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May 22, 2017

Mr. David Brownlee
Unit Coordinator
Response and Remediation Program
Georgia Department of Natural Resources
2 Martin Luther King Jr. Drive, SE, Suite 1462 East
Atlanta, Georgia 30334

**Subject:** **VRP 4th Semiannual Progress Report**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site Macon, Georgia**
**HSI #10511**

Dear Mr. Brownlee:

Attached please find one hard copy and two cd copies of the ***VRP 4th Semiannual Progress Report*** for the Atlanta Gas Light Company Former Manufactured Gas Plant Site located in Macon Georgia.

Should you have any questions, please do not hesitate to contact me.

Sincerely,

Adria Reimer, P.G.
Project Manager

Attachments

cc: Greg Corbett, AGL Resources
Lea Millet, Georgia Power
Carol Geiger, Kazmarek Mowrey Cloud Laseter LLP
Hollister Hill, Troutman Sanders
Herbert Ernst, Environmental Cost Management
David Fortson, City of Macon
Alex Morrison, MUDA

**Georgia Environmental Protection Division**
**Land Protection Branch**
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**Response Development Units 1 – 3**

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# Document Submittal Form

**Instructions:** This form should be completed and included with any document submitted to the Response and Remediation Program, Response Development Units 1 – 3, that is greater than 25 pages in length or that contains paper sizes larger than 11"x17". This includes Release Notifications and documents related to Hazardous Site Inventory and Voluntary Remediation Program sites. Contact Brownfield Unit staff for Brownfield submittal guidelines. Your cooperation helps to ensure that documents are filed correctly, completely, and efficiently.

Name of Document: 4th Semiannual Progress Report

Date of Document: May 22, 2017

Site Name: Former Manufactured Gas Plant Site, Macon, GA

Site ID Number: HSI #10511

Document Submittal Checklist. Please certify that the submittal includes the following by checking each box as appropriate. Items 1 – 3 should be checked / included / certified for each submittal:

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- ☐ manifests
- ☒ other: Appendices B, D, F and G

I certify that the information I am submitting is, to the best of my knowledge and belief, true, accurate, and complete.

Signature:

Name (printed): Adria Reimer

Date: 5/22/2017

Organization: ERM

Phone: 678-486-2700

Email: Adria.reimer@erm.com

Receipt Date
(for EPD use only)

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May 22, 2017

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**Subject:** **4th Semiannual Progress Report**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia HSI #10511**

I have enclosed 2 electronic versions of Transmittal of Electronic version 4th Semiannual Progress Report Atlanta Gas Light Company Former Manufactured Gas Plant Site Macon, Georgia HSI #10511pdf files on Compact Disc to accompany the hard copy report. This certification states that the electronic copy is complete, identical to the paper copy and virus free.

*I, Holly H. McDonald, on May 22, 2017 made a complete electronic copy of the following document:*

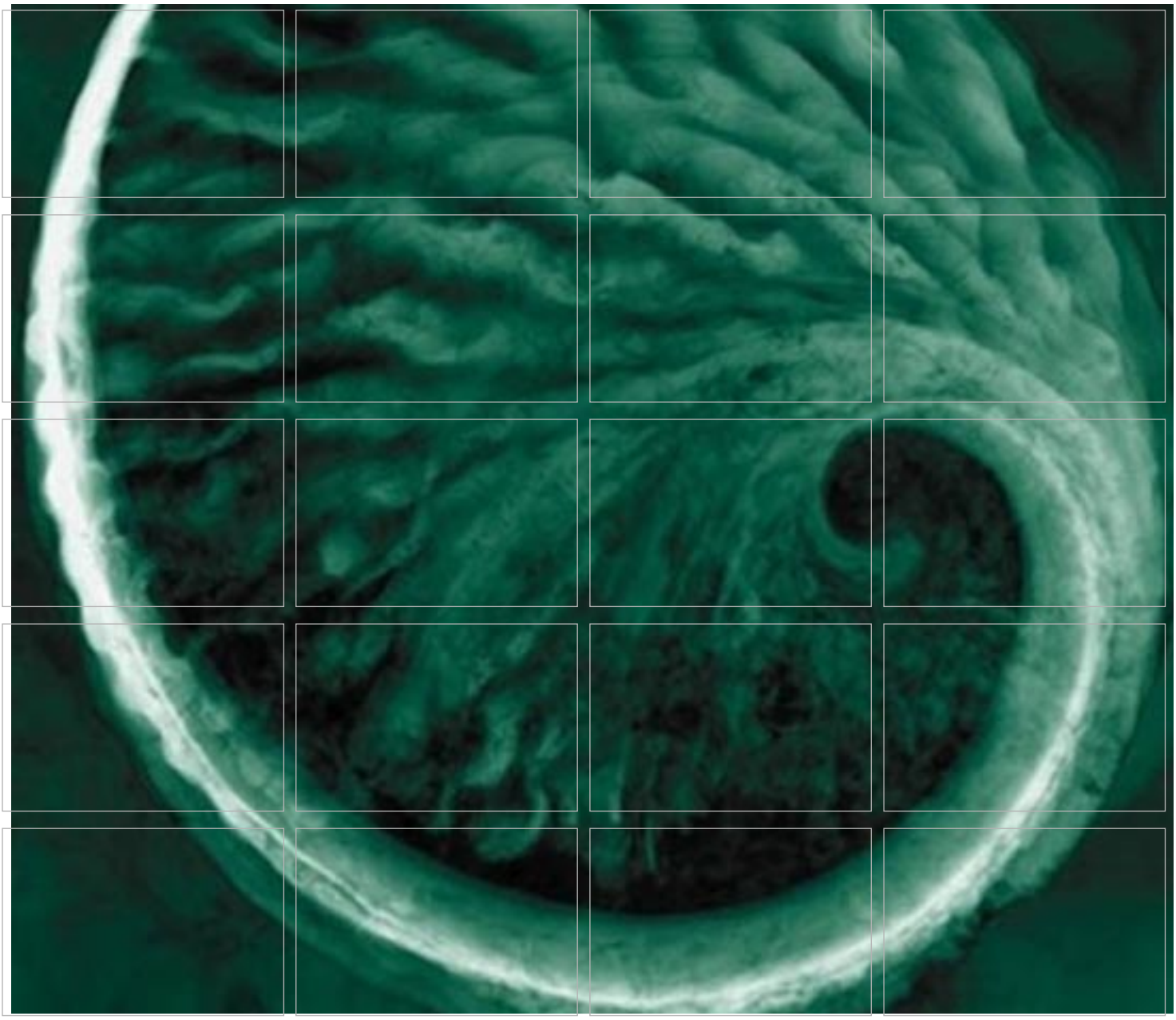
*Transmittal of Electronic Version of the Submittal of the*
**4th Semiannual Progress Report**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia HSI #10511**
*then confirmed that the electronic copies did not contain a virus utilizing Symantec antivirus software.*

You can contact me at 678.486.2700 with any questions or comments.

Best regards,

Holly H. McDonald

Holly H. McDonald



# 4th Semiannual Progress Report

***Atlanta Gas Light Company***
Former Manufactured Gas Plant Site
Macon, Georgia HSI #10511

May 22, 2017

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Atlanta Gas Light Company

# 4th Annual Progress Report

# Former Manufactured Gas Plant Site
# Macon, Georgia HSI #10511

May 22, 2017

ERM Project No. 0366660


Jorge Salcedo, PG
*Partner-In-Charge*

Adria Reimer, PG
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*PROFESSIONAL CERTIFICATION PAGE*

**4TH ANNUAL PROGRESS REPORT**
**ATLANTA GAS LIGHT COMPANY**
**FORMER MANUFACTURED GAS PLANT SITE**
**MACON, GEORGIA**
**HSI NO. 10511**

*I certify that I am a qualified ground-water scientist who has received a baccalaureate or post-graduate degree in the natural sciences or engineering, and have sufficient training and experience in groundwater hydrology and related fields, as demonstrated by state registration and completion of accredited university courses, that enable me to make sound professional judgments regarding groundwater monitoring and contaminant fate and transport. I further certify that this report was prepared by me or by a subordinate working under my direction.*

Adria L. Reimer, P.G. #002004

**May 22, 2017**

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*ACRONYMS AND ABBREVIATION*S

| | |
|---|---|
| AGLC | Atlanta Gas Light Company |
| AGMWP | Alluvial Groundwater Monitoring Work Plan |
| BGMP | Bedrock Groundwater Monitoring Plan |
| BTEX | Benzene, Toluene, Ethylbenzene and Xylenes |
| BPLM | By-Product Like Material |
| CAP | Corrective Action Plan |
| CAP A | Corrective Action Plan Addendum |
| COI | Constituent of Interest |
| CSM | Conceptual Site Model |
| CSR | Compliance Status Report |
| DNAPL | Dense Non-Aqueous Phase Liquid |
| EPD | Environmental Protection Division |
| ERM | Environmental Resources Management |
| ft | Feet or Foot |
| ft/bgs | Feet Below Ground Surface |
| ft btoc | Feet Below Top of Casing |
| ft/day | Feet per Day |
| GMWP | Groundwater Monitoring Work Plan |
| HSI | Hazardous Site Inventory |
| HSRA | Hazardous Site Response Act |
| ISCO | In-situ Chemical Oxidation |
| ISS | In-Situ Solidification |
| K | Hydraulic Conductivity |
| MGP | Manufactured Gas Plant |
| MUDA | Macon Urban Development Authority |
| NAPL | Non-Aqueous Phase Liquid |
| NTU | Nephelometric Turbidity Units |
| POD | Point of Demonstration |
| PWR | Partially Weathered Rock |
| RRS | Risk Reduction Standards |
| ROW | Right-of-Way |
| SVOCs | Semivolatile Organic Compounds |
| UEC | Uniform Environmental Covenant |
| USEPA | United States Environmental Protection Agency |
| VI | Vapor Intrusion |
| VIRP | Voluntary Investigation and Remediation Plan |
| VEFR | Vacuum Enhanced Fluid Recovery |
| VOCs | Volatile Organic Compounds |
| VRP | Voluntary Remediation Program |
| VRPA | Voluntary Remediation Program Act |
| ug/L | Micrograms per Liter |

# 1.0 INTRODUCTION

This 4th *Annual Progress Report* is being submitted on behalf of Atlanta Gas Light Company (AGLC) for the Macon former Manufactured Gas Plant (MGP) site located in Macon, Bibb County, Georgia (Figure 1). Two MGP facilities formerly operated in the area of Mulberry Street and 6th Street in Macon. The former MGP located at 137 Mulberry Street (southeast of 6th Street) has been the subject of numerous investigation and corrective actions since the 1980s. This portion of the Macon MGP site is referred to as the Mulberry Street former MGP (also referred to as the Eastern Portion MGP in previous correspondence) and also includes those parcels affected by a release from the former operations. The property where the Mulberry Street former MGP facility operations were conducted is bounded by Walnut Street, 7th Street, Mulberry Street, and 6th Street, and is currently owned by Macon Urban Development Authority (MUDA). Investigation on this portion of the former MGP began in 1986 and soil remediation was completed in 2004.

The second MGP was located northwest of 6th Street and is bounded by Terminal Avenue on the north side. Investigation of this property began in 2005. Soil and groundwater impacts requiring additional investigation were identified during the installation of injection wells for the in-situ chemical oxidation (ISCO) remedy and demolition of structures on the property. The results of investigations and additional historical research established that this location was a separate former MGP site that used different MGP production processes than the Mulberry MGP. This former MGP is referred to as the Western Portion MGP (Figure 2).

AGLC and the Georgia Environmental Protection Division (EPD) entered into Consent Order EPD-HSR-227 on July 11, 2000. The Consent Order was administered under the Hazardous Site Response Act (HSRA) and the Site was listed on the EPD Hazardous Site Inventory (HSI) as number 10511. AGLC completed a series of investigations and implemented numerous EPD-approved corrective actions while under the HSRA program to address residual MGP impacts in the unsaturated and saturated materials at the Site and on neighboring parcels.

AGLC submitted an application to enter the Georgia Voluntary Remediation Program (VRP) and a *Voluntary Investigation and Remediation Plan* (VIRP) to EPD in October 2014. On January 14, 2015, AGLC and EPD signed and executed Consent Order EPD-VRP-12, providing for transition of the Site from regulation under HSRA to the VRP. EPD acknowledged acceptance to the VRP in correspondence dated May 21, 2015 and provided comments on the VIRP in correspondence dated May 26, 2015. For the purposes of this document, the term "Site" is defined as the portion of AGLC's contiguous property and any other owner's property potentially impacted by the former MGP operations. The Site, additional VRP-qualifying properties, and adjoining properties are shown on Figure 3.

Under the VRP, the schedule for submittal of progress reports is May 21st and November 21st annually. The purpose of this report is to provide EPD with an update of activities completed since submittal of the 3rd *Semiannual Progress Report* on November 21, 2016. In addition, the progress report describes upcoming planned activities. In correspondence dated May 26, 2015, EPD provided comments to the October 2014 VIRP; the comments were addressed in the *1st Semiannual Progress Report* (ERM, 2015).

In correspondence dated February 21, 2017, EPD provided comments to the *1st*, *2nd* and *3rd Semiannual Progress Reports* and the *2016 Corrective Action Completion Report.* The comments were addressed in correspondence dated March 22, 2017. Details of the correspondence are provided in Section 2.1.

## 2.0 *ACTIVITIES COMPLETED SINCE 3RD SEMIANNUAL PROGRESS REPORT SUBMITTAL*

This section describes activities that have been completed since the *3rd Semiannual Progress Report* (ERM, 2016) was submitted in November 2016. These activities include:

- Review and provide responses to EPD comments received on February 21, 2017, regarding the following submittals:
  - *1st Semiannual Progress Report* (November 2015);
  - *2nd Semiannual Progress Report* (May 2016); and
  - *3rd Semiannual Progress Report* (November 2016), which included the *Corrective Action Completion Report for Remediation of the Former Manufactured Gas Plan Site – Western Parcel* (CACR).
- Completion of the February 2017 semiannual groundwater monitoring event.

### 2.1 *REGULATORY CORRESPONDENCE*

In correspondence dated February 21, 2017, EPD provided comments to the above referenced reports. EPD comments #1 and #2 required a response, while comments #3 through #6 indicated EPD's approval of recommendations included in the previously submitted progress reports. The EPD comment letter and AGLC response letter are provided in Appendix A.

### 2.2 *SEMIANNUAL GROUNDWATER MONITORING*

Groundwater sampling at the Site is typically conducted in February (annual event) and August (semiannual event). As discussed in the *3rd Semiannual Progress Report*, in situ solidification (ISS) remediation of MGP-derived byproduct-like material (BPLM) and/or source materials below the groundwater table at the former Western Portion Macon MGP site was completed in late 2015, excavation of unsaturated soil to remove BPLM and/or source material was completed in mid-April 2016, and restoration activities were completed in late April 2016.

The February 2017 (annual) groundwater monitoring event represents the fourth monitoring event since ISS activities were completed, the third since excavation activities were completed, and the second since completion of Site restoration. Sections 3 and 4 of this report discuss the groundwater monitoring objectives and February 2017 results.

### 2.3 *REGISTERED PROFESSIONAL SUPPORTING DOCUMENTATION*

To document the direct oversight of implementation of corrective action and long-term monitoring, a monthly summary of hours invoiced and description of

services provided by Adria Reimer, P.G. (Georgia No. 002004) to the VRP participant since the previous submittal to EPD is shown in the following table:

| **Adria Reimer, P.G. (Georgia No. 002004)** | | |
|---|---|---|
| Month | Hours Invoiced | Work Completed |
| November 2016 | 17 | Oversight of the work summarized in this report |
| December 2016 | 3.5 | |
| January 2017 | 11 | |
| February 2017 | 16 | |
| March 2017 | 22 | |
| April 2017 | 36.5 | |

## 3.0 GROUNDWATER MONITORING METHODS

This section summarizes groundwater level measurement and groundwater sample collection methods utilized during the February 2017 annual groundwater monitoring event at the Site. Site features, property boundaries, the extent of ISS activities, and locations of groundwater monitoring wells are shown on Figure 2. Property ownership information is shown on Figure 3.

The volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) on the COI list (Table 1) were updated based on correspondence received from the EPD dated January 17, 2012 to include constituents listed in Table 2-1 of the January 2004 Compliance Status Report (CSR). The January 17, 2012 correspondence also requested that the COI list remain in use until COI delineation to background and certification of the Western Portion to the applicable risk-reduction standard (RRS) is completed and documented by submittal of an updated CSR. . Per comments #5 and #6 of the February 21, 2017 EPD comment letter, laboratory analysis of groundwater samples for inorganic constituents is no longer required at the Site.

The February 2017 annual monitoring event for alluvial groundwater represents the second Site-wide alluvial sampling event since the completion of Site remedial activities in April 2016. Sampling was conducted in accordance with *Alluvial Groundwater Monitoring Work Plan* (AGMWP) [Appendix H of the *Western Portion and MW-101 Area Groundwater Corrective Action Plan Addendum*] submitted to EPD on October 14, 2014 as Appendix C of the VIRP. The network of alluvial groundwater monitoring wells sampled in February 2017 is presented as Table 2, and is consistent with the list provided as Table B1-2 in the *3rd Semiannual Progress Report*.

Groundwater samples collected from bedrock wells during the February 2017 monitoring event were obtained using methods described in the *Bedrock Groundwater Monitoring Plan* (BGMP) [Appendix I of the *Voluntary Investigation Remediation Plan* (VIRP)] submitted to the EPD on October 14, 2014. The bedrock groundwater monitoring schedule is presented in Table 3, and is consistent with the schedule proposed in Table B1-3 of the *3rd Semiannual Progress Report*.

### 3.1 SCOPE OF WORK

The February 2017 groundwater monitoring event, which represents the annual monitoring event, included the following tasks:

#### 3.1.1 Field Tasks

- Groundwater level gauging;
- Monitoring for the presence of dense non-aqueous phase liquid (DNAPL);
- Groundwater sampling; and

- Waste management.

### 3.1.2 *Reporting Tasks*

- Tabulation of groundwater elevations;
- Tabulation of laboratory analytical results for COI;
- Preparation of alluvial groundwater elevation maps and bedrock groundwater flow potential maps;
- Evaluation of groundwater flow in the alluvial and bedrock aquifers;
- Evaluation of analytical results relative to Type 2 and Type 4 RRS; and
- Preparation of isoconcentration maps for benzene and naphthalene.

## 3.2 *GROUNDWATER MONITORING NETWORK*

The network of monitoring wells was developed over a series of investigations to determine on-site and off-site groundwater impacts. The annual event (February) represents the event with the greater number of wells to be sampled and the semiannual event (August) includes a subset of these wells. The alluvium groundwater monitoring well network is included as Table 2, the bedrock groundwater-monitoring network is included as Table 3, and locations of existing monitoring wells are shown on Figure 2.

## 3.3 *GROUNDWATER LEVEL GAUGING AND WELL INSPECTION*

During the initial groundwater gauging task the condition of each well was noted, including the concrete surface seal, outer casing, inner expandable well cap, and lock. Any well caps, manhole cover bolts, or locks that were damaged or missing were noted and replaced during this reporting period. Groundwater levels were measured from the pre-existing surveyed reference point on the top of casing of each well. All wells were gauged with an oil-water interface meter to obtain depth to water data and to assess whether DNAPL was present. The interface meter was decontaminated between wells by wiping the line with a cloth containing isopropanol followed by a cloth containing deionized water. The probe was decontaminated using a wash of deionized water and a phosphate-free detergent followed by a deionized water rinse.

## 3.4 *WELL PURGING AND GROUNDWATER SAMPLE COLLECTION METHODS*

Before collection of groundwater samples, each well was purged using low-flow/ low-volume techniques conducted in accordance with ERM's standard operating procedures, which are based on technical guidelines from U.S. Environmental Protection Agency (USEPA) Region 4 Science and Ecosystem Support Division Operating Procedures March 2013 (SESD Operating Procedures), *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures*

(Puls and Barcelona, 1995), and *Ground-Water Sampling Guidelines for Superfund and RCRA Project Managers* (Yeskis and Zavala, 2002). The purpose of purging the well is to draw fresh formation water into the well so that the samples are representative of the portion of the aquifer surrounding the well. Low-flow methods are used for purging and sampling to avoid unnecessary disturbance to the well and formation surrounding the well, to reduce mixing within the well screen and well itself which may potentially lead to sample dilution, and to reduce the potential for sample aeration.

In wells where excessive drawdown occurred (> 0.3 feet), the method of purging the well was switched to a minimum of three (3) well volumes at which point the well was sampled upon stabilization, or following removal of a maximum of five well volumes, unless well volume was over 10 gallons. Wells with greater than 10 gallons of purge volume, which also exhibit drawdown of greater than 0.3 feet were still purged using low-flow/low-volume techniques due to the excessive amount of volume needed to purge by switching methods.

Field groundwater quality measurements included pH, conductivity, temperature, dissolved oxygen (DO), oxidation-reduction potential (ORP), and turbidity. Field parameter values and corresponding purge volumes were recorded on groundwater sampling forms. Copies of these forms for the February 2017 sampling event are included in Appendix B.

Groundwater samples from the February 2017 event were analyzed for all COI (Table 1). Analytical Environmental Services, Inc. (AES; Georgia Certification ID 800) performed the analyses.

## 3.5 QUALITY CONTROL/QUALITY ASSURANCE SAMPLES

Field quality control (QC) samples were collected and analyzed to document the accuracy and precision of the laboratory. QC samples included:

- *Trip Blanks*: One trip blank accompanied each cooler containing VOC samples sent to the laboratory. Trip blanks were analyzed to determine if any contaminants were introduced while samples were stored or while in transit to the laboratory. Trip blanks were analyzed for VOCs on the COI list only.
- *Field Duplicates*: Three (3) alluvial well blind field duplicates (AMW-15, MW-101, and MW-400) and two (2) bedrock well field duplicates (MW-110D and MW-205D) were collected during the February 2017 sampling event. Duplicates were collected to determine the precision of groundwater sample analysis and the variability of collection procedures.
- *Matrix Spikes* and *Matrix Spike Duplicates*: Matrix Spike and Matrix Spike Duplicate (MS/MSD) sample sets were collected from MW-102 (alluvial) and MW-22D (bedrock) during the February 2017 sampling event, as part of the laboratory analytical batch QC.

### *3.6 MANAGEMENT OF INVESTIGATION DERIVED WASTE*

All liquid wastes generated from sampling activities (i.e., purge water and decontamination water) were placed in on-site, labeled, stainless steel 55-gallon drums or labeled plastic totes for storage on the AGLC property between Terminal Avenue and 6th Street prior to proper disposal. Personal protective equipment and other trash was placed in bags, and deposited in solid waste containers.

## 4.0 SITE HYDROGEOLOGY

### 4.1 GROUNDWATER ELEVATIONS

During the February 2017 sampling event, all alluvial and bedrock groundwater wells were inspected and the groundwater levels and total depths were gauged and recorded, with the exception of two (2) wells that could not be located during the event. MW-23 is located in an unpaved area and could not be located during the event due to extensive gravel cover in the area. An attempt will be made to locate MW-23 during the August 2017 semiannual event. MW-07 was paved over during exterior building renovations at the northeast corner of Mulberry Street and 7th Street and is considered destroyed. Groundwater elevation data derived from water level measurements collected on February 20, 2017, for the alluvial and bedrock wells are presented in Tables 4 and 5, respectively. DNAPL was detected at MW-111D and MW-309D in February 2017. Observed DNAPL thickness at the wells is noted in Table 5. The alluvial groundwater elevation map for February 20, 2017 is presented on Figure 4. Figure 5 shows the hydraulic potential in shallow bedrock wells for February 20, 2017.

### 4.2 GROUNDWATER GRADIENTS, HYDRAULIC CONDUCTIVITY AND SEEPAGE VELOCITY

Prior to soil remediation and ISS, groundwater flow in the alluvial aquifer was generally in an easterly direction. Based on the February 2017 data, alluvial groundwater continues to flow in an easterly direction , but around the ISS mass (Figure 4). Seepage velocity in the alluvial aquifer was estimated from the product of hydraulic conductivity and horizontal hydraulic gradient (Table 6 and Appendix C) divided by effective porosity. The hydraulic conductivity and effective porosity from the GW CAP-A were used to estimate the seepage velocity. Based on these parameters, the February 2017 alluvial seepage velocity is approximately 1.1 ft/day in the Western Portion and approximately 0.25 ft/day in the Eastern Portion (see Table 6 for calculations).

Rock formations have primary and secondary porosity. Primary porosity is the ability of the rock matrix to accept and transport fluids. Secondary porosity accounts for fluid movement in the formation by way of features other than the matrix. Fractures represent an example of secondary porosity. Groundwater flow in crystalline rock formations, such as the granitic gneiss underlying the Macon MGP Site, principally occurs in fractures as the matrix does not readily transport fluids. Groundwater flow and dissolved constituent transport typically dominated by the orientation of the primary fracture system. Geophysical investigations conducted in 1999 (RETEC, 2004) and 2005 (RETEC, 2005) demonstrated primary fractures in bedrock at the Site are oriented to the east and southeast. The inferred (or apparent) bedrock groundwater flow directions for data collected in February 2017 are presented on Figure 5. The hydraulic potential measured in shallow bedrock wells decreases toward the east

and southeast, as shown on Figure 5. Groundwater gradients calculated based on the hydraulic potential indicate groundwater movement in bedrock is generally parallel to the fracture orientations.

Since fractured bedrock aquifers are inherently anisotropic and heterogeneous, calculation of seepage velocity may not be representative using bulk porosity estimates. However, a range of porosity estimates may provide bounds on the expected seepage velocity of the bedrock aquifer. Multiple seepage velocities were calculated using porosity estimates from the literature and by solving three-point problems for different areas of the Site. The seepage velocities are presented in Table 6. The calculated range of seepage velocities in the bedrock aquifer at the Western Portion of the Site was between 0.04 and 3.52 ft/day, and between 0.0431 and 3.43 ft/day in February 2017 in the Eastern Portion of the Site (see Table 6 for seepage velocity calculations and Appendix C for gradient calculations).

## 5.0 GROUNDWATER ANALYTICAL RESULTS

Analytical results for alluvial and bedrock monitoring wells sampled in February 2017 are summarized in Tables 7 and 8, respectively. These results were compared to Type 4 RRS (i.e., non-residential standard) for monitoring wells in the City ROW, on-site, or in an industrial use area and Type 2 RRS (i.e., residential standard) for wells located off-site and/or in a residential use area. Groundwater monitoring well locations, parcel property boundaries and the cleanup goal type (i.e., non-residential or residential) are shown on Figure 6. Detected concentrations of benzene and naphthalene exceeding the Type 2 or Type 4 RRS (as applicable) are shaded in Tables 7 and 8.

The spatial distribution of benzene and naphthalene are shown in Figures 7 and 8 respectively, for alluvium wells sampled in February 2017. For alluvial wells not sampled in February 2017, the most recent benzene and naphthalene data, and month and year the data were collected, are shown in Figures 6 and 7. Groundwater analytical results for alluvial monitoring wells are presented in Table 7. The spatial distribution of benzene and naphthalene in bedrock in February 2017 is depicted on Figures 9 and 10, respectively. For bedrock wells not sampled in February 2017, the most recent benzene and naphthalene data, and month and year the data were collected, are shown on Figures 9 and 10.

Groundwater purge logs are included herein as Appendix B, alluvial groundwater gradient calculation and bedrock hydraulic potential calculation figures as Appendix C, laboratory analytical reports in Appendix D, and data validation reports are attached as Appendix E. A complete summary of historical analytical data collected for the groundwater-monitoring program (since 2001) is provided as Appendix F. Benzene and naphthalene concentration and groundwater elevation trend graphs for bedrock monitoring wells are provided in Appendix G.

### 5.1 ALLUVIAL GROUNDWATER ANALYTICAL RESULTS

Analytical results for groundwater samples collected in February 2017 from alluvial monitoring wells were compared to the Type 2 or 4 RRS, and are presented in Table 7.

*Volatile Organic Compound Results*

Laboratory analysis of groundwater samples collected from alluvial groundwater wells in February 2017 indicates that all VOCs were either not detected at laboratory reporting limits or were detected at a concentration below the applicable RRS, with the exception of benzene in a small area adjacent to the ISS mass along Terminal Avenue (Figure 7). Non-residential cleanup goals apply to this area. Benzene was detected at concentrations above the applicable cleanup goal (Type 4 RRS of 9 µg/L) in groundwater samples collected from alluvial monitoring wells AMW-15 (80 µg/L) and MW-205 (35 µg/L), both located within the City ROW, east of the Norfolk Southern rail line and west of

the ISS. Ethylbenzene, toluene and xylenes were detected in MW-205, and ethylbenzene and xylenes were detected in AMW-14 (also located west of the ISS, approximately 70 feet south of AMW-15) and AMW-15 at concentrations below the Type 4 RRS.

No VOCs were detected above the laboratory detection limit (5 µg/L) in any other alluvial monitoring well sampled in February 2017.

*Semivolatile Organic Compound Results*

Naphthalene was the only SVOC detected above 20 µg/L (Type 2 and Type 4 RRS for naphthalene) in alluvial wells in February 2017. As shown on Figure 8, the exceedances for naphthalene were in samples collected from MW-101 (43 µg/L) and MW-205 (46 µg/L). MW-101 is located south of the ISS and MW-205 is located west of the ISS.

## 5.2 *BEDROCK GROUNDWATER ANALYTICAL RESULTS*

Analytical results for groundwater samples collected from bedrock monitoring wells were compared to Type 2 or 4 RRS, as appropriate, and are presented in Table 8.

Twenty-six (26) bedrock monitoring wells were sampled during the annual February 2017 sampling event to meet the objectives outlined in the BGMP. MW-111D and MW-309D were not sampled due to the presence of DNAPL in the wells. Section 6.2.2 of this report presents details on the presence of DNAPL at these wells in February 2017 and an evaluation of these observations in the context of previous observations.

*Volatile Organic Compound Results*

No VOCs were detected in groundwater samples collected in February 2017 from bedrock wells where residential cleanup standards apply (i.e., MW-24D and MW-26D). Benzene was detected in groundwater above the non-residential, Type 4 RRS of 9 µg/L in samples collected from ten (10) bedrock monitoring wells:

- MW-12DRR
- MW-12DD
- MW-110D
- MW-200DR
- MW-204D
- MW-205D
- MW-206D
- MW-301D
- MW-305D
- MW-308D

Benzene concentrations for the wells listed above ranged from 9.3 µg/L (MW-301D) to 9,600 µg/L (MW-305D) in February 2017. The distribution of benzene in bedrock wells sampled in February 2017 is shown on Figure 9. Benzene was the only BTEX analyte detected above its respective RRS in bedrock groundwater samples collected during the February 2017 sampling event, with the exception

of toluene, which was detected at MW-305D (5,000 µg/L) above the Type 4 RRS (1,100 µg/L).

*Semivolatile Organic Compound Results*

The non-residential and residential cleanup goal for naphthalene is 20 µg/L. Naphthalene was not detected in either bedrock well where residential goals apply (i.e., MW-24D and MW-26D) in February 2017. Naphthalene was detected above 20 µg/L in samples collected from eight (8) bedrock monitoring wells where non-residential cleanup goals apply:

- MW-12DRR
- MW-110D
- MW-200DR
- MW-204D
- MW-205D
- MW-206D
- MW-301D
- MW-305D

Naphthalene concentrations reported above the target cleanup goal ranged from 430 µg/L (MW-301D) to 3,700 µg/L (MW-205D) in February 2017. The distribution of naphthalene in bedrock wells sampled in February 2017 is shown on Figure 10. No other SVOCs were detected above their respective cleanup goals in bedrock groundwater samples collected during the February 2017 sampling event.

## 5.3 QUALITY ASSURANCE, QUALITY CONTROL, AND DATA VALIDATION

All field QA/QC data, and at least 10 percent of the VOC and SVOC data presented in the analytical reports were reviewed by ERM's data validation expert. Laboratory analytical reports for all samples are provided in Appendix D, and the data validation reports for VOC and SVOC data are included in Appendix E. These data were reviewed in accordance with the USEPA Contract Laboratory Program National Functional Guidelines for Organic/Inorganic Data Review, Level 2 Evaluation [2008, 2011].

ERM performed a data validation review of sample order numbers 1702K47, 1702M96 and 1702O89 for the February 2017 alluvial sampling event, which included the following parent and duplicate samples:

| Allluvial Wells | |
|---|---|
| DUP-01-20170223-01 | MW-101-20170223-01 |
| DUP-02-20170223-01 | AMW-15-20170223-01 |
| DUP-03-20170223-01 | MW-400-20170223-01 |
| Bedrock Wells | |
| DUP-04-20170223-01 | MW-110D-20170223-01 |
| DUP-05-20170224-01 | MW-205D-20170224-01 |

The following items were included in the data validation review:

- Surrogate recoveries
- Relative percentage difference of primary/field duplicate samples
- Field and laboratory blank contamination
- Holding times, sample receipt conditions, dilution factors, chains of custody
- Trip blanks
- Sample duplicates

Three (3) alluvial and two (2) bedrock field duplicate samples were collected during the February 2017 sampling event (see above) to determine the precision of the groundwater sample analysis and collection. As shown in Appendix E, the relative percent difference (RPD) calculations showed differences of less than 30 percent (%) between parent and duplicate sample results, indicating good correlation, with the following exceptions:

- MW-101: naphthalene (RPD = 69%; 43 µg/L compared to 21 µg/L)
- MW-110D: naphthalene (RPD = 37%; 760 µg/L compared to 1,100 µg/L)
- MW-205D: xylenes (RPD = 32%; 580 µg/L compared to 420 µg/L)

MS/MSD sample sets were collected in February 2017 as part of the laboratory analytical batch QC. MS/MSD samples are used to assess matrix interference and reliability of the analytical processes and equipment. The samples were collected from MW-102 and MW-22D. All results for the MS/MSD QC samples were within the laboratory-established limits.

The parent and duplicate sample results with >30% RPD do not impede the usability of the data collected during the February 2017 event. All data results were within the QA/QC parameters utilized by the laboratory and no data was qualified. Naphthalene detections in the parent and duplicate samples collected at MW-101 and MW-110D, and xylene detections in parent and duplicate samples collected at MW-205D were within the limits of historical detections (Appendix F). In addition, at each of the individual well locations an RPD >30% was only determined for one (1) compound, indicating the disparities represent slight variations in groundwater quality rather than arising from field or laboratory procedures.

## 6.0 DISCUSSION OF GROUNDWATER SAMPLING OBJECTIVES

This section provides an evaluation of the results of the groundwater sampling events conducted in the context of variability and concentration trends over the past four years as they relate to the monitoring objectives defined in the BGMP and interim alluvial objectives prior to and during active remedy implementation. Historical groundwater monitoring results are summarized in Appendix F.

### 6.1 ALLUVIAL GROUNDWATER

#### 6.1.1 Document that the Plume is not Migrating off MUDA Type 5 Property

Results from monitoring wells MW-15, MW-101, and MW-102 were used to assess whether the alluvial groundwater plume may be migrating off the MUDA Type 5 property located at 137 Mulberry Street. Type 4 RRS apply to these wells.

- MW-101 is located adjacent to the earliest ISS mass on the MUDA property and historically has had impacts. Naphthalene was detected above the Type 4 RRS of 20 µg/L at a concentration of 43 µg/L in the parent sample and just slightly above the RRS at a concentration of 21 µg/L in the duplicate sample during the February event. All other COI were significantly below Type 4 RRS. Naphthalene is the first reported COI to exceed the Type 4 RRS in MW-101 since August 2015.
- MW-15 and MW-102 are located hydraulically downgradient of MW-101 along the property boundary. Both wells have historically had concentrations below detection limits for organic COI, and no COI were detected above the reporting limit in either well during the February 2017 sampling event with the exception of anthracene at MW-15 (0.074 µg/L) at a concentration slightly above the detection limit (0.050 µg/L) and significantly below the Type 4 RRS (31,000 µg/L). No COI have been detected above the Type 4 RRS in MW-15 since sampling of the well began in 2001. No COI have been detected above the Type 4 RRS at MW-102 since 2002.

Results from the February 2017 sampling event suggest isolated, localized dissolved COI in the vicinity of MW-101 but do not indicate that the alluvial groundwater plume on the MUDA property is currently unstable or migrating off the Type 5 property. Specifically, no VOCs or SVOC have been detected at MW-15 or MW-102 for more than 15 years, providing evidence of long-term groundwater stability downgradient of the ISS. The long history of absence of VOC and SVOC impacts at these locations prior to, during and after implementation of corrective actions at the MUDA property shows supports that the impacts are isolated in a small area adjacent to the ISS and that those impacts are not migrating downgradient to these locations, and therefore are not migrating to downgradient properties.

### 6.1.2 *Collect Data Downgradient of the Footprint of Corrective Actions at the Western Portion MGP to Monitor Changes*

Results from monitoring wells MW-08, MW-101, and MW-400 sampled in February 2017 were used to assess groundwater concentrations in wells downgradient of the ISS footprint. Type 4 RRS apply to these wells. No VOCs were detected in these wells in February 2017. No SVOCs were detected above Type 4 RRS in any of the three (3) wells in February 2017, except for naphthalene in MW-101 as noted above.

### 6.1.3 *Monitor Alluvial Groundwater Data Hydraulically Downgradient of the Eastern Portion ISS Mass to Assess Whether Concentrations Remain Below RRS*

MW-12R, MW-14I, MW-21, and MW-104 were sampled during the February 2017 sampling event to assess whether alluvial groundwater downgradient of the Eastern Portion ISS mass remains below Type 2 RRS (for MW-21) or Type 4 RRS (MW-12R, MW-14I, and MW-104). No COI were detected at concentrations exceeding their respective RRS during the February 2017 sampling event at these wells. Furthermore, no organic COI have exceeded Type 2 or 4 RRS (as applicable based on well location) in any of the above alluvium monitoring wells for more than seven years, since naphthalene was detected at MW-12R at a concentration above the Type 4 RRS in February 2010, during the first sampling event following well installation.

The sustained lack of VOC and SVOC detections at these four (4) downgradient locations shows that there are no alluvial groundwater impacts in this area. The absence of impacts during the nearly ten years of monitoring this area supports this conclusion.

### 6.1.4 *Detect Changes in Environmental Conditions*

The groundwater flow directions and seepage velocities for the February 2017 monitoring event were compared with previous results to identify any changes. The flow direction in the alluvium aquifer has historically been to the east. Alluvium groundwater flow during the February 2017 event was predominantly towards the east. The calculated horizontal hydraulic gradient for the alluvium was 0.0600 ft/ft at the Western Portion of the Site and 0.0134 ft/ft at the Eastern Portion of the Site during the February 2017 gauging event (Appendix C).

During the August 2016 sampling event, the calculated horizontal hydraulic gradient for the alluvium was 0.0570 ft/ft at the Western Portion of the Site and 0.0124 ft/ft at the Eastern Portion of the Site. The alluvium groundwater gradients in the Eastern and Western portion of the site in February 2017 were consistent with those in August 2016. Compared to previous events, no significant variations in groundwater flow direction or calculated gradient are noted.

No changes in environmental conditions were detected at the Site based on the evaluation of groundwater flow direction and seepage velocity.

## 6.2 BEDROCK GROUNDWATER

### 6.2.1 Perimeter Well Monitoring

Data from perimeters wells (including MW-22D, MW-23D, MW-24D, MW-26D, and MW-27D) were evaluated to assess any changes in the nature and extent of the bedrock groundwater quality. Results from these wells do not indicate any changes to the bedrock aquifer, with the exception of MW-24D. As discussed in Section 2.3 of the *3rd Semiannual Progress Report*, during this reporting period COI concentrations at MW-24D were monitored to evaluate whether COI concentration detections and fluctuations occurring since 2014 may be the result of bedrock aquifer disturbances (i.e., drilling and/or DNAPL recovery activities). Groundwater monitoring results for samples collected from MW-24D between the most recent disturbance (VEFR event in June 2016) and August 2016 were reported in the *3rd Semiannual Progress Report*. Data evaluation indicated the potential for drilling- and/or VEFR-induced bedrock aquifer disturbances near the intersection of Walnut Street and 7th Street to destabilize the groundwater plume, and for those disturbances to last at least three months after the disturbance.

No bedrock aquifer disturbances (drilling and/or DNAPL recovery events) have occurred since June 2016, and no VOCs or SVOCs were detected at MW-24D above the Type 2 RRS in February 2017 with the exception of benzo(a)pyrene at a concentration slightly above the applicable standard (0.98 µg/L compared to 0.2 µg/L). Plume stability in the vicinity of the Walnut Street and 7th Street intersection will continue to be evaluated using data collected at MW-24D during future groundwater monitoring events.

### 6.2.2 Monitor for DNAPL accumulation and DNAPL Recovery

The first VEFR event was performed in February 2011 to remove DNAPL in MW-111D. Subsequent events were performed in September 2013 (MW-111D and MW-302D), May 2015 (MW-111D), August 2015 (MW-111D, MW-309D and SW-1), and June 2016 (MW-111D, MW-309D and SW-1). Per the EPD comment letter dated February 21, 2017, VEFR is currently not required at the Site. DNAPL monitoring will continue during semiannual monitoring events. Results of monitoring activities at MW-111D, MW-302D and MW-309D, wells in which DNAPL has primarily been observed from November 22, 2015 through February 21, 2017, are summarized below.

*MW-302D*

No DNAPL was observed during the April 2016 monitoring event; therefore, the well was not included in the June 2016 VEFR event. Trace DNAPL blebs were detected in sediments adhering to the tip of the interface probe after collecting

the well total depth measurement in August 2016. Observations of minor blebs have been reported previously. No DNAPL was observed and no blebs were detected at MW-302D during the February 2017 monitoring event.

*MW-111D*

During the April 2016 event DNAPL was measured at a thickness of approximately 1.4 ft. The day of the June 2016 VEFR event DNAPL thickness was measured at 0.20 ft immediately prior to the event. DNAPL was not measured in the well immediately following the event. Approximately 1.25 ft of DNAPL was measured in MW-111D in August 2016 and in February 2017. The variability in the reported thicknesses between the April 2016 and June 2016 events is due to the inherent difficulty in obtaining a precise measurement of the DNAPL. The stickiness and high viscosity of the DNAPL can interfere with interface probe operation. Reported thicknesses are based on several lines of evidence, including changes in the sound emitted by the interface probe, observations of DNAPL on the probe and tape, and observations of changes in speed and resistance to lowering of the probe to the bottom of the well during water level and total well depth gauging.

*MW-309D*

During the April 2016 event, DNAPL was detected at MW-309D. Due to the density, conductivity and tarry nature of the DNAPL, the thickness is difficult to measure. Immediately prior to the June 2016 VEFR event DNAPL was detected at a depth of approximately 38 feet below the top of casing (ft btoc), similar to the April 2016 measurement. Upon completion of the VEFR event, DNAPL was still detected at MW-309D at a depth of approximately 40 ft btoc, indicating a potential thickness of up to 5 ft. Although the well was completed to a total depth of 45 ft below ground surface (ft bgs), the accumulation of DNAPL makes it difficult to reach the true bottom of the well. It is possible that repeated VEFR events conducted at MW-309D have caused the material surrounding the open corehole to collapse into the corehole, and that the material has become bridged or solidified by the tar-like DNAPL. In this manner, an accurate reading of the actual accumulation of DNAPL detected in February 2017 is unachievable. In addition, it appears the DNAPL/sediment has solidified, making recovery difficult. Approximate depth to DNAPL reported in August 2016 and in February 2017 was 38 ft below the top of well casing, consistent with the April 2016 measurement, indicating stable conditions at the well.

### 6.2.3 *Detect Changes in Environmental Conditions*

The groundwater flow directions and seepage velocities for the February 2017 gauging event were compared with previous results to identify any changes. The flow direction in the bedrock aquifer has historically been to the east. Bedrock groundwater flow during the February 2017 event was also predominantly towards the east. The calculated horizontal hydraulic gradient for the bedrock

was 0.0194 ft/ft at the Western Portion of the Site and 0.0189 ft/ft at the Eastern Portion of the Site during the February 2017 gauging event (Appendix C).

During the August 2016 event, the calculated hydraulic gradient in the bedrock aquifer at the Western and Eastern Portions of the Site was 0.0209 ft/ft and 0.0220 ft/ft, respectively. The bedrock groundwater gradients in the Western and Eastern portions of the Site in February 2017 were slightly lower than the during the August 2016 event. Compared to previous events, no significant variations in groundwater flow direction or calculated gradient are noted in the Eastern Portion or Western Portion.

COI concentrations in bedrock groundwater for the February 2017 event were compared with historical concentrations for consistency. No changes in environmental conditions were detected at the Site based on the evaluation of groundwater flow direction, seepage velocity, and the extents and concentrations of detected constituents.

### 6.2.4 *Detect New Releases (or other sources) of Contaminants to the Environment*

Background monitoring well MW-26D continues to have no detections of organic COI. Background monitoring well MW-22D had no detections of organic COI except for indeno(1,2,3-cd)pyrene (0.056 µg/L, just slightly above the detection limit of 0.050 µg/L, but below the Type 2 RRS of 1.17 µg/L). Perimeter monitoring well MW-27D had no detections of organic COI. The low-level detection of indeno(1,2,3-cd)pyrene at MW-22D is not considered to be indicative of a new release or other source of contaminants to the environment as it is more likely due to increased precision in laboratory testing methods rather than representing a change in groundwater conditions.

### 6.2.5 *Demonstrate the Effectiveness of Institutional Controls*

The qualifying properties associated with the former Macon MGP Site consist of: an AGLC-owned parcel located at 306 Terminal Avenue; parcels owned by MUDA located at 137 Mulberry Street and 122 Walnut Street (and an unnumbered utility parcel on 6th Street); parcels owned by the City of Macon; and parcels owned by Norfolk Southern Railroad (undefined addresses or parcel identifiers). Agreements have been reached with MUDA, City of Macon and Norfolk Southern and institutional controls will be implemented as needed to conform to VRP rules. Evaluation of several additional parcels for inclusion as qualifying properties is ongoing, and AGLC will notify EPD and revise the VIRP accordingly via semiannual progress reports.

Institutional controls that will be placed on qualifying properties will likely include the restriction of groundwater use. Although controls are not yet in place for all potential qualifying properties, a visual inspection was performed during the February 2017 sampling event for the existence of private wells on qualifying properties, and on neighboring properties. No evidence of private wells or shallow groundwater use was observed on any of the neighboring properties.

### 6.2.6 *Document Attainment of Remediation Objectives*

COI data trends were evaluated to assess whether concentrations were decreasing, increasing or stable, and to verify the plume is not expanding. COI impacts detected in monitoring wells are summarized below. Historical groundwater monitoring results are summarized in Appendix F and concentration trend graphs for the alluvial and bedrock wells with COI impacts are included in Appendix G.

There are no detections of benzene in the alluvium aquifer in areas where Type 2 (residential) cleanup standards are applicable. Alluvial groundwater benzene detections are limited to AMW-15 and MW-205 (Figure 7 and 8), which are located in an area where Type 4 (non-residential) standards apply. Naphthalene was also detected in these wells during the February 2017 event, below Type 4 RRS at AMW-15 and above Type 4 RRS at MW-205. These wells are located west of the area addressed as part of the 2015-2016 ISS and soil excavation activities, in an area where corrective actions could not be performed due to proximity to existing Norfolk Southern railroad tracks. Historical groundwater monitoring results are summarized in Appendix F and concentration trend graphs for AMW-15 and MW-205 are included in Appendix G. Additional data are needed to assess whether benzene and naphthalene concentrations at AMW-15 are increasing, stable, or decreasing. Both benzene and naphthalene concentrations at MW-205 appear to be decreasing.

During February 2017, naphthalene was detected on the MUDA property at MW-101 above the Type 4 RRS. The parent sample was reported with a concentration of 43 µg/L naphthalene (duplicate sample concentration of 21 µg/L) compared to the Type 4 RRS of 20 µg/L. This is the first time since February 2015 that naphthalene has been detected above the Type 4 RRS. Benzene was not detected in February 2017. Overall, concentrations of benzene and naphthalene at MW-101 indicate a decreasing trend (Appendix G).

No VOCs or SVOCs were detected above applicable RRS in any alluvial wells, with the exception of the three (3) wells noted above. The limited occurrences and low levels of COI at these locations indicate that corrective actions have been effective at reducing COI concentrations in the alluvial aquifer.

Groundwater COI concentration trends for bedrock wells are evaluated in Table 9 and all bedrock groundwater analytical results are tabulated in Appendix F. Concentration trend graphs for the bedrock wells with COI impacts are included in Appendix G.

## 6.3 *SUMMARY OF GROUNDWATER CONDITIONS*

Results of all alluvial groundwater monitoring downgradient and cross-gradient to the ISS mass are below laboratory detection limits with the exception of naphthalene at MW-101. The well is located adjacent to the ISS mass, and naphthalene was not detected in any surrounding alluvial wells. This limited detection represents an isolated condition. The lack of VOC and SVOC detections are downgradient and cross-gradient locations supports that the

extent is limited and COI are not migrating beyond a small area adjacent to the ISS.

Overall, the February 2017 monitoring results do not indicate plume migration in the bedrock aquifer. Results of bedrock groundwater monitoring wells indicate some fluctuations in benzene and/or naphthalene concentrations near the Walnut Street and 7th Street intersection; however, downgradient and cross-gradient perimeter wells (i.e., MW-22D, MW-23, MW-24D, MW-26D, MW-112D, MW-113D, MW-304D and MW-306D are all non-detect for COI, with the exception of minor detections of one or more SVOCs at MW-22D, MW-24D, MW-113D and MW-306D (Table 8). In addition, COI in deep bedrock wells MW-27DD, MW-205DD and MW-302DD are all either non-detect or below the applicable non-residential, Type 4 RRS. The Type 4 RRS also applies to MW-12DD, where only benzene in detected above the cleanup goal. Benzene at this well shows a decreasing trend in concentrations (Appendix G).

Monitoring of alluvial and bedrock groundwater monitoring wells at the Site will continue during the next reporting period. The August 2017 monitoring event will be completed in accordance with the schedule shown in Table 2 and Table 3. Based on the August 2017 results, revisions to the groundwater monitoring schedule will be proposed in the *5th Semiannual Progress Report*.

## 7.0 PLANNED CORRECTIVE ACTIONS AND INVESTIGATIONS

The following sections describe corrective actions and investigations that are planned to be initiated and/or completed during the next monitoring period. A projected milestone schedule is included as Figure 11.

## 7.1 GROUNDWATER INVESTIGATIONS AND MONITORING

### 7.1.1 Semiannual Groundwater Monitoring

During the next reporting period, groundwater monitoring will be conducted in accordance with the proposed Alluvial Groundwater Monitoring Schedule shown in Table 2. The proposed schedule is intended to provide data regarding COIs in wells to monitor overall effectiveness of the remedy at the Site and assess plume stability. Bedrock groundwater monitoring will continue in accordance with the proposed Bedrock Groundwater Monitoring Schedule shown in Table 3.

The objective of the groundwater monitoring program is to collect data necessary to evaluate corrective action effectiveness, monitor stability of the dissolved phase plume and presence of DNAPL, and provide information to update the CSM as necessary. The next groundwater monitoring event is scheduled for August 2017.

### 7.1.2 Bedrock Investigations

As discussed in previous sections of this report, in comment #4 of the February 21, 2017 comment letter EPD agreed to suspend requirements for installation of any additional bedrock wells or sumps. No bedrock investigations are warranted at this time.

### 7.1.3 NAPL Recovery

The evidence of high viscosity and low mobility of the DNAPL at the Site, in combination with the geologic setting and limited spatial extent of DNAPL indicates that DNAPL is not migrating under steady-state conditions. As reported in the *3rd Semiannual Progress Report*, the application of vacuum to bedrock monitoring wells for the recovery of DNAPL from a single borehole appears to destabilize the COI plume, causing dissolved phase concentrations to fluctuate in areas where the plume would otherwise be stable.

Per the EPD comment letter dated February 21, 2017, VEFR is currently not required at the Site. DNAPL monitoring will continue during the semiannual event completed during the upcoming reporting period.

## 7.2 *VAPOR INTRUSION EVALUATIONS*

The vapor intrusion (VI) pathway may be complete where a building is located or is planned and where reported COI concentrations may pose an unacceptable risk for existing buildings or future construction. Control methods (e.g., Uniform Environmental Covenants [UEC], barriers or specific construction design) may be utilized to mitigate the potential for vapors to enter indoor air in existing buildings or future construction.

As anticipated and noted in the *3rd Semiannual Progress Report*, the small unused building located on the corner of 6th Street and Mulberry Street (Prodigy Woodworks parcel) was demolished in 2016. A UEC will be placed on the parcel requiring control measures, (e.g., installation of a vapor barrier) as part of the construction of any future enclosed structures on the property. The UEC will be used to enforce the control measures, which will reduce the potential for a complete VI pathway at the Prodigy Woodworks parcel.

COI are detected in areas where non-residential cleanup goals (Type 4 RRS) apply above those standards in only three (3) alluvial groundwater wells. Two (2) of the wells (AMW-15 and MW-205) are located along Terminal Avenue, on Norfolk Southern property adjacent to existing railroad tracks. The third well (MW-101) is located on MUDA property which is currently undeveloped. As discussed in Section 2.1, the VI pathway for the buildings located at 230 and 280 7th Street is considered incomplete due to the lack of detections of COI in alluvial and intermediate wells in the area.

As such, there are currently no known VI risks and no evaluations are planned for the next reporting period. If warranted, based upon COI concentrations, Site conditions, and potential future property construction activities, current and applicable VI guidance may be used to evaluate the VI pathway at the Macon MGP site in areas with alluvial COI concentrations above non-residential or residential cleanup goals, as applicable based on current and/or future use of the particular property. It is anticipated that UECs will be utilized to impose control measures to reduce the potential for VI into existing or future construction.

## 7.3 *SURFACE WATER EVALUATION*

No surface water evaluations are planned, as discussed in Section 2.1.

## 7.4 *MODELING AND POINT OF DEMONSTRATION WELLS*

As discussed in Section 1.0 of this report, corrective actions for alluvial groundwater were completed in April 2016. Plume stability monitoring of dissolved phase impacts will continue with semiannual groundwater monitoring events. Alluvial and bedrock groundwater monitoring well locations and downgradient potential exposure points will be evaluated and point of demonstration (POD) wells will be identified. COI concentrations at POD wells will be used to assess whether an unacceptable risk to potential receptors exists. The evaluation will include an analysis of overall COI plume stability and

assessment of the implications of the presence of DNAPL in bedrock fractures on long-term dissolved phase plume stability and potentially complete exposure pathways.

## *7.5 RISK ASSESSMENT AND REPRESENTATIVE EXPOSURE CONCENTRATIONS*

Evaluation of post-corrective action groundwater COI concentrations will continue during the next reporting period. If warranted based upon the results of these evaluations, additional properties may be entered into the VRP. Upon completion of the corrective action monitoring of and inclusion of any additional properties into the VRP, the human health exposure pathway assessment and risk evaluation outlined conceptually in the VIRP for COIs will be completed.

## *7.6 UNIFORM ENVIRONMENTAL COVENANTS*

Continued monitoring and maintenance activities, and/or restrictions on disturbance of soil, and/or restrictions to groundwater use at VRP-qualifying properties will be implemented as needed in the form of UECs. Existing UECs (e.g., current restriction on groundwater use at the MUDA property) will be revised if appropriate and new UECs will be enacted, if necessary, based on post-remedy conditions and the results of the risk evaluation.

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# Tables

*Project No. 0366660*
*Atlanta Gas Light Company*

**Environmental Resources Management**
3200 Windy Hill Road SE, Suite 1500W
Atlanta, Georgia 30339
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# Table 1
## Site-Specific Groundwater Constituents of Interest
### Atlanta Gas Light Company
### Former Manufactured Gas Plant Site
### Macon, Georgia

| Volatile Organic Compounds | Semivolatile Organic Compounds |
|---|---|
| **EPA-8260B** | **EPA-8270C** |
| Benzene | Acenaphthene |
| Ethylbenzene | Acenaphthylene |
| Toluene | Anthracene |
| Total Xylenes | Benzo[a]anthracene |
| Carbon Disulfide | Benzo[a]pyrene |
| | Benzo[b]fluoranthene |
| | Benzo[g,h,i]perylene |
| | Benzo[k]fluoranthene |
| | Chrysene |
| | Dibenz(a,h)anthracene |
| | 2,4-Dimehylphenol |
| | Fluoranthene |
| | Fluorene |
| | Indeno[1,2,3-cd]pyrene |
| | 2-Methylphenol |
| | 3 & 4 Methylphenol |
| | Naphthalene |
| | Phenanthrene |
| | Phenol |
| | Pyrene |

# Table 2
## Alluvial Well Groundwater Monitoring Network
### Atlanta Gas Light Company
### Former Manufactured Gas Plant Site
### Macon, Georgia

| Monitoring Well I.D. | Hydrogeologic Unit | Screened Interval ft bgs | Previously Proposed Sampling Schedule | Wells Sampled During Expanded August 2016 Semiannual Event | Proposed 2017 Sampling Schedule | Rationale for Change |
|---|---|---|---|---|---|---|
| AMW-2 | Alluvium | 4.6 - 14.6 | Annual | X | Annual | --- |
| AMW-6 | Alluvium | 11 - 21 | Semiannual | X | Semiannual | --- |
| AMW-11 | Alluvium | 5 - 15 | Annual | X | Annual | --- |
| AMW-12 | Alluvium | 10 - 20 | Annual | X | Annual | --- |
| AMW-13 | Alluvium | 10 - 20 | Annual | X | Annual | --- |
| AMW-14 | Alluvium | 5 - 20 | Annual | X | Annual | --- |
| AMW-15 | Alluvium | 6 - 21 | Annual | X | Annual | --- |
| MW-07 | Alluvium | 5 - 15.5 | Gauge Only | Gauged Only | Gauge Only | --- |
| MW-08 | Alluvium | 9 - 19 | Annual | X | Annual | --- |
| MW-10 | Alluvium | 7.5 - 17.5 | Gauge Only | X | Gauge Only | --- |
| MW-11 | Alluvium | 5 - 12 | Gauge Only | Gauged Only | Gauge Only | --- |
| MW-12R | Alluvium | 4.5 - 14.5 | Annual | X | Annual | --- |
| MW-12IR | Intermediate | 11 - 21 | Annual | X | Annual | --- |
| MW-14 | Alluvium | 3 - 15 | Annual | X | Annual | --- |
| MW-14I | Intermediate | 19 - 24 | Annual | X | Annual | --- |
| MW-15 | Alluvium | 3 - 14.5 | Semiannual | X | Annual | No indication of migration off MUDA property |
| MW-21 | Alluvium | 3 -10 | Annual | X | Annual | --- |
| MW-23 | Alluvium | 5 - 20 | Gauge Only | Gauged Only | Gauge Only | --- |
| MW-26 | Alluvium | 5 - 20 | Gauge Only | X | Gauge Only | --- |
| MW-28 | Alluvium | 2 - 17 | Gauge Only | X | Gauge Only | --- |
| MW-101 | Alluvium | 5 - 15 | Semiannual | X | Semiannual | --- |
| MW-102 | Alluvium | 5 - 10 | Semiannual | X | Annual | No indication of migration off MUDA property |
| MW-103 | Alluvium | 10 - 20 | Annual | X | Annual | --- |
| MW-104 | Alluvium | 5 - 20 | Annual | X | Annual | --- |
| MW-104I | Intermediate | 15 - 20 | Gauge Only | Gauged Only | Gauge Only | --- |
| MW-105 | Alluvium | 15 - 25 | Gauge Only | Gauged Only | Gauge Only | --- |
| MW-106 | Alluvium | 9 - 19 | Gauge Only | X | Gauge Only | --- |
| MW-107 | Alluvium | 8 - 18 | Gauge Only | Gauged Only | Gauge Only | --- |
| MW-108 | Alluvium | 10 - 20 | Semiannual | X | Semiannual | --- |
| MW-109 | Alluvium | 13.5 - 23.5 | Annual | X | Annual | --- |
| MW-205 | Alluvium | 14 - 29 | Semiannual | X | Semiannual | --- |
| MW-400 | Alluvium | 6 - 16 | Semiannual | X | Semiannual | --- |
| MW-401 | Alluvium | 6 - 16 | Annual | X | Annual | --- |

Groundwater sampling is completed in February (Annual and Semiannual Wells) and August (Semiannual Wells Only)
Note: Installation of additional alluvium monitoring wells is not proposed at this time. The need for additional wells will be evaluated and modifications to the monitoring well network and/or schedule will be provided in semiannual progress reports

# Table 3
## Bedrock Groundwater Monitoring Network
### Atlanta Gas Light Company
### Former Manufactured Gas Plant Site
### Macon, Georgia

| Monitoring Well I.D. | Hydrogeologic Unit | Screened Interval ft bgs | Previously Proposed Sampling Schedule | Wells Sampled During Expanded August 2016 Semiannual Event | Proposed 2017 Sampling Schedule | Rationale for Change |
|---|---|---|---|---|---|---|
| MW-08D | Shallow Bedrock | 38 - 53.5 | Gauge only | Gauged only | Gauge only | --- |
| MW-12DRR | Shallow Bedrock | 37 - 52 | Semiannual | X | Semiannual | --- |
| MW-12DD | Deep Bedrock | 87 - 97 | Annual | Gauged only | Annual | --- |
| MW-22D | Shallow Bedrock | 44 - 66 | Annual | X | Annual | --- |
| MW-23D | Shallow Bedrock | 23 - 36 | Semiannual | X | Annual | --- |
| MW-24D | Shallow Bedrock | 30.5 - 40.5 | Semiannual | X | Semiannual | --- |
| MW-26D | Shallow Bedrock | 31 - 42 | Annual | X | Annual | --- |
| MW-27D | Shallow Bedrock | 43.5 - 48.5 | Annual | X | Annual | --- |
| MW-27DD | Deep Bedrock | 105 - 115 | Gauge only | Gauged only | Gauge only | --- |
| MW-108D | Shallow Bedrock | 48.5 - 58.5 | Annual | Gauged only | Annual | --- |
| MW-110D | Shallow Bedrock | 28 - 43 | Semiannual | X | Annual | COI Trends Appear to be Stable or Decreasing |
| MW-111D | Shallow Bedrock | 33 - 46.5 | Semiannual | Gauged only (DNAPL) | Semiannual | --- |
| MW-112D | Shallow Bedrock | 26 - 36 | Annual | Gauged only | Annual | --- |
| MW-113D | Shallow Bedrock | 29.5 - 39.5 | Annual | Gauged only | Annual | --- |
| MW-114D | Shallow Bedrock | 45 - 55 | Gauge only | Gauged only | Gauge only | --- |
| MW-200DR | Shallow Bedrock | 29.5 - 39.5 | Semiannual | X | Semiannual | --- |
| MW-204D | Shallow Bedrock | 30.5 - 45.5 | Semiannual | X | Semiannual | --- |
| MW-205D | Shallow Bedrock | 28 - 43 | Semiannual | X | Semiannual | --- |
| MW-205DD | Deep Bedrock | 90 - 100 | Semiannual | X | Annual | No COI detected since 2013 |
| MW-206D | Shallow Bedrock | 31 - 46 | Annual | Gauged only | Annual | --- |
| MW-207D | Shallow Bedrock | 34 - 46.5 | Annual | Gauged only | Annual | --- |
| MW-300D | Shallow Bedrock | 33 - 43 | Annual | Gauged only | Annual | --- |
| MW-301D | Shallow Bedrock | 36 - 46 | Semiannual | X | Annual | COI Trends Appear to be Stable or Decreasing |
| MW-302D | Shallow Bedrock | 35 - 45 | Semiannual | Gauged only* | Semiannual | --- |
| MW-302DD | Deep Bedrock | 70 - 100 | Semiannual | X | Semiannual | --- |
| MW-304D | Shallow Bedrock | 41 - 61 | Annual | Gauged only | Annual | --- |
| MW-305D | Shallow Bedrock | 34.5 - 41.5 | Semiannual | X | Semiannual | --- |
| MW-306D | Shallow Bedrock | 32.5 - 51 | Semiannual | X | Semiannual | --- |
| MW-307D | Shallow Bedrock | 34 - 58 | Semiannual | X | Annual | COI Trends Appear to be Stable or Decreasing |
| MW-308D | Shallow Bedrock | 72 - 110 | Semiannual | X | Semiannual | --- |
| MW-309D | Shallow Bedrock | 35 - 45 | Semiannual | Gauged only (DNAPL) | Semiannual | --- |

Groundwater sampling is completed in February (Annual and Semiannual Wells) and August (Semiannual Wells Only)

* DNAPL blebs on tip of interface probe after total depth measurement

# Table 4
## Depths to Groundwater and Groundwater Elevations - Alluvial Monitoring Wells
## February 20, 2017
### Atlanta Gas Light Company
### Former Manufactured Gas Plant Site
### Macon, Georgia

| Monitoring Well | Top of Casing Elevation (ft AMSL) | Depth to Groundwater February 20, 2017 (ft BTOC) | Groundwater Elevation February 20, 2017 (ft AMSL) |
|---|---|---|---|
| AMW-2 | 320.80 | 6.46 | 314.34 |
| AMW-6 | 326.42 | 11.20 | 315.22 |
| AMW-11 | 324.10 | 8.25 | 315.85 |
| AMW-12 | 322.56 | 9.72 | 312.84 |
| AMW-13 | 328.65 | 12.60 | 316.05 |
| AMW-14 | 326.28 | 9.50 | 316.78 |
| AMW-15 | 325.42 | 9.58 | 315.84 |
| MW-07* | 303.22 | CNL | -- |
| MW-08 | 307.43 | 12.86 | 294.57 |
| MW-10 | 306.57 | 8.74 | 297.83 |
| MW-11 | 299.45 | 3.66 | 295.79 |
| MW-12R | 297.11 | 3.73 | 293.38 |
| MW-12IR | 297.08 | 7.85 | 289.23 |
| MW-14 | 295.28 | 6.38 | 288.90 |
| MW-14I | 295.04 | 6.73 | 288.31 |
| MW-15 | 300.31 | 6.51 | 293.80 |
| MW-21 | 293.79 | 3.24 | 290.55 |
| MW-23** | 292.54 | CNL | -- |
| MW-26 | 287.53 | 0.80 | 286.73 |
| MW-28 | 288.07 | 1.83 | 286.24 |
| MW-101 | 307.10 | 9.88 | 297.22 |
| MW-102 | 301.52 | 8.55 | 292.97 |
| MW-103 | 312.91 | 15.77 | 297.14 |
| MW-104 | 295.78 | 6.05 | 289.73 |
| MW-104I | 295.72 | 6.70 | 289.02 |
| MW-105 | 302.73 | 5.48 | 297.25 |
| MW-106 | 310.95 | 13.05 | 297.90 |
| MW-107 | 307.16 | 9.50 | 297.66 |
| MW-108 | 318.25 | 5.95 | 312.30 |
| MW-109 | 314.07 | 6.16 | 307.91 |
| MW-205 | 321.32 | 6.1 | 315.22 |
| MW-400 | 307.99 | 13.49 | 294.50 |
| MW-401 | 306.48 | 12.45 | 294.03 |

**Notes:**

ft AMSL - feet Above Mean Sea Level

ft BTOC - feet Below Top of Casing

All depths to water are listed in feet below top of casing (ft BTOC).

All casing and groundwater elevations are listed in feet above mean sea level (ft AMSL).

CNL - Could Not Locate

NM - Not Measured

*MW-07 has been paved over

**MW-23 was covered by gravel and could not be located

Dense Non-Aqueous Phase Liquid (DNAPL) was not detected in any alluvial groundwater monitoring wells.

# Table 5
## Depths to Groundwater and Groundwater Elevations - Bedrock Monitoring Wells
## February 20, 2017
### Atlanta Gas Light Company
### Former Manufactured Gas Plant Site

| Monitoring Well | Top of Casing Elevation (ft AMSL) | Depth to Groundwater February 20, 2017 (ft BTOC) | Groundwater Elevation February 20, 2017 (ft AMSL) | DNAPL Thickness (ft) |
|---|---|---|---|---|
| MW-08D | 307.52 | 11.42 | 296.10 | |
| MW-12DRR | 299.71 | 9.51 | 290.20 | |
| MW-12DD | 297.02 | 15.93 | 281.09 | |
| MW-22D | 296.74 | 12.14 | 284.60 | |
| MW-23D | 292.13 | 10.55 | 281.58 | |
| MW-24D | 292.30 | 5.05 | 287.25 | |
| MW-26D | 287.57 | 1.21 | 286.36 | |
| MW-27D | 288.48 | 8.51 | 279.97 | |
| MW-27DD | 288.65 | 8.65 | 280.00 | |
| MW-108D | 318.30 | 11.11 | 307.19 | |
| MW-110D | 295.97 | 7.20 | 288.77 | |
| MW-111D | 295.78 | 6.98 | 288.80 | 1.25 |
| MW-112D | 289.70 | 4.49 | 285.21 | |
| MW-113D | 293.80 | 7.78 | 286.02 | |
| MW-114D | 298.10 | 8.21 | 289.89 | |
| MW-200DR | 295.27 | 5.53 | 289.74 | |
| MW-204D | 296.30 | 7.38 | 288.92 | |
| MW-205D | 295.40 | 6.65 | 288.75 | |
| MW-205DD | 294.58 | 14.74 | 279.84 | |
| MW-206D | 295.70 | 6.75 | 288.95 | |
| MW-207D | 296.10 | 6.79 | 289.31 | |
| MW-300D | 301.02 | 4.51 | 296.51 | |
| MW-301D | 305.76 | 11.75 | 294.01 | |
| MW-302D | 301.93 | 13.63 | 288.30 | |
| MW-302DD | 301.79 | 22.17 | 279.62 | |
| MW-304D | 303.55 | 16.09 | 287.46 | |
| MW-305D | 297.22 | 17.73 | 279.49 | |
| MW-306D | 293.93 | 5.73 | 288.20 | |
| MW-307D | 295.15 | 8.94 | 286.21 | |
| MW-308D | 324.70 | 17.48 | 307.22 | |
| MW-309D | 298.04 | 9.83 | 288.21 | ~ 1.1 - 7 |

**Notes:**

ft AMSL - feet Above Mean Sea Level

ft BTOC - feet Below Top of Casing

All depths to water are listed in feet below top of casing (ft BTOC).

All casing and groundwater elevations are listed in feet above mean sea level (ft AMSL).

DNAPL - Dense Non-Aqueous Phase Liquid

# Table 6
## Seepage Velocity Calculations
### Atlanta Gas Light Company
### Former Manufactured Gas Plant Site
### Macon, Georgia

| Hydrogeologic Unit | Portion of Site | Hydraulic Conductivity (ft/day) | Porosity (unitless) | February 20, 2017 | | Monitoring wells used for gradient calculation |
|---|---|---|---|---|---|---|
| | | | | Gradient | Velocity (ft/day) | |
| Alluvial | Western | 4.75 | 2.50E-01 | 6.00E-02 | 1.14E+00 | MW-109 and MW-08 |
| Alluvial | Eastern | 4.75 | 2.50E-01 | 1.34E-02 | 2.55E-01 | MW-102 and MW-28 |
| Bedrock* | Western | 1.37 | 1.42E-02 | 1.94E-02 | 1.88E+00 | MW-08D; MW-300D; and MW-308D |
| Bedrock* | Western | 1.37 | 6.00E-01 | 1.94E-02 | 4.44E-02 | MW-08D; MW-300D; and MW-308D |
| Bedrock* | Western | 2.58 | 1.42E-02 | 1.94E-02 | 3.52E+00 | MW-08D; MW-300D; and MW-308D |
| Bedrock* | Western | 2.58 | 6.00E-01 | 1.94E-02 | 8.33E-02 | MW-08D; MW-300D; and MW-308D |
| Bedrock* | Eastern | 1.37 | 1.42E-02 | 1.89E-02 | 1.83E+00 | MW-08D; MW-306D; MW-300D |
| Bedrock* | Eastern | 1.37 | 6.00E-01 | 1.89E-02 | 4.33E-02 | MW-08D; MW-306D; MW-300D |
| Bedrock* | Eastern | 2.58 | 1.42E-02 | 1.89E-02 | 3.43E+00 | MW-08D; MW-306D; MW-300D |
| Bedrock* | Eastern | 2.58 | 6.00E-01 | 1.89E-02 | 8.11E-02 | MW-08D; MW-306D; MW-300D |

*Bedrock porosity range taken from Applied Hydrogeology 4th Ed.
Multiple bedrock gradients are presented from different areas of the site.
Alluvial porosity used in velocity calcuation is from the FFS, 2008.

Vs=Ki/n
where:
Vs=seepage velocity (Velocity)
K=hydraulic conductivity
i=horizontal hydraulic gradient (Gradient)
n=porosity

# Table 7
## Alluvial Groundwater Analytical Results
## February 2017
### Atlanta Gas Light Company
### Former Manufactured Gas Plant
### Macon, Georgia

| Parameter | Units | Type 2 (Residential) RRS | Type 4 (Non-residential) RRS | AMW-2 | AMW-6 | AMW-11 | AMW-12 | AMW-13 | AMW-14 | AMW-15 | | MW-08 | MW-12R | MW-12IR | MW-14 | MW-14I | MW-15 | MW-21 | MW-101 | | MW-102 | MW-103 | MW-104 | MW-108 | MW-109 | MW-205 | MW-400 | | MW-401 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/21/17 | 02/21/17 | 02/22/17 | 02/21/17 | 02/22/17 | 02/21/17 | 02/23/17 | DUP-2 | 02/22/17 | 02/24/17 | 02/24/17 | 02/24/17 | 02/23/17 | 02/23/17 | 02/27/17 | 02/23/17 | DUP-1 | 02/27/17 | 02/24/17 | 02/24/17 | 02/22/17 | 02/22/17 | 02/22/17 | 02/23/17 | DUP-3 | 02/24/17 |
| | | Applicable RRS | | Type 4 | Type 2 | Type 4 | Type 4 | Type 4 | Type 4 | Type 4 | | Type 4 | Type 4 | Type 4 | Type 2 | Type 2 | Type 4 | Type 2 | Type 4 | | Type 4 | Type 4 | Type 4 | Type 4 | Type 2 | Type 4 | Type 4 | | Type 4 |
| Groundwater Elevation | ft. AMSL | N/A | N/A | 314.34 | 315.22 | 315.85 | 312.84 | 316.05 | 316.78 | 315.84 | | 294.57 | 293.38 | 289.23 | 288.90 | 288.31 | 293.80 | 290.55 | 297.22 | | 292.97 | 297.14 | 289.73 | 312.30 | 307.91 | 315.22 | 294.50 | | 294.03 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.48 | 6.45 | 6.12 | 5.65 | 5.71 | 6.38 | 5.71 | | 6.44 | 3.88 | 5.58 | 6.21 | 5.93 | 5.11 | 5.37 | 6.05 | | 5.56 | 5.25 | 75.73 | 6.37 | 4.90 | 6.37 | 5.41 | | 6.05 |
| Specific Conductance | µS/cm | N/A | N/A | 202.4 | 599.4 | 655.0 | 356.8 | 117.30 | 258.3 | 175.7 | | 214.11 | 684.0 | 625.7 | 158.90 | 298.50 | 979.90 | 263.6 | 366.20 | | 760.7 | 84.7 | 179.2 | 465.90 | 170.20 | 289.0 | 806.5 | | 339.9 |
| Temperature | °Celsius | N/A | N/A | 18.85 | 21.49 | 21.24 | 21.05 | 23.77 | 23.21 | 22.21 | | 20.51 | 20.48 | 21.62 | 22.09 | 21.24 | 18.47 | 17.37 | 20.08 | | 17.27 | 22.02 | 22.49 | 21.79 | 20.92 | 22.40 | 21.88 | | 21.43 |
| Dissolved Oxygen | mg/L | N/A | N/A | 2.81 | 4.68 | 0.32 | 3.27 | 1.64 | 5.88 | 1.08 | | 6.44 | 0.17 | 0.22 | 5.24 | 0.11 | 0.23 | 1.78 | 0.08 | | 0.97 | 5.69 | 2.47 | 0.09 | 1.70 | 0.91 | 0.24 | | 0.88 |
| Oxidation-Reduction Potential | mV | N/A | N/A | 111.7 | 106.8 | 67.60 | 137.5 | 191.20 | 113.8 | 128.7 | | 106.6 | 220.9 | 83.4 | 131.10 | 56.60 | 180.00 | 80.4 | 98.3 | | 109.0 | 500.7 | 149.6 | -59.60 | 151.2 | -69.80 | 148.1 | | 61.3 |
| Turbidity | NTU | N/A | N/A | 2.33 | 9.2 | 3.11 | 1.00 | 1.75 | 7.88 | 6.85 | | 5.15 | 1.79 | 9.20 | 15.7 | 2.32 | 1.23 | 2.65 | 3.65 | | 0.71 | 3.75 | 7.60 | 1.76 | 0.27 | 5.50 | 3.12 | | 9.1 |
| **Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | **78** | **80** | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | **35** | <5.0 | <5.0 | <5.0 |
| Carbon Disulfide | µg/L | 4,000* | 4,000* | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | **14** | **14** | **17** | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | **50** | <5.0 | <5.0 | <5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | **5.5** | <5.0 | <5.0 | <5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | **16** | **10** | **12** | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | **36** | <5.0 | <5.0 | <5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | **0.71** | **11** | **10** | <0.50 | <0.50 | **1.6** | <0.50 | **1.9** | <0.50 | <0.50 | **1.4** | <50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | **25** | <0.50 | <0.50 | **0.83** |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | **1.9** | <100 | <1.0 | <1.0 | <1.0 | <1.0 | **1.8** | <1.0 | <1.0 | <1.0 | <100 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | **3.0** | <1.0 | <1.0 | <1.0 |
| Anthracene | µg/L | 4,700 | 31,000 | <0.050 | <0.050 | **0.066** | 0.053 | <0.050 | <0.050 | **0.49** | <5.0 | <0.050 | **0.072** | **0.24** | <0.050 | <0.050 | **0.074** | <0.050 | **0.22** | <5.0 | <0.050 | <0.050 | <0.050 | **0.29** | **0.099** | **1.3** | **0.11** | **0.12** | **0.060** |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | **0.019** | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <5.0 | <0.050 | <0.050 | **0.26** | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <5.0 | 0.069 | <0.050 | <0.050 | <0.050 | <0.050 | **0.11** | <0.050 | <0.050 | <0.050 |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | **0.12** | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <5.0 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <5.0 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | **0.12** | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | **0.15** | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | **0.14** | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <5.0 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <5.0 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Chrysene | µg/L | 117 | 392 | **0.20** | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <5.0 | <0.050 | <0.050 | **0.17** | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <5.0 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | **0.12** | <0.050 | <0.050 | <0.050 |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | **0.11** | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | **0.29** | <10 | <0.10 | <0.10 | **3.1** | <0.10 | **0.11** | <0.10 | <0.10 | **0.12** | <10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | **1.7** | **0.10** | <0.10 | <0.10 |
| Fluorene | µg/L | 1,000* | 4,100 | **<0.10** | <0.10 | <0.10 | <0.10 | <0.10 | **0.28** | **4.0** | **4.0** | <0.10 | <0.10 | **3.6** | <0.10 | **0.77** | <0.10 | <0.10 | **1.7** | <10 | <0.10 | <0.10 | <0.10 | <0.10 | **0.17** | **10** | <0.10 | <0.10 | <0.10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | 0.13 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <5.0 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <5.0 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | **18** | **12** | **11** | <0.50 | <0.050 | **7.9** | <0.50 | <0.50 | <0.50 | <0.50 | **43** | **21** | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | **46** | **0.56** | **0.55** | <0.50 |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | **0.30** | **3.2** | <5.0 | <0.050 | <0.050 | **0.25** | <0.050 | <0.050 | <0.050 | <0.050 | **1.0** | **1.0** | <0.050 | <0.050 | <0.050 | <0.050 | **0.10** | **5.9** | <0.050 | <0.050 | <0.050 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Pyrene | µg/L | 1,000* | 3,100 | 0.052 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | **0.20** | <5.0 | **0.16** | **0.18** | **4.2** | <0.050 | **0.29** | <0.050 | <0.050 | **0.084** | **0.084** | <0.050 | <0.050 | <0.050 | **0.27** | <0.050 | **1.8** | **0.14** | **0.14** | **1.0** |

**Notes:**

**Analyte was detected above laboratory detection limit**

No exceedances of residential (Type 2) RRS at locations where residential cleanup standards apply.

**Analyte concentration exceeds the non-residential (Type 4) RRS**

* Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical

ft AMSL - feet Above Mean Sea Level

RRS - Risk Reduction Standard

SU - Stamdard Units

µS/cm - microsiemens per centimeter

µg/L - micrograms per liter

mg/L - milligrams per liter

mV - millivolts

NTU - nephelometric turbidity units

N/A - RRS are not applicable to this parameter

Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Table 8**
**Bedrock Groundwater Analytical Results**
**February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 (Residential) RRS | Type 4 (Non-residential) RRS | MW-12DRR | MW-12DD | MW-22D | MW-23D | MW-24D | MW-26D | MW-27D | MW-108D | MW-110D | | MW-112D | MW-113D | MW-200DR | MW-204D | MW-205D | | MW-205DD | MW-206D | MW-207D | MW-300D | MW-301D | MW-302D | MW-302DD | MW-304D | MW-305D | MW-306D | MW-307D | MW-308D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/22/17 | 02/23/17 | 02/21/17 | 02/22/17 | 02/28/17 | 02/22/17 | 02/21/17 | 02/22/17 | 02/23/17 | DUP-4 | 02/22/17 | 02/22/17 | 02/24/17 | 02/24/17 | 02/24/17 | DUP-5 | 02/24/17 | 02/27/17 | 02/23/17 | 02/22/17 | 02/21/17 | 02/21/17 | 02/23/17 | 02/23/17 | 02/27/17 | 02/24/17 | 02/22/17 | 02/22/17 |
| | | Applicable RRS | | Type 4 | Type 4 | Type 4 | Type 4 | Type 2 | Type 2 | Type 4 | Type 4 | Type 4 | | Type 4 | Type 4 | Type 4 | Type 4 | Type 2 | | Type 2 | Type 4 | Type 4 | Type 4 | Type 4 | Type 4 | Type 4 | Type 4 | Type 4 | Type 4 | Type 4 | Type 4 |
| Groundwater Elevation | ft. AMSL | N/A | N/A | 290.20 | 281.09 | 284.60 | 281.58 | 287.25 | 286.36 | 279.97 | 307.19 | 288.77 | | 285.21 | 286.02 | 289.74 | 288.92 | 288.75 | | 279.84 | 288.95 | 289.31 | 296.51 | 294.01 | 288.30 | 279.62 | 287.46 | 279.49 | 288.20 | 286.21 | 307.22 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.42 | 7.63 | 6.91 | 6.04 | 5.70 | 10.22 | 6.46 | 7.70 | 6.30 | | 9.22 | 5.80 | 6.53 | 6.22 | 6.54 | | 8.50 | 6.23 | 6.80 | 6.11 | 6.06 | 5.69 | 7.46 | 6.55 | 12.36 | 11.42 | 12.32 | 12.24 |
| Specific Conductance | µS/cm | N/A | N/A | 493.6 | 225.20 | 418.20 | 385.10 | 49.20 | 234.20 | 215.9 | 151.60 | 518.60 | | 287.40 | 355.70 | 454.2 | 487.30 | 673.0 | | 383.60 | 518.9 | 543.10 | 539.00 | 774.00 | 1028.2 | 557.3 | 688.9 | 5070.3 | 1574.6 | 8534.90 | 4220.50 |
| Temperature | °Celsius | N/A | N/A | 21.91 | 22.45 | 21.21 | 22.56 | 17.36 | 21.46 | 19.5 | 22.45 | 23.35 | | 22.10 | 22.17 | 21.06 | 23.43 | 22.92 | | 22.85 | 21.61 | 22.93 | 20.70 | 20.53 | 22.62 | 22.27 | 20.24 | 21.05 | 22.85 | 21.33 | 23.21 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.18 | 0.34 | 0.26 | 0.22 | 0.38 | 0.26 | 0.11 | 0.30 | 0.19 | | 5.23 | 0.20 | 0.21 | 0.21 | 0.12 | | 0.49 | 0.11 | 0.11 | 0.11 | 0.29 | 6.21 | 0.21 | 0.07 | 3.56 | 5.42 | 1.54 | 2.59 |
| Oxidation-Reduction Potential (ORP) | mV | N/A | N/A | 1.00 | -117.00 | -97.30 | 43.20 | 90.3 | 35.90 | -13.1 | -149.30 | -48.50 | | 71.10 | 68.60 | -58.8 | -16.80 | -55.1 | | 26.40 | -4.60 | -85.10 | 5.30 | -17.00 | 25.1 | -167.7 | -10.2 | -47.4 | -28.8 | -40.90 | -4.00 |
| Turbidity | NTU | N/A | N/A | 0.74 | 1.74 | 0.66 | 7.8 | 1.39 | 8.01 | 5.26 | 0.90 | 5.95 | | 1.43 | 1.10 | 1.51 | 1.81 | 0.90 | | 1.29 | 11.48 | 8.45 | 3.69 | 0.50 | 12.65 | 2.64 | 114 | 1.46 | 0.66 | 3.83 | 5.62 |
| **Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | **470** | **35** | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | **70** | **63** | <5.0 | <5.0 | **110** | **490** | **4,300** | **4,300** | <5.0 | **19** | <5.0 | <5.0 | **9.3** | **5.4** | **6.4** | <5.0 | **9,600** | <5.0 | <5.0 | **11** |
| Carbon Disulfide | µg/L | 4,000* | 4,000* | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <250 | <5.0 | <5.0 | <5.0 |
| Ethylbenzene | µg/L | 700* | 2,300 | **150** | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | **150** | **160** | <5.0 | <5.0 | **58** | **340** | **860** | **950** | <5.0 | **89** | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | **250** | **5.9** | <5.0 | <5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | **12** | **14** | <5.0 | **6.3** | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | **5,000** | <5.0 | <5.0 | <5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | **140** | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | **5.7** | **6.0** | <5.0 | <5.0 | **5.2** | **19** | **580** | **420** | <5.0 | **11.0** | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 | **960** | <5.0 | <5.0 | <5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | **36** | **0.65** | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | **46** | **55** | <0.50 | <0.50 | **28** | **50** | **120** | **140** | **2.3** | **30** | **1.4** | <0.50 | **0.75** | **2.5** | <0.50 | <0.50 | **3.3** | **1.3** | **1.3** | <0.50 |
| Acenaphthylene | µg/L | 470 | 3,100 | **6.5** | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | **1.9** | **1.8** | <1.0 | <1.0 | **2.2** | **2.3** | **1.4** | <1.0 | <1.0 | **1.5** | <1.0 | <1.0 | <1.0 | **7.2** | <1.0 | <1.0 | **51** | <1.0 | <1.0 | <1.0 |
| Anthracene | µg/L | 4,700 | 31,000 | **4.5** | <0.050 | <0.050 | <0.050 | <0.050 | **0.17** | <0.050 | <0.050 | **6.2** | **5.5** | <0.050 | **0.060** | **1.9** | **4.1** | **5.3** | **4.9** | **0.051** | **0.55** | <0.050 | <0.050 | **0.25** | **1.9** | <0.050 | <0.050 | **1.5** | **0.053** | **0.29** | **0.078** |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | **0.15** | <0.050 | <0.050 | <0.050 | <0.050 | **0.56** | <0.050 | <0.050 | **0.20** | **0.17** | <0.050 | <0.050 | **0.065** | **0.12** | <0.050 | <0.050 | <0.050 | **0.081** | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | **0.099** | <0.050 | <0.050 | <0.050 |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | <0.050 | <0.050 | **0.98** | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | <0.10 | <0.10 | **1.1** | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | **0.12** | <0.10 | <0.10 | <0.10 |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | <0.10 | <0.10 | **1.1** | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | <0.050 | <0.050 | **1.0** | <0.050 | <0.050 | **0.052** | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| Chrysene | µg/L | 117 | 392 | **0.12** | <0.050 | <0.050 | <0.050 | **0.53** | <0.050 | <0.050 | **0.081** | **0.16** | **0.14** | <0.050 | <0.050 | <0.050 | **0.081** | <0.050 | <0.050 | <0.050 | **0.057** | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | **0.076** | <0.050 | <0.050 | <0.050 |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | <0.10 | <0.10 | **1.0** | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | **5.0** | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | **4.5** | **4.1** | <0.10 | <0.10 | **3.0** | **4.0** | **1.6** | **1.6** | <0.10 | **1.3** | **1.1** | <0.10 | **0.16** | **0.96** | <0.10 | <0.10 | **1.1** | **0.11** | **0.27** | <0.10 |
| Fluorene | µg/L | 1,000* | 4,100 | **32** | **0.33** | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | **15** | **19** | <0.10 | <0.10 | **20** | **17** | **29** | **34** | **0.40** | **9.50** | **0.54** | <0.10 | **3.8** | **6.8** | **0.24** | <0.10 | **9.0** | **0.57** | **0.42** | <0.10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | **0.056** | <0.050 | **1.0** | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Naphthalene | µg/L | 20* | 20* | **1600** | **4.3** | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 | **760** | **1,100** | <0.50 | <0.50 | **680** | **2,000** | **3,400** | **3,700** | <0.50 | **530** | <0.50 | <0.50 | **430** | **5.5** | <0.50 | <0.50 | **3,500** | <0.50 | **1.7** | <0.50 |
| Phenanthrene | µg/L | 470 | 3,100 | **17.00** | **0.16** | <0.50 | <0.050 | <0.50 | <0.050 | <0.050 | <0.050 | **26** | **32** | <0.050 | <0.050 | **5.4** | **20** | **31** | **37** | **0.068** | **3.5** | <0.050 | <0.050 | **1.3** | **11** | <0.050 | <0.050 | **9.3** | **0.46** | **2.6** | **0.060** |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 | <10 |
| Pyrene | µg/L | 1,000* | 3,100 | **5.3** | <0.050 | <0.050 | <0.050 | **0.055** | <0.050 | <0.050 | <0.050 | **5.6** | **5.1** | <0.050 | <0.050 | **3.1** | **4.5** | **1.7** | **1.5** | <0.050 | **3.3** | **2.0** | <0.050 | **0.11** | **1.2** | <0.050 | <0.050 | **1.1** | **0.12** | **0.30** | <0.050 |

**Notes:**
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the residential (Type 2) RRS**
**Analyte concentration exceeds the non-residential (Type 4) RRS**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

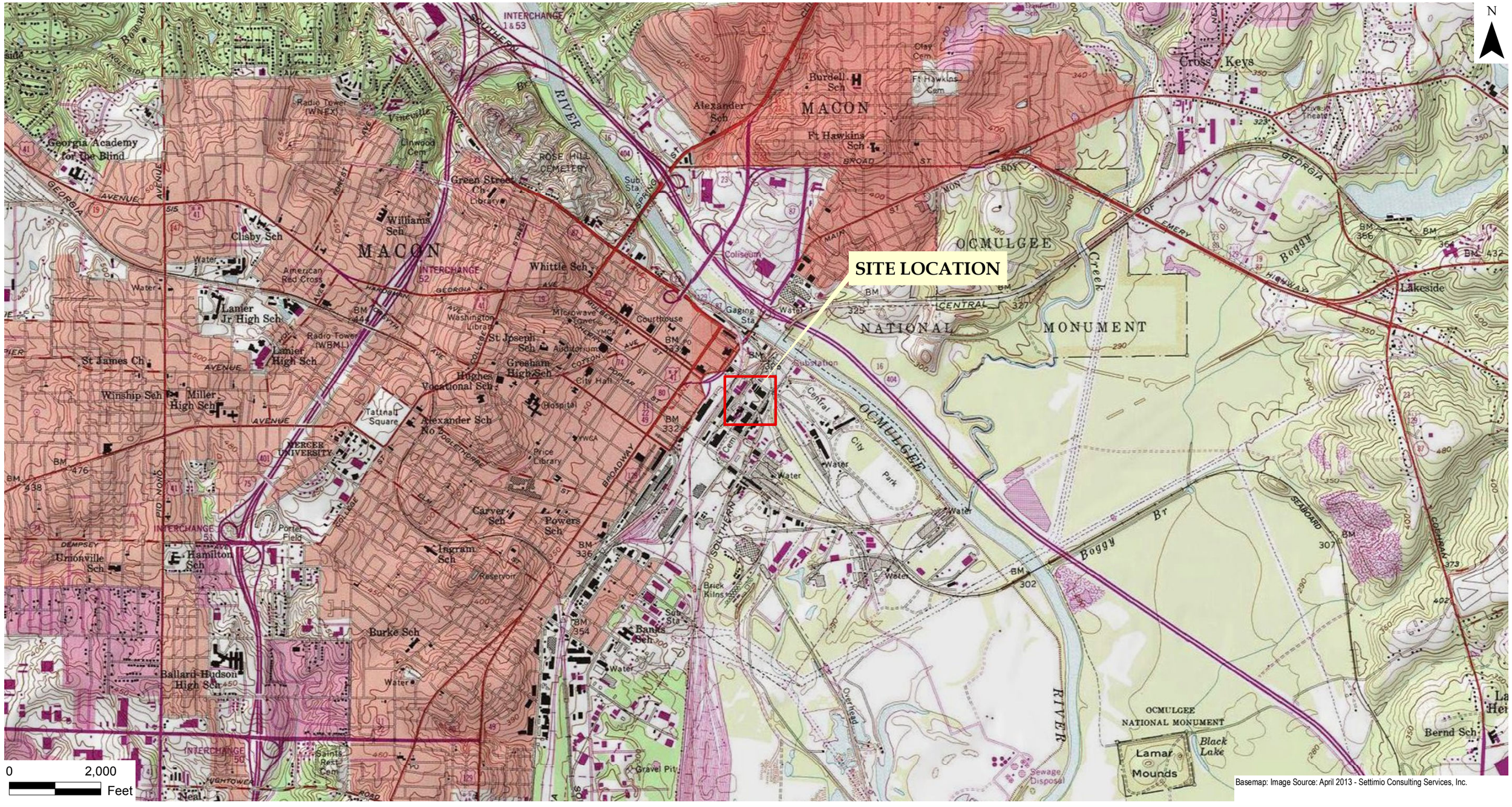
**Table 9**
**Bedrock Groundwater Summary of COI Trends**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Well | COI | Evaluation of Concentrations and Trends |
|---|---|---|
| MW-12DRR | Benzene, naphthalene | Benzene concentrations showed a decreasing trend from August 2013 through August 2016. The February 2017 concentrations were higher than those reported for the last four years and remain consistent with historical concentrations. |
| MW-12DD | Benzene, naphthalene | Benzene from the February 2017 event (35 µg/L) increased from the April 2016 sampling event (15 µg/L) and decreased from the February 2015 sampling event (44 µg/L). Benzene concentrations remain well below the historic high (1,800 µg/L, September 2002). The naphthalene concentration during the February 2017 sampling event was 4.3 µg/L which is below the RRS of 20 µg/L. Naphthalene has not been detected above the RRS since August 2014. Overall concentration trends for benzene and naphthalene appear to be decreasing. |
| MW-22D | Indeno(1,2,3-cd)pyrene | Indeno(1,2,3-cd)pyrene was detected in MW-22D at 0.056 µg/L, slightly above the laboratory detection limit of 0.050 µg/L in February 2017. The low concentration detected during the February 2017 event is an anomaly and likely a reflection of the precision of the laboratory analysis rather than a change in the plume extent, as the detection is very low, and no other COIs have been detected in the well. The well is located in a Type 4 area, where the indeno(1,2,3-cd)pyrene RRS is 3.92 µg/L. No other VOCs or SVOCs have ever been detected at MW-22D. |
| MW-24D | | Prior to August 2014, benzene and naphthalene concentrations at MW-24D were predominantly non-detect, with occasional detections below the Type 2 RRS. Detections observed between August 2013 and August 2016 appear to be related to bedrock disturbances (i.e., drilling and/or DNAPL recovery events) rather than resulting from groundwater flow under steady-state conditions. Benzene and naphthalene were below detection limits in February 2017, supporting that the 2013 and 2016 detections were likely due to the drilling and/or VEFR activities rather than indicative of plume migration given the February 2017 sample results. |
| MW-23D, MW-26D, MW-27D | | No VOCs or SVOCs have ever been detected in MW-23D or in MW-26D. No VOCs or SVOCs have ever been detected in MW-27D, with the exception of pyrene in September 2003 at 12 µg/L, significantly below non-residential, Type 4 the RRS of 3,100 µg/L. |
| MW-110D | Benzene, naphthalene | Benzene concentrations in February 2017 (70 µg/L) show a decrease since August 2016 (88 µg/L) and April 2016 (96 µg/L) and are the lowest reported since well installation. Naphthalene concentrations have generally been decreasing. The February 2017 concentration (1,100 µg/L) is well below the August 2016 naphthalene concentration of 3,400 µg/L (duplicate sample) and below the April 2016 concentration (1,600 µg/L), representing an 83% reduction from the highest concentration of 6,800 µg/L (August 2010). |
| MW-200DR | Benzene, naphthalene | Benzene and naphthalene concentrations in February 2017 (110 µg/L and 680 µg/L, respectively) increased compared to results obtained since August 2015. Groundwater monitoring will to continue to evaluate COI trends. |
| MW-205D | Benzene, naphthalene | No observable trends, although benzene concentrations since August 2014 appear to be decreasing. February 2017 COI detections are consistent with historical detections. |
| MW-206D | Benzene, naphthalene | Benzene was detected in MW-206D (19 µg/L) in February 2017 for the first time since 2013. Naphthalene was detected in MW-206D (530 µg/L) in February 2017 for the first time since 2012. Benzene and naphthalene concentrations in MW-206D remain below their historic highs in February 2012. Monitoring will continue in order to evaluate a trend in MW-206D. |
| MW-207D | | Neither benzene nor naphthalene has been detected at MW-207D since February 2013. All other VOC and SVOC detections have been significantly below non-residential Type 4 RRS. |
| MW-301D | Benzene, naphthalene | Benzene was detected in the sample collected in February 2017 (9.3 µg/L) slightly above the Type 4 RRS of 9 µg/L. Naphthalene was detected in the sample collected in February 2017 (430 µg/L). Although benzene and naphthalene concentrations increased in February 2017 compared to previous events, overall COI concentrations are decreasing. Monitoring will continue in order to determine if the February 2017 results are anomalous or indicative of a trend. |
| MW-302D | | Benzene and naphthalene were detected in February 2017 (5.4 µg/L and 5.5 µg/L, respectively). These concentrations are below the Type 4 RRS and significantly below the benzene and naphthalene concentration highs of 550 µg/L and 300 µg/L, respectively, in February 2014. |
| MW-305D | Benzene, naphthalene | Benzene concentrations at MW-305D have fluctuated since installation in 2014, ranging from 3,700 µg/L (August 2015) to 22,000 µg/L (August 2016). The February 2017 results (9,600 µg/L) show a decrease since August 2016. Naphthalene concentrations in MW-305D have also fluctuated from a low of 220 µg/L in August 2015 to a high of 9,600 µg/L in August 2016. The February concentration (3,500 µg/L) shows a decrease compared with August 2016. The effects of bedrock groundwater disturbances in the vicinity of MW-305D are not known at this time. |
| MW-306D | | Benzene and naphthalene concentrations at MW-306D have decreased since well installation and neither was detected during the February 2017 sampling event. |
| MW-307D | | Benzene has not been detected at MW-307D since February 2014. Several COI are routinely detected (including naphthalene), however all detections are significantly less than the Type 4 RRS and none show an increasing trend. |
| MW-308D | Benzene | MW-308D is located in the western portion of the Site adjacent to the new ISS footprint. Benzene concentrations have been above the Type 4 RRS since February 2015; however, the August 2016 and February 2017 concentrations show a decreasing trend from the August 2015 and April 2016 results. Additional data is needed to determine a trend for benzene. Naphthalene has only been detected at the well once (April 2016), at a concentration of 0.87 µg/L that is significantly below the Type 4 RRS of 20 µg/L. |

# Figures

*Project No. 0366660*
*Atlanta Gas Light Company*

**Environmental Resources Management**
3200 Windy Hill Road SE, Suite 1500W
Atlanta, Georgia 30339
(678) 486-2700




Basemap: Image Source: April 2013 - Settimio Consulting Services, Inc.

ERM

# Environmental Resources Management

| | | | | | |
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| DESIGN: | H Sartain | DRAWN: | S Vizuete | CHKD.: | A Reimer |
| DATE: | 4/5/2017 | SCALE: | AS SHOWN | REVISION: | 0 |

FILE: 0366660 AGL Resources Macon GW Pathforward.AR\05 - ERM Outputs\Figures\AGL_Macon\MXD\2017 04 4thVRPPrgRpt\Fig2.mxd

CONTOUR INTERVAL 10 FEET
DOTTED LINES REPRESENT 5-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

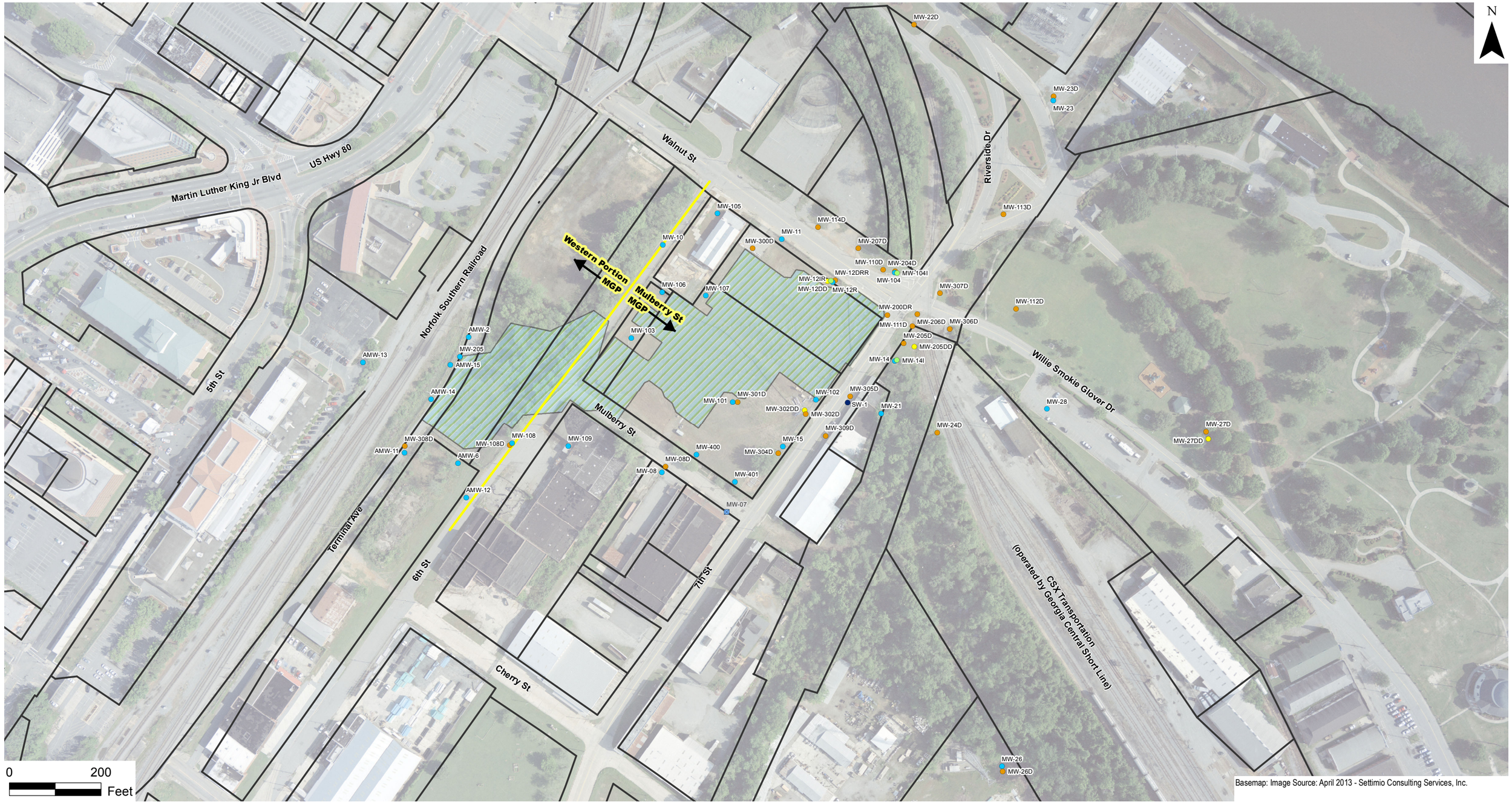
QUADRANGLE LOCATION

FIGURE 1 - TOPOGRAPHIC SITE LOCATION MAP

Atlanta Gas Light Company

Former Manufactured Gas Plant

Macon, Bibb County, Georgia




Basemap: Image Source: April 2013 - Settimio Consulting Services, Inc.

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| DATE: | 5/19/2017 | SCALE: | AS SHOWN | REVISION: | 0 |

FILE: 0366660 AGL Resources Macon GW Pathforward.ARI05 - ERM Outputs\Figures\AGL_Macon\MXD\2017 04 4th\VRPPrgRpt\Fig02_Site&Wells.mxd

- Shallow Well
- Destroyed Shallow Well
- Intermediate Well
- Shallow Bedrock Well
- Deep Bedrock Well
- Property Line
- ISS Mass
- SW-1 Sump Well (Installed as part of DNAPL investigation)

FIGURE 2 - SITE LAYOUT & GROUNDWATER MONITORING WELL NETWORK

Atlanta Gas Light Company

Former Manufactured Gas Plant

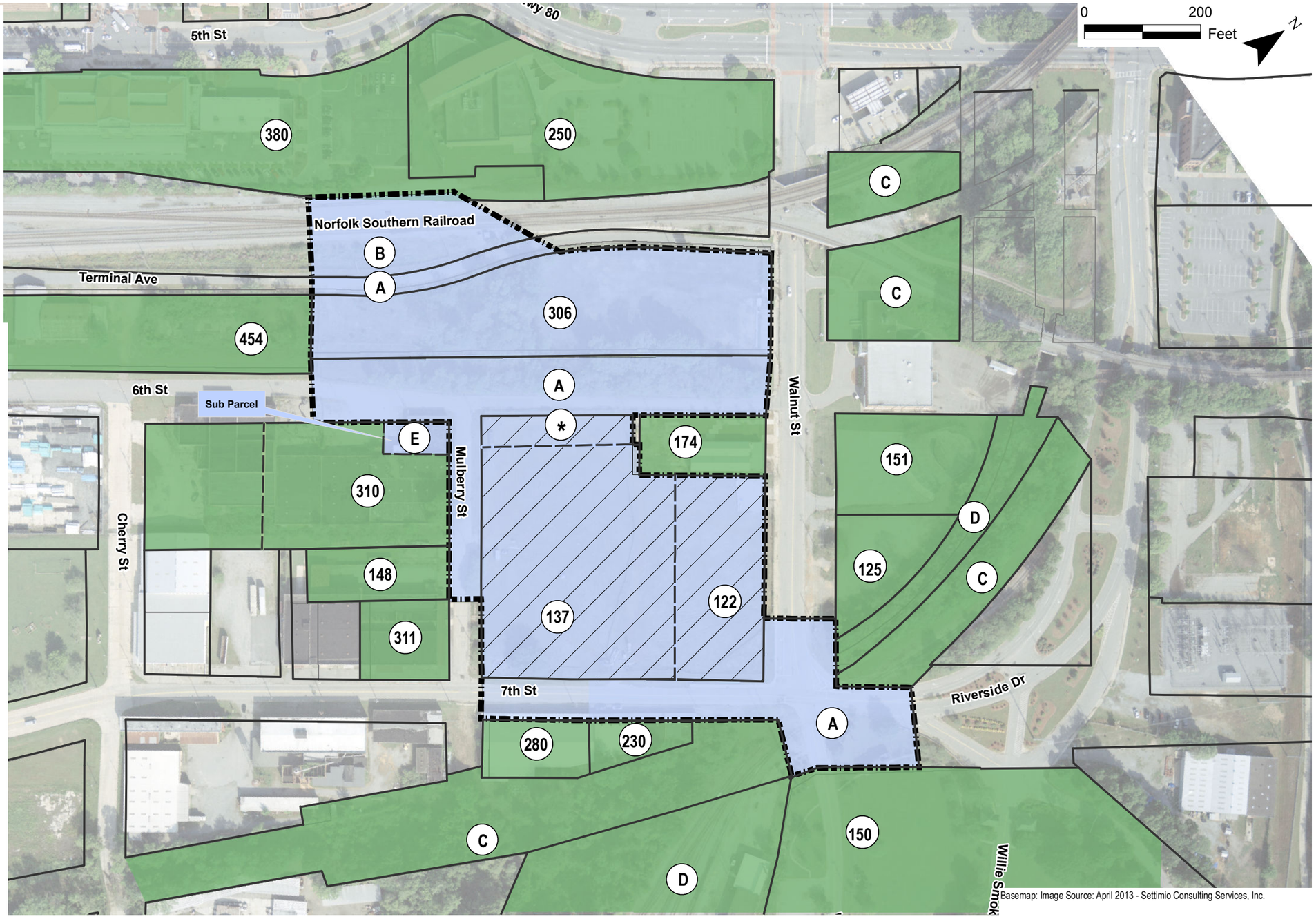
Macon, Bibb County, Georgia

## APPLICANT & QUALIFYING PROPERTIES

| | | |
|---|---|---|
| 306 | Owner: AGLC (Applicant) | *Tax Parcel ID: R073-0384* |
| 137 122 | Owner: Macon-Bibb Co Urban Dev Auth | *Tax Parcel ID: R074-UTIL, R074-0223, R074-0205* |
| A | Owner: City of Macon | *Tax Parcel ID: N/A* |
| B | Owner: Norfolk Southern | *Tax Parcel ID: N/A* |
| E | Owner: Prodigy Holdings LLC | *Tax Parcel ID: Sub Parcel of R081-0135* |

## ADJOINING PROPERTIES

| | | |
|---|---|---|
| C | Owner: Norfolk Southern | *Tax Parcel ID: N/A* |
| 125 151 | Owner: Bobby C. Lanford | *Tax Parcel ID: R074-0218, R074-0216* |
| 230 | Owner: Bernard B. Smith et al | *Tax Parcel ID: R074-0204* |
| 150 | Owner: Bibb County | *Tax Parcel ID: ST89-0027* |
| 280 | Owner: Seventh Street Invest LLC | *Tax Parcel ID: R074-0209* |
| D | Owner: CSXT | *Tax Parcel ID: N/A* |
| 311 148 | Owner: ECI Contracting Group | *Tax Parcel ID: R082-0004, R074-0202* |
| 310 454 | Owner: Prodigy Holdings LLC | *Tax Parcel ID: R081-0135, R081-0076* |
| 174 | Owner: Marillac Properties LLC | *Tax Parcel ID: R074-0200* |
| 250 | Mercer University | *Tax Parcel ID: R073-0403* |
| 380 | Macon-Bibb County Transit Authority | *Tax Parcel ID: R073-0399* |




Basemap: Image Source: April 2013 - Settimio Consulting Services, Inc.

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FILE: 0366660 AGL Resources Macon GW Pathforward.AR\05 - ERM Outputs\Figures\AGL_Macon\MXD\2017 04 4thVRPPrgRpt\Fig1.mxd

Macon-Bibb County Urban Development Authority Propoerty (Agreement Pending)

* Unnumbered Parcel (per Macon-Bibb County Tax Assessors GIS)

280 Address Number (per Macon-Bibb County Tax Assessors GIS)

Property Line

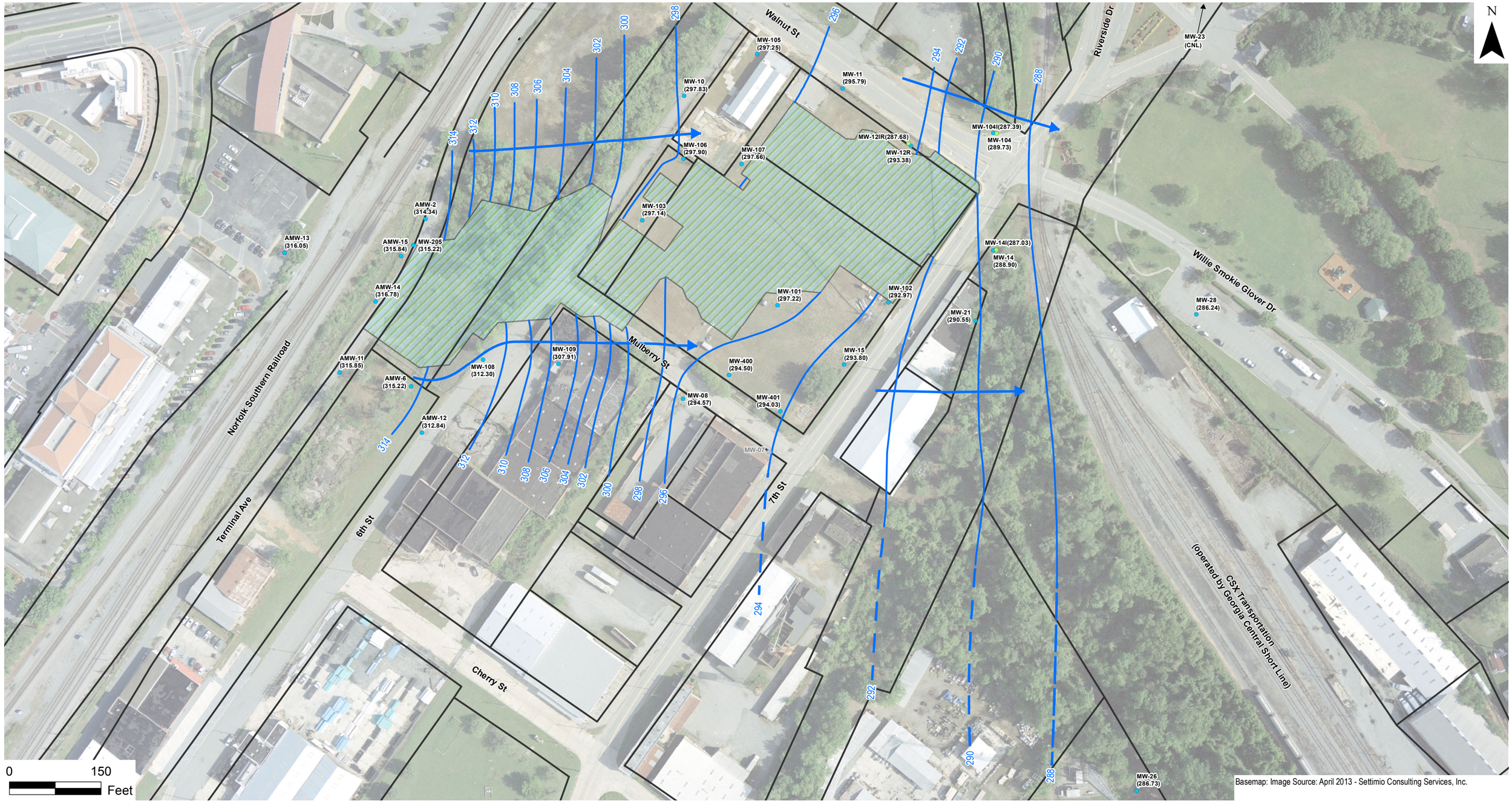
VRP Applicant & Qualifying Properties Boundary

FIGURE 3 - PROPERTY OWNERSHIP MAP

Atlanta Gas Light Company

Former Manufactured Gas Plant

Macon, Bibb County, Georgia

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# Environmental Resources Management

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| DATE: | 5/10/2017 | SCALE: | AS SHOWN | REVISION: | 1 |

FILE: 0366660 AGL Resources Macon GW Pathforward.AR\05 - ERM Outputs\Figures\AGL_Macon\MXD\2017 04 4thVRPPrgRpt\Fig4.mxd

- Shallow Well
- Destroyed Shallow Well
- Intermediate Well
- Deep Bedrock Well
- Groundwater Elevation Contour (ft AMSL)
- Inferred Groundwater Elevation Contour (ft AMSL)
- Groundwater Flow Direction
- Property Line
- ISS Mass

NOTES:

(315.85) = Groundwater Elevation (ft AMSL)

(NM) = Not Measured

(CNL) = Could Not Locate

FT AMSL = Feet Above Mean Sea Level

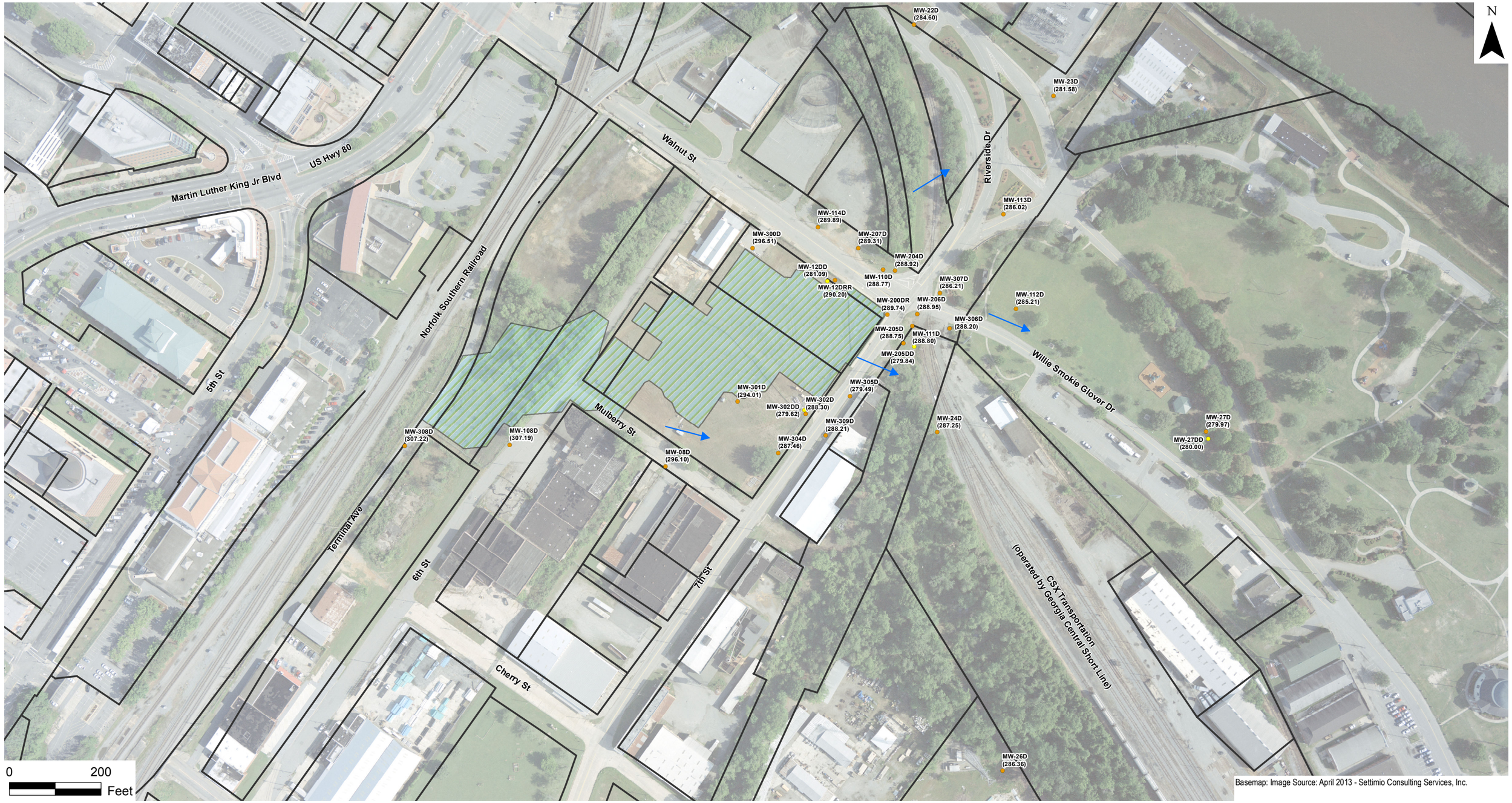
Intermediate wells MW-14I and MW-12IR not used in contouring.

FIGURE 4 - ALLUVIUM GROUNDWATER ELEVATION MAP - FEBRUARY 20, 2017

Atlanta Gas Light Company

Former Manufactured Gas Plant

Macon, Bibb County, Georgia




Basemap: Image Source: April 2013 - Settimio Consulting Services, Inc.

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# Environmental Resources Management

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| DESIGN: | H Sartain | DRAWN: | S Vizuete | CHKD.: | A Reimer |
| DATE: | 5/19/2017 | SCALE: | AS SHOWN | REVISION: | 0 |

FILE: 0366660 AGL Resources Macon GW Pathforward.AR\05 - ERM Outputs\Figures\AGL_Macon\MXD\2017 04 4th\VRPPrgRpt\Fig05_GWBdrk_022017.mxd

- Shallow Bedrock Well
- Deep Bedrock Well
- Apparent Groundwater Flow Direction
- Property Line
- ISS Mass

NOTES:

(307.19) = Groundwater Elevation (Ft AMSL)

(NM) = Not Measured

Deep bedrock wells MW-12DD, MW-27DD, MW-205DD and MW-302DD not used in flow direction calculations.

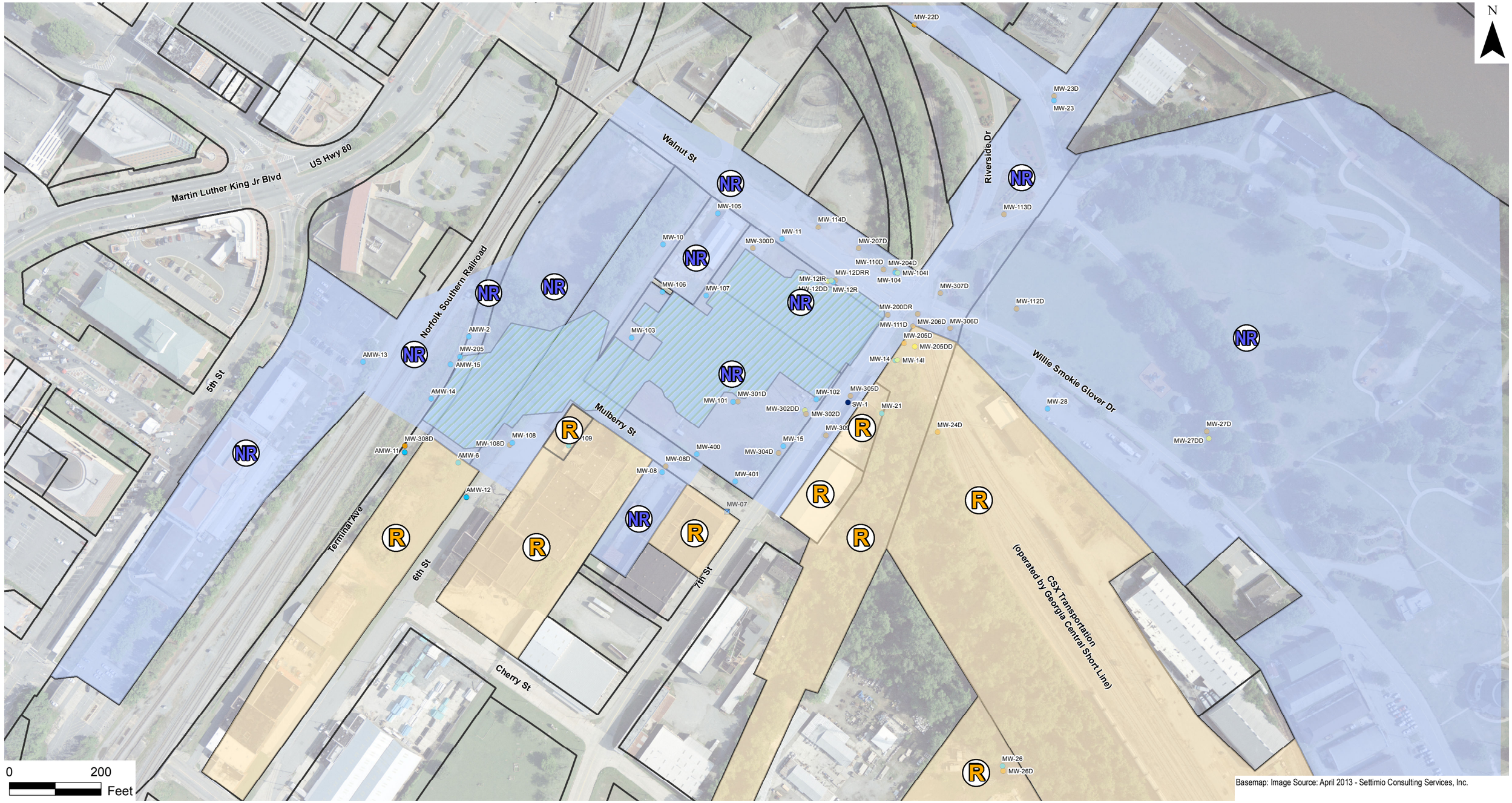
FT AMSL = Feet Above Mean Sea Level

## FIGURE 5 - HYDRAULIC POTENTIAL IN SHALLOW BEDROCK WELLS - FEBRUARY 20, 2017

Atlanta Gas Light Company

Former Manufactured Gas Plant

Macon, Bibb County, Georgia




Basemap: Image Source: April 2013 - Settimio Consulting Services, Inc.

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| DESIGN: | H Sartain | DRAWN: | S Vizuete | CHKD.: | A Reimer |
| DATE: | 5/19/2017 | SCALE: | AS SHOWN | REVISION: | 0 |

FILE: 0366660 AGL Resources Macon GW Pathforward.ARI05 - ERM Outputs\Figures\AGL_Macon\MXD\2017 04 4thVRPPrgRpt\Fig06_ParcelSpecificCleanup.mxd

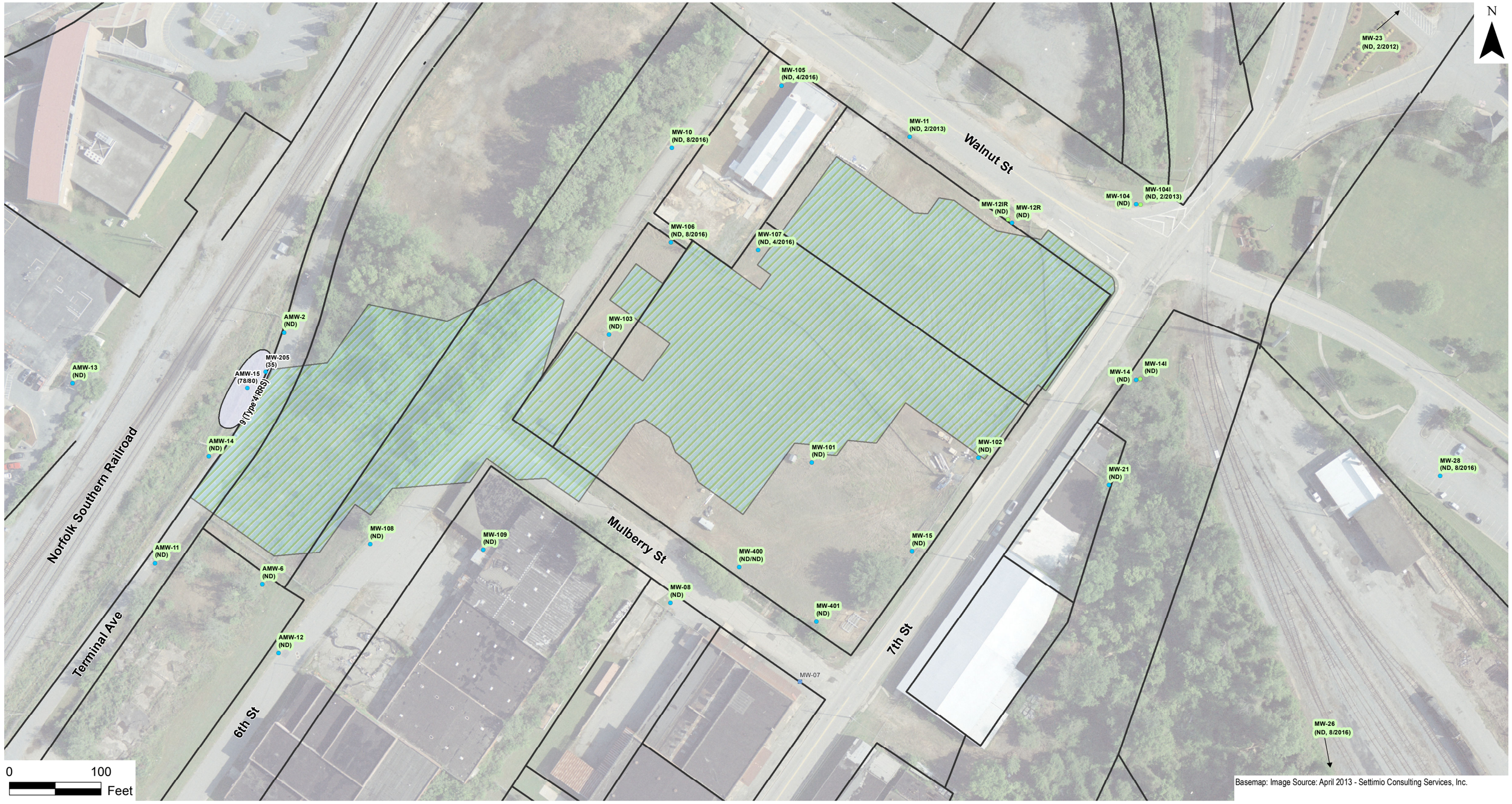
- Residential Cleanup Standard for Groundwater
- Non-Residential Cleanup Standard for Groundwater
- Shallow Well
- Destroyed Shallow Well
- Intermediate Well
- Shallow Bedrock Well
- Deep Bedrock Well
- ISS Mass
- Property Line

FIGURE 6
PARCEL-SPECIFIC CLEANUP STANDARDS

Atlanta Gas Light Company

Former Manufactured Gas Plant

Macon, Bibb County, Georgia

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# Environmental Resources Management

| DESIGN: | H Sartain | DRAWN: | S Vizuete | CHKD.: | A Reimer |
|---|---|---|---|---|---|
| DATE: | 5/10/2017 | SCALE: | AS SHOWN | REVISION: | 1 |

FILE: 0366660 AGL Resources Macon GW Pathforward.AR\05 - ERM Outputs\Figures\AGL_Macon\MXD\2017 04 4thVRPPrgRpt\Fig6.mxd

- Shallow Well
- Destroyed Shallow Well
- Intermediate Well
- Property Line
- ISS Mass

**Benzene Concentration Contour**

- >9 µg/L (Type 4 RRS), <100 µg/L

NOTES:

Sample collected February 2017 unless otherwise indicated.

(35) Benzene Concentration

(78/80) Benzene Concentration (Normal sample/ Duplicate sample)

(ND) Non Detect

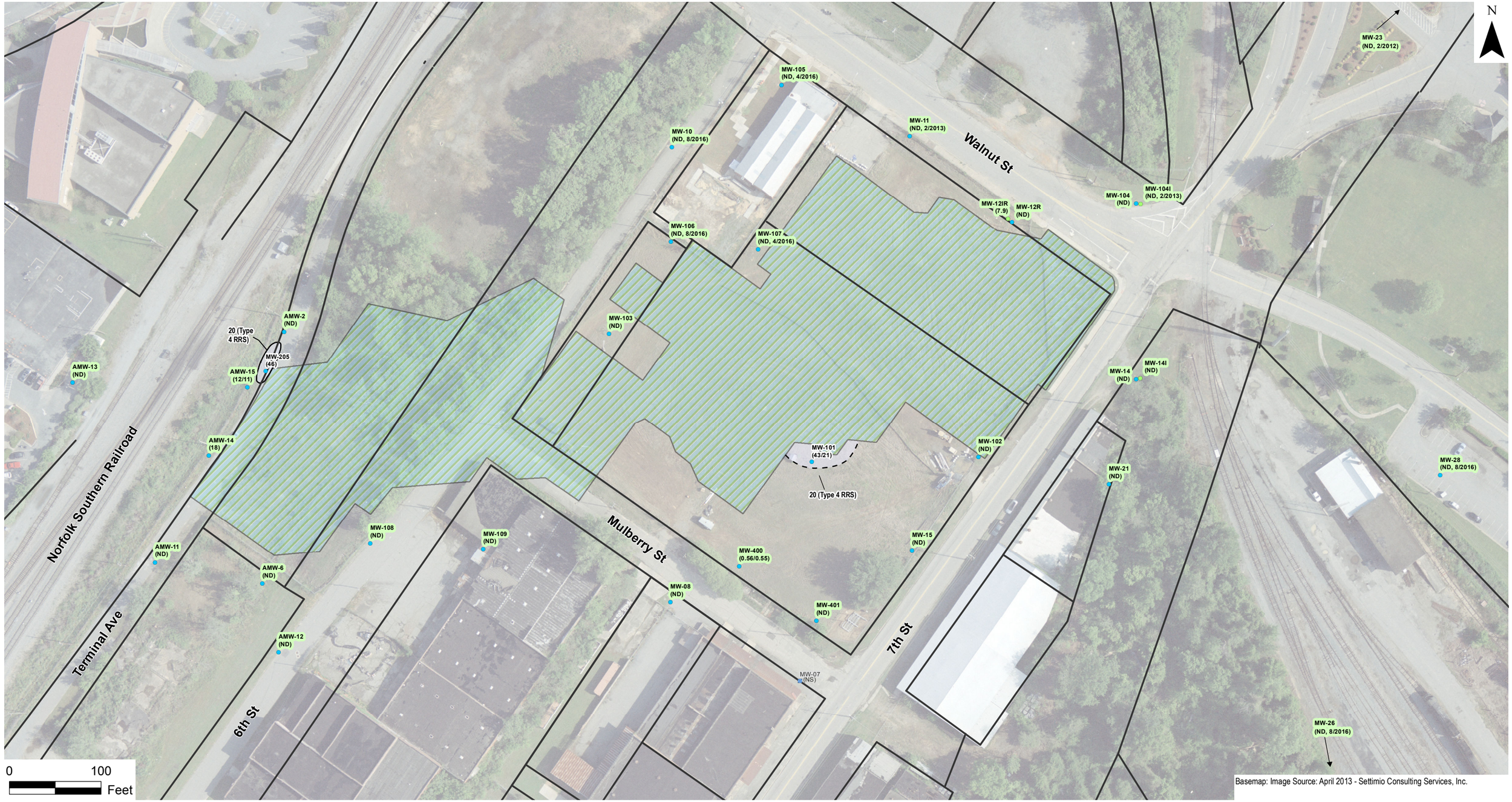
Sample result ND or < Applicable Cleanup Goal

FIGURE 7 - BENZENE IN ALLUVIAL GROUNDWATER FEBRUARY 2017

Atlanta Gas Light Company

Former Manufactured Gas Plant

Macon, Bibb County, Georgia




Basemap: Image Source: April 2013 - Settimio Consulting Services, Inc.

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# Environmental Resources Management

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|---|---|---|---|---|---|
| DESIGN: | H Sartain | DRAWN: | S Vizuete | CHKD.: | A Reimer |
| DATE: | 5/12/2017 | SCALE: | AS SHOWN | REVISION: | 2 |

FILE: 0366660 AGL Resources Macon GW Pathforward.ARI05 - ERM Outputs\Figures\AGL_Macon\MXD\2017 04 4thVRPPrgRpt\Fig08_NaphAlluv_Feb2017.mxd

- Shallow Well
- Destroyed Shallow Well
- Intermediate Well
- Property Line
- ISS Mass

**Naphthalene Concentration Contour**

- >20 µg/L (Type 4 RRS), <100 µg/L

NOTES:

Sample collected February 2017 unless otherwise indicated.
Isoconcentration contours are dashed when inferred.
(18) Naphthalene Concentration
(43/21) Naphthalene Concentration (Normal sample/ Duplicate sample)
(ND) Non Detect
(NS) Not Sampled
Sample result ND or < Applicable Cleanup Goal

FIGURE 8 - NAPHTHALENE IN ALLUVIAL GROUNDWATER FEBRUARY 2017

Atlanta Gas Light Company

Former Manufactured Gas Plant

Macon, Bibb County, Georgia

Basemap: Image Source: April 2013 - Settimio Consulting Services, Inc.

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# Environmental Resources Management

| | | | | | |
|---|---|---|---|---|---|
| DESIGN: | H Sartain | DRAWN: | S Vizuete | CHKD.: | A Reimer |
| DATE: | 5/10/2017 | SCALE: | AS SHOWN | REVISION: | 1 |

FILE: 0366660 AGL Resources Macon GW Pathforward.AR\05 - ERM Outputs\Figures\AGL_Macon\MXD\2017 04 4thVRPPrgRpt\Fig8.mxd

- Shallow Bedrock Well
- Deep Bedrock Well
- Property Line
- ISS Mass

**Benzene Concentration Contours**

- >9 µg/L (Type 4 RRS), <100 µg/L
- >100 µg/L, <1,000 µg/L
- >1,000 µg/L, <10,000 µg/L

NOTES:

Sample collected February 2017 unless otherwise indicated.

Deep Bedrock Wells MW-12DD, MW-27DD, MW-205DD, and MW-302DD were not used in contouring.

MW-309D & MW-111D were not sampled due to the presence of DNAPL.

Isoconcentration contours are dashed when inferred.

(11) Benzene Concentration

(70/63) Benzene Concentration (Normal sample/ Duplicate sample)

(ND) Non Detect

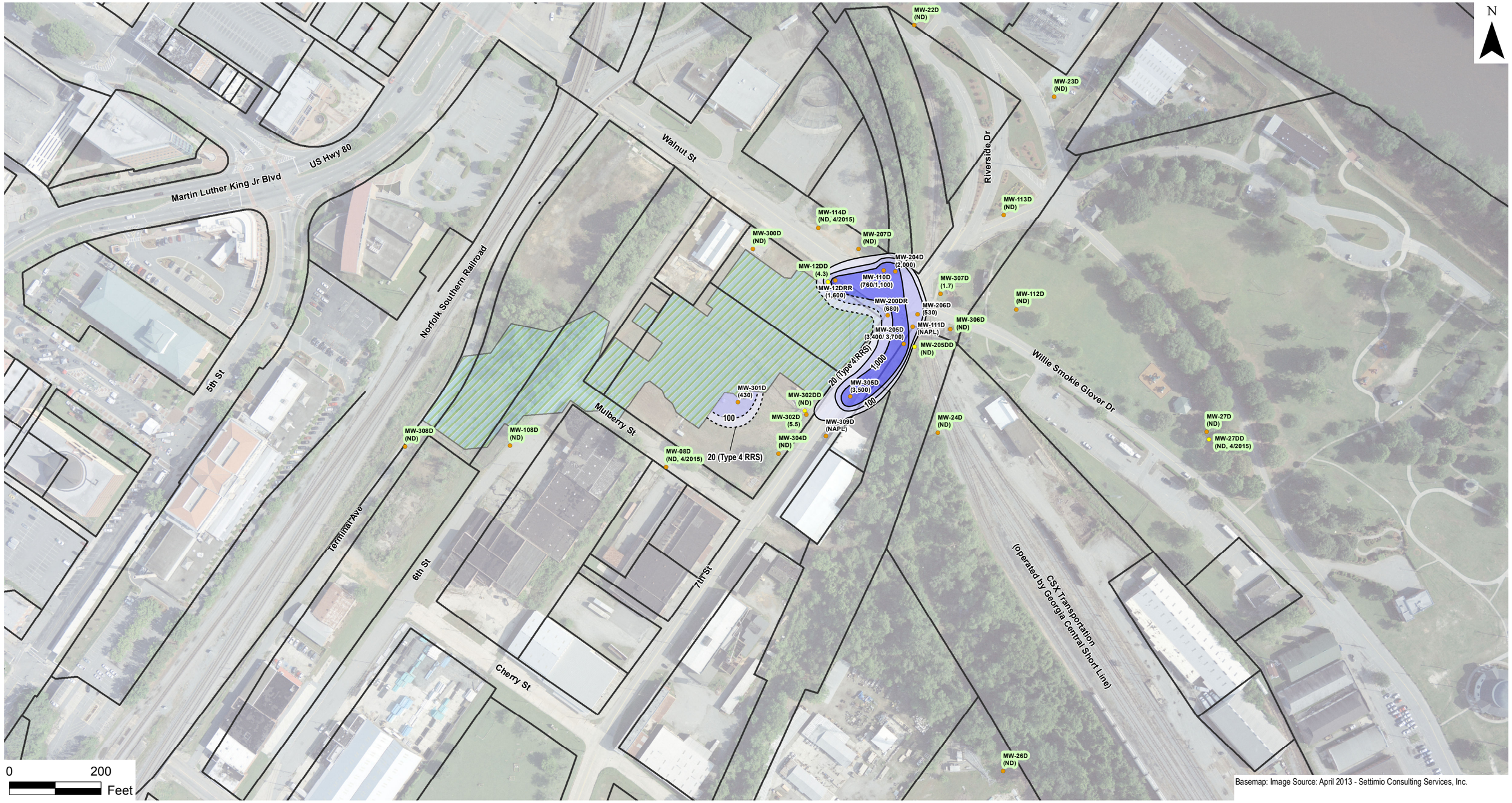
Sample result ND or < Applicable Cleanup Goal

FIGURE 9 - BENZENE IN BEDROCK GROUNDWATER FEBRUARY 2017

Atlanta Gas Light Company

Former Manufactured Gas Plant

Macon, Bibb County, Georgia




Basemap: Image Source: April 2013 - Settimio Consulting Services, Inc.

ERM

# Environmental Resources Management

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|---|---|---|---|---|---|
| DESIGN: | H Sartain | DRAWN: | S Vizuete | CHKD.: | A Reimer |
| DATE: | 5/10/2017 | SCALE: | AS SHOWN | REVISION: | 3 |

FILE: 0366660 AGL Resources Macon GW Pathforward.AR\05 - ERM Outputs\Figures\AGL_Macon\MXD\2017 04 4thVRPPrgRpt\Fig9.mxd

- Shallow Bedrock Well
- Deep Bedrock Well
- Property Line
- ISS Mass

**Naphthalene Concentration Contours**

- >20 µg/L (Type 4 RRS), <100 µg/L
- >100 µg/L, <1,000 µg/L
- >1,000 µg/L, <10,000 µg/L

NOTES:
Sample collected February 2017 unless otherwise indicated.
Deep Bedrock Wells MW-12DD, MW-27DD, MW-205DD, and MW-302DD were not used in contouring.
MW-309D & MW-111D were not sampled due to the presence of DNAPL.
Isoconcentration contours are dashed when inferred.
(530) Naphthalene Concentration
(760/1,100) Naphthalene Concentration (Normal sample/ Duplicate sample)
(ND) Non Detect
Sample result ND or < Applicable Cleanup Goal

FIGURE 10 - NAPHTHALENE IN BEDROCK GROUNDWATER FEBRUARY 2017

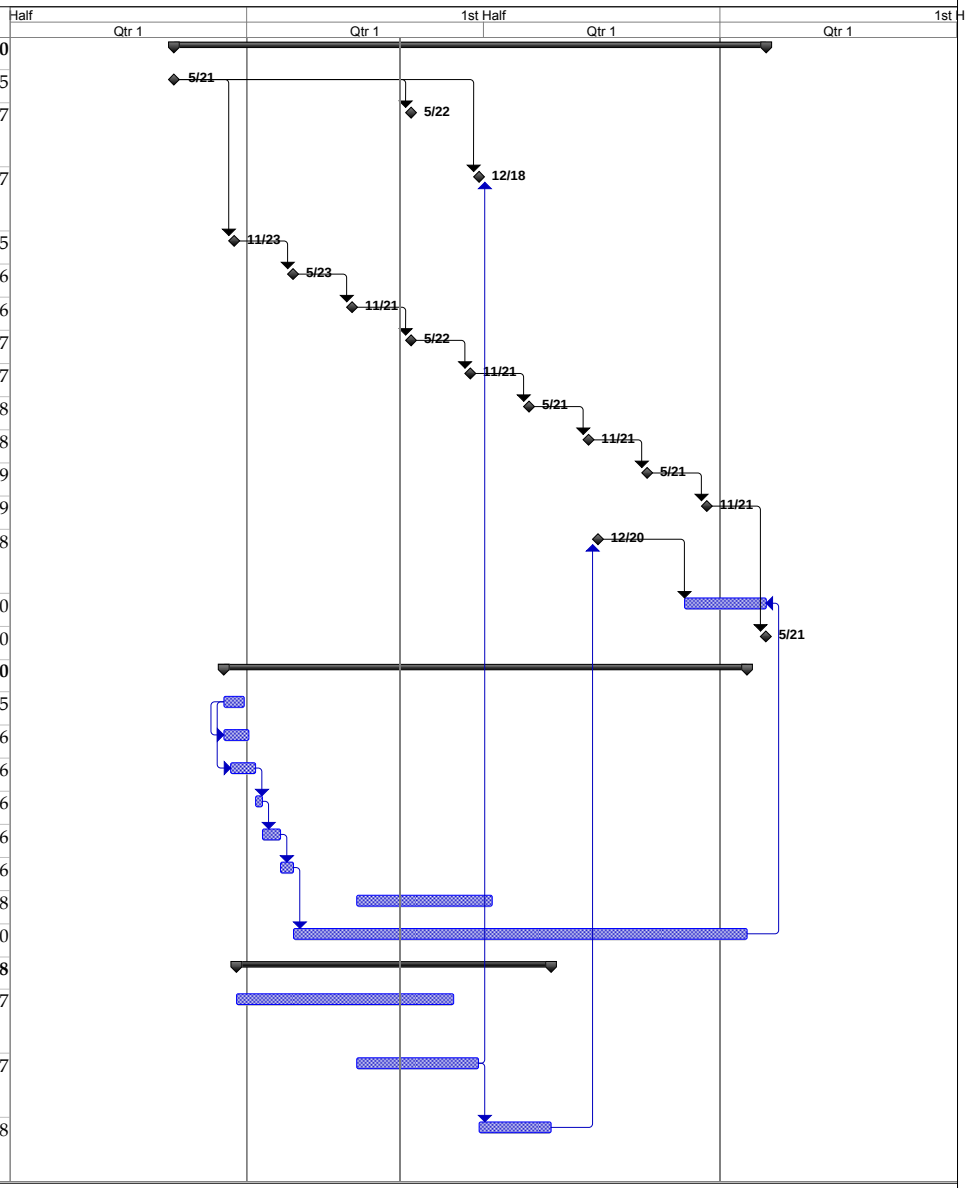
Atlanta Gas Light Company

Former Manufactured Gas Plant

Macon, Bibb County, Georgia

***Figure 11***
***VRP Projected Milestone Schedule***
***Atlanta Gas Light Company***
***Former Manufactured Gas Plant Site***
***Macon, Georgia***

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **VRP Schedule and Deadlines** | **1306 days** | **Thu 5/21/15** | **Thu 5/21/20** |
| 2 | Acceptance Into VRP | 1 day | Thu 5/21/15 | Thu 5/21/15 |
| 3 | Completion of Horizontal Delineation of Release for All Affected Parcels | 1 day | Mon 5/22/17 | Mon 5/22/17 |
| 4 | Update CSM to include Vertical delineation (if required) and Final Remediation Plans, and Costs | 1 day | Mon 12/18/17 | Mon 12/18/17 |
| 5 | 1st Semiannual Progress Report | 1 day | Mon 11/23/15 | Mon 11/23/15 |
| 6 | 2nd Semiannual Progress Report | 1 day | Mon 5/23/16 | Mon 5/23/16 |
| 7 | 3rd Semiannual Progress Report | 1 day | Mon 11/21/16 | Mon 11/21/16 |
| 8 | 4th Semiannual Progress Report | 1 day | Mon 5/22/17 | Mon 5/22/17 |
| 9 | 5th Semiannual Progress Report | 1 day | Tue 11/21/17 | Tue 11/21/17 |
| 10 | 6th Semiannual Progress Report | 1 day | Mon 5/21/18 | Mon 5/21/18 |
| 11 | 7th Semiannual Progress Report | 1 day | Wed 11/21/18 | Wed 11/21/18 |
| 12 | 8th Semiannual Progress Report | 1 day | Tue 5/21/19 | Tue 5/21/19 |
| 13 | 9th Semiannual Progress Report | 1 day | Thu 11/21/19 | Thu 11/21/19 |
| 14 | Update VIRP Application and Incorporate all Qualifying Parcels and Associated Documentation | 1 day | Thu 12/20/18 | Thu 12/20/18 |
| 15 | Prepare Compliance Status Report | 180 days | Fri 9/13/19 | Thu 5/21/20 |
| 16 | Submit Compliance Status Report | 1 day | Thu 5/21/20 | Thu 5/21/20 |
| 17 | **Alluvial Groundwater** | **1153 days** | **Thu 10/22/15** | **Mon 3/23/20** |
| 18 | Complete ISS | 45 days | Thu 10/22/15 | Wed 12/23/15 |
| 19 | T&D all Waste Materials | 55 days | Thu 10/22/15 | Wed 1/6/16 |
| 20 | Backfill and Compaction | 55 days | Thu 11/12/15 | Wed 1/27/16 |
| 21 | Site Grading | 15 days | Thu 1/28/16 | Wed 2/17/16 |
| 22 | Site Restoration | 40 days | Thu 2/18/16 | Wed 4/13/16 |
| 23 | Corrective Action Completion Report | 28 days | Thu 4/14/16 | Mon 5/23/16 |
| 24 | Modelling, POD Verification | 300 days | Mon 12/5/16 | Fri 1/26/18 |
| 25 | Alluvial GW Monitoring (including POD Wells) | 1000 days | Tue 5/24/16 | Mon 3/23/20 |
| 26 | **Bedrock Groundwater** | **695 days** | **Mon 11/30/15** | **Fri 7/27/18** |
| 27 | Bedrock Groundwater Monitoring (including POD Wells) | 480 days | Mon 11/30/15 | Fri 9/29/17 |
| 28 | Groundwater Modelling, POD Verification and Risk Evaluations | 270 days | Mon 12/5/16 | Fri 12/15/17 |
| 29 | Incorporate Additional Parcels into VRP Qualifying Properties as Required | 160 days | Mon 12/18/17 | Fri 7/27/18 |




Project: Macon MGP Site VRP
Date: Tue 4/18/17

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Task | | Project Summary | | Inactive Task | | Duration-only | | Finish-only | |
| Split | | External Tasks | | Inactive Milestone | | Manual Summary Rollup | | Progress | |
| Milestone | | External Milestone | | Inactive Summary | | Manual Summary | | Deadline | |
| Summary | | Inactive Task | | Manual Task | | Start-only | | | |

# Regulatory Correspondence During Reporting Period

*Appendix A*

*Project No. 0366660*
*Atlanta Gas Light Company*

**Environmental Resources Management**
3200 Windy Hill Road SE, Suite 1500W
Atlanta, Georgia 30339
(678) 486-2700

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

**Richard E. Dunn, Director**

**Land Protection Branch**
2 Martin Luther King, Jr. Drive
Suite 1054, East Tower
Atlanta, Georgia 30334
404-657-8600

February 21, 2017

Atlanta Gas Light Company
c/o Mr. Greg Corbett
Director of Environment & Sustainability
Ten Peachtree Place
Atlanta, Georgia 30309

**VIA FIRST-CLASS MAIL AND EMAIL**

Re: Comments on VRP Semiannual Reports 1, 2, and 3 and 2016 Corrective Action Completion Report
Macon MGP Site, HSI Site Number 10511
Macon, Georgia; Bibb County

Dear Mr. Corbett:

The Georgia Environmental Protection Division (EPD) is in receipt of VRP Semiannual Progress Reports 1, 2, and 3, dated December 8, 2015, May 29, 2016, and November 21, 2016, respectively, for the Macon MGP Site. We note that a Corrective Action Completion Report was included in Appendix A of Semiannual Report 2. The reports were submitted to EPD pursuant to the Georgia Voluntary Remediation Program Act (the Act), O.C.G.A. 12-8-100. Our comments are provided below.

1. Based upon review of Section 2.5 and Appendix B in Semiannual Report 1, EPD will not require further evaluation of Ocmulgee River surface water, sediments, or river armoring associated with the Upper and Lower Outfall areas at this time. Environmental covenants restricting land use on site will need to include provisions for annual reporting to EPD on observed conditions in the river and specify conditions [e.g., significant rainfall (10-year event), construction activities in the river, dredging of the river, etc.] that could potentially disturb TLM or its overlying cover and would trigger a river bottom survey of the armored area associated with the Upper Outfall.

2. EPD is concerned about the potential for vapor intrusion into buildings at 230 and 280 7th Street, which adjoin the Mulberry MGP/Eastern Portion MGP on the southeast. DNAPL is present at MW-309D, which is a shallow bedrock well located on or next to the 230 7th Street property. Groundwater concentrations of benzene and naphthalene in bedrock wells immediately northeast of those buildings are high. Data is lacking on the quality of overlying alluvial groundwater in those areas. Accordingly, please do one of the following:

   a. Collect soil-gas samples from several select locations next to the buildings' outer walls, then laboratory-analyze the samples for VOCs and SVOCs. If concentrations of VOCs or SVOCs are detected in the soil-gas samples, run the data through the EPA's VISL screening tool.

   b. Install and sample additional alluvial monitoring wells on or next to the 230 and 280 7th Street properties. Laboratory-analyze the groundwater samples for VOCs and SVOCs. If

concentrations of VOCS or SVOCs are detected in the groundwater samples, run the data through the EPA's VISL screening tool.

3. Given that the VEFR events have not been effective in remediating the DNAPL on site, combined with the possibility that VEFR could accelerate migration of or destabilize the dissolved contaminant plume, EPD will not require additional VEFR events at this time. However, if continued monitoring of MW-111D and MW-309D shows increasing thicknesses of DNAPL, or if site conditions otherwise dictate a more aggressive remedial approach, VEFR events may be required in the future.
4. In lieu of removing additional bedrock well and sump installations from the remedial plan, as requested in Section 3.1.2 of Semiannual Report 3, EPD will temporarily suspend requirements for their installation, pending the collection of future groundwater monitoring data.
5. Based upon historical analytical data, and as requested in Section 3.6.2.1 of Appendix B of Report 3, EPD will no longer require laboratory analysis for inorganics in alluvial wells.
6. Based upon historical analytical data, and as requested in Section 3.6.2.2 of Appendix B of Report 3, EPD will no longer require laboratory analysis for inorganics in bedrock wells.

Atlanta Gas Light Company must address these comments to EPD's satisfaction in order to demonstrate compliance with the provisions, purposes, standards, and policies of the Act. EPD may, at its sole discretion, review and comment on documents submitted by Atlanta Gas Light Company. However, failure of EPD to respond to a submittal within any timeframe does not relieve Atlanta Gas Light Company from complying with the provisions, purposes, standards, and policies of the Act.

If you have any questions, please contact Allan Nix of the Response and Remediation Program at (404) 657-3935.

Sincerely,

David Brownlee
Unit Coordinator
Response and Remediation Program

c: Christie Battenhouse, Atlanta Gas Light Company
Adria Reimer, ERM

Atlanta Gas Light

**Greg Corbett, P.E.**
Managing Director –
Environmental Services

Ten Peachtree Pl, NE
Atlanta, GA 30309
404-584-3719 tel
gcorbett@southernco.com

March 22, 2017

David Brownlee
Unit Coordinator
Land Protection Branch
Response and Remediation Program
2 Martin Luther King, Jr. Drive
Suite 1054, East Tower
Atlanta, Georgia 30334

RE: Response to Comments on VRP Semiannual Progress Reports 1, 2, and 3 and
2016 Corrective Action Completion Report
Macon Former Manufactured Gas Plant Site
Macon, Georgia; Bibb County
HSI Site Number 10511
Consent Order EPD-VRP-12

Dear Mr. Brownlee,

In the comment letter dated February 21, 2017, the Department of Natural Resources, Environmental Protection Division (EPD) provided comments on the *VRP Semiannual Progress Reports 1, 2, and 3*, dated December 8, 2015, May 29, 2016, and November 21,2016, respectively, for the Macon former manufactured gas plant (MGP) site. The reports were submitted to EPD pursuant to the Georgia Voluntary Remediation Program Act (the Act), O.C.G.A. 12-8-100. Atlanta Gas Light Company (AGLC) is submitting this letter to document our responses to EPD's comments. For clarification, EPD's comments are italicized and bolded. Since there were no comments provided on the *Corrective Action Completion Report* that was included in Appendix A of the *2nd Semiannual Progress Report*, AGLC assumes that this report was approved as submitted.

1. ***Based upon review of Section 2.5 and Appendix B in Semiannual Report 1, EPD will not require further evaluation of Ocmulgee River surface water, sediments, or river armoring associated with the Upper and Lower Outfall areas at this time. Environmental covenants restricting land use on site will need to include provisions for annual reporting to EPD on observed conditions in the river and specify conditions [e.g., significant rainfall (10-year event), construction activities in the river, dredging of the river, etc.] that could potentially***

***disturb TLM or its overlying cover and would trigger a river bottom survey of the armored area associated with the Upper Outfall.***

AGLC appreciates EPD's concurrence for no further evaluation of surface water, sediments, or river armoring associated with the Upper and Lower Outfall areas in the Ocmulgee River. However, AGLC would like to reiterate the request submitted in the 1st Semiannual Progress Report to discontinue any further evaluation of the Ocmulgee River sediments based on the history of the investigation, remediation, and subsequent monitoring of the Ocmulgee River sediments near the Upper and Lower Outfalls and compliance certifications previously provided. As submitted with the 1st Semiannual Progress Report, the following describes additional lines of evidence that additional monitoring is not necessary:

- The area was re-armored with 6-inch stone to protect human health and the environment, as well as the ecosystem and to prevent scour;
- Ten years of monitoring has shown the armored sediment cap to be working to prevent scour and the 3-foot required sediment cover remains over all TLM-impacted areas;
- The ecological risk has been removed;
- There is net deposition in the armored remediation area;
- The sediments are certified to site-specific clean-up criteria for sediments developed with the EPD during the development of the CAPs for the Site; and
- All historical data shows no impact to surface water.

In addition, since the river bottom is sovereign land of the State of Georgia lying outside the boundaries of any deeded real estate parcel, the Ocmulgee River sediments are not amenable to a restrictive covenant. As such, the Ocmulgee River sediments were not included in the VIRP application submitted in 2014 as qualifying property but, instead, were addressed under Operable Unit 1 (OU-1) of Consent Order Number EPD-HSR-227 (dated July 11, 2000) and in accordance with the approved corrective action plan and subsequent revisions under the Georgia Hazardous Site Response Act (HSRA) Chapter 391-3-19, and rules promulgated thereunder. Therefore, the sediment unit (OU-1) should be considered closed as of the conclusion of the 10-year river elevation survey event.

2. ***EPD is concerned about the potential for vapor intrusion into buildings at 230 and 280 7th Street, which adjoin the Mulberry MGP/Eastern Portion MGP on the southeast. DNAPL is present at MW-309D, which is a shallow bedrock well located on or next to the 230 7th Street property. Groundwater concentrations of benzene and naphthalene in bedrock wells***

***immediately northeast of those buildings are high. Data is lacking on the quality of overlying alluvial groundwater in those areas. Accordingly, please do one of the following:***

a. ***Collect soil-gas samples from several select locations next to the buildings' outer walls, then laboratory-analyze the samples for VOCs and SVOCs. If concentrations of VOCs or SVOCs are detected in the soil-gas samples, run the data through the EPA's VISL screening tool.***
b. ***Install and sample additional alluvial monitoring wells on or next to the 230 and 280 7th Street properties. Laboratory-analyze the groundwater samples for VOCs and SVOCs. If concentrations of VOCS or SVOCs are detected in the groundwater samples, run the data through the EPA's VISL screening tool.***

While dense non-aqueous phase liquid (DNAPL) has been observed in bedrock wells in the proximity of the building located at 230 and 280 7th Street and dissolved phase concentrations of benzene and naphthalene (or any organic constituent of interest [COI) in bedrock groundwater in the area have been high, concentrations in the alluvial and intermediate-zone groundwater in proximity of the building have consistently been below the Type 1 (residential) risk reduction standard or not detected for over 10-15 years. This is evident based on groundwater data from the following alluvial and intermediate groundwater wells in the near vicinity of the building and are situated hydraulically upgradient, sidegradient, and downgradient of the building:

- Upgradient: MW-07, MW-15, MW-102, MW-401
- Sidegradient: MW-14, MW-14I
- Downgradient: MW-21

Figures B3-3 and B3-4 (Attachment A) from the most recent groundwater monitoring report shows the layout of the site monitoring wells, along with the interpreted groundwater flow in the alluvial aquifer. The summary of historical analytical groundwater data for these wells is included as Attachment B. In particular, there have been no detections of either benzene or naphthalene in upgradient alluvial monitoring wells MW-15 or MW-102 since installation in 2001 and 2002, respectively (note that the naphthalene detection in MW-102 was likely related to turbidity in the initial September 2002 sample and not verified during a subsequent resampling event in December 2002). Both MW-15 and MW-102 are located within approximately 80 feet upgradient of the 230/280 7th Street buildings. In addition, neither benzene nor naphthalene has been detected in alluvial monitoring well MW-21, which is situated directly adjacent and downgradient to the 230 7th Street property line (which is essentially the eastern wall of the building) since its installation in 2006.

In an effort to clarify why DNAPL in or around MW-309D cannot possibly be presenting a vapor intrusion risk to occupants of 230 or 280 7th Street, VOCs can only partition to the vadose zone from the shallowest groundwater zone present at a given site. In other words, VOCs do not pass through water undetected. Thus, the presence of a shallow zone of groundwater with concentrations below levels that could produce a vapor intrusion risk overlaying higher concentrations from deeper groundwater zones (whether dissolved or DNAPL) essentially means the pathway for vapor intrusion from those deeper zones is incomplete. Accordingly, the only question should be whether the network of wells monitoring the shallow zone in the vicinity of MW-309D is adequate to demonstrate the absence of concentrations at levels that could cause a vapor concern. MW-309D is surrounded by three wells installed in the shallowest zone (MW-15, MW-21, and MW-102), each of which are located within 80 to approximately 120 feet of the point that would intersect shallow groundwater directly above MW-309D. VOCs concentrations in MW-21 have been below Type 1 RRS for at least 10 years, in MW-102 for over 14 years, and in MW-15 for over 15 years. It is simply not plausible that VOC concentrations in shallow groundwater would spike from levels complying with Type 1 RRS in MW-102 to concentrations that could produce a vapor risk to occupants of the buildings at 230 or 280 7th Street and then plummet again back into compliance with Type 1 RRS in MW-21, all in the space of the less-than 120 feet separating MW-21 and MW-309D. Therefore, AGLC respectfully believes the absence of a vapor intrusion risk from any DNAPL in or around MW-309D has been demonstrated.

The sustained absence of volatile or semivolatile organic COI in the shallow groundwater above the areas where dissolved phase concentrations and/or DNAPL may be present in bedrock demonstrates that vapor phase constituents are not migrating from the bedrock groundwater and reaching the vadose zone, and thus, do not pose a vapor intrusion risk to occupants of the building.

3. ***Given that the VEFR events have not been effective in remediating the DNAPL on site, combined with the possibility that VEFR could accelerate migration of or destabilize the dissolved contaminant plume, EPD will not require additional VEFR events at this time. However, if continued monitoring of MW-IIID and MW-309D shows increasing thicknesses of DNAPL, or if site conditions otherwise dictate a more aggressive remedial approach, VEFR events may be required in the future.***

AGLC appreciates EPD's concurrence with this request.

4. ***In lieu of removing additional bedrock well and sump installations from the remedial plan, as requested in Section 3.1.2 of Semiannual Report 3, EPD will temporarily suspend requirements for their installation, pending the collection of future groundwater monitoring data.***

AGLC appreciates EPD's concurrence with this request.

5. ***Based upon historical analytical data, and as requested in Section 3.6.2.1 of Appendix B of Report 3, EPD will no longer require laboratory analysis for inorganics in alluvial wells.***

AGLC appreciates EPD's concurrence with this request.

6. ***Based upon historical analytical data, and as requested in Section 3.6.2.2 of Appendix B of Report 3, EPD will no longer require laboratory analysis for inorganics in bedrock wells.***

AGLC appreciates EPD's concurrence with this request.

AGLC would like to schedule a meeting to review these responses. If you have any immediate questions or comments, please call me 404-584-3719 or email me at gcorbett@southernco.com.

Sincerely,

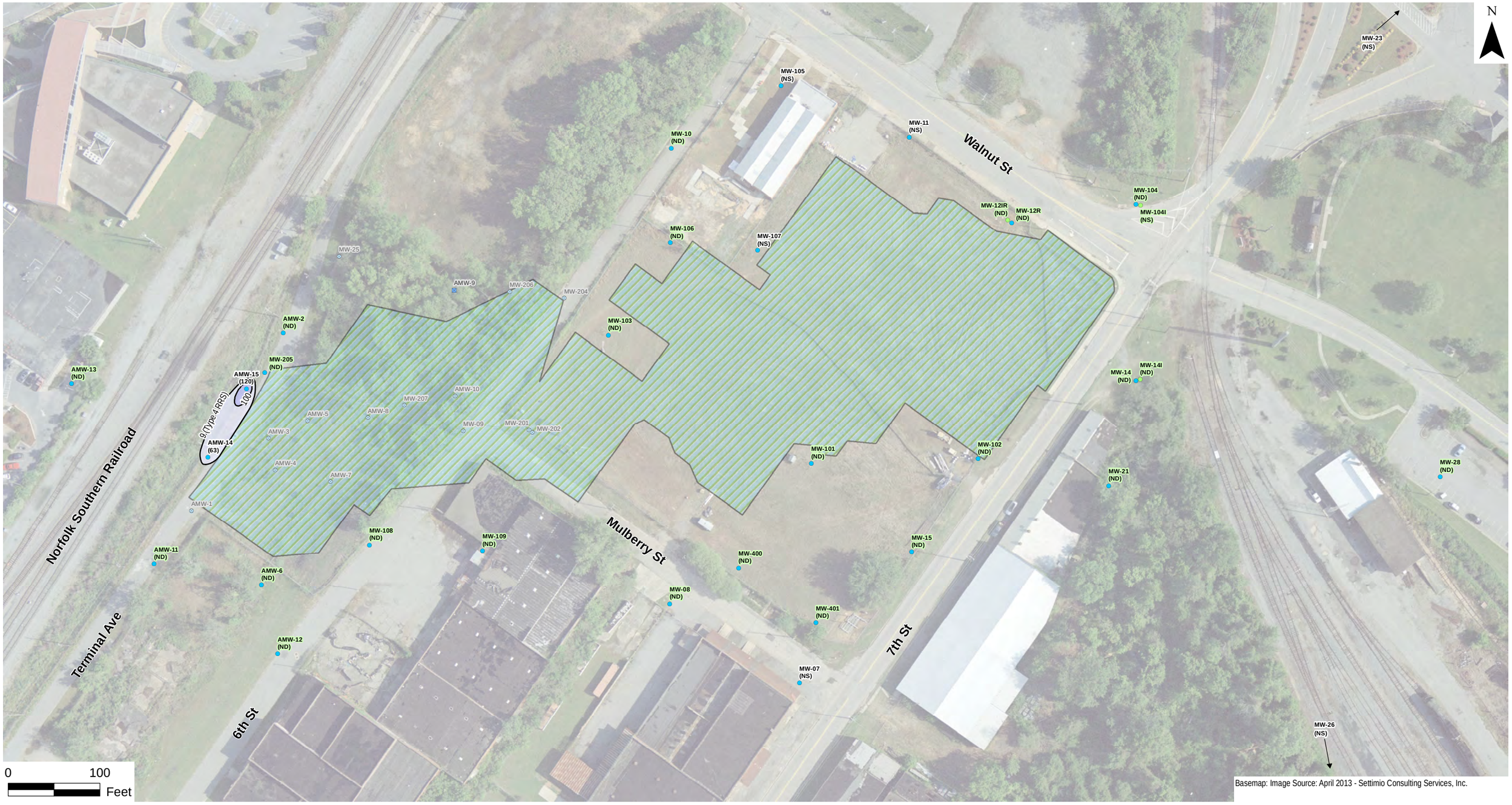
Greg Corbett, P.E.
Atlanta Gas Light Company
Managing Director, Environmental Services

Attachments

cc: Lea Millet, P.G. – Georgia Power Company
Christie Battenhouse, P.G. – Atlanta Gas Light Company
Scott Laseter – Kazmarek Mowrey Cloud Laseter LLP
Hollister Hill – Troutman Sanders
Adria Reimer – ERM

**Attachment A**

**Figures B3-3 and B3-4 from the 3rd Semiannual Progress Report**




Basemap: Image Source: April 2013 - Settimio Consulting Services, Inc.

ERM

# Environmental Resources Management

| | | | | | |
|---|---|---|---|---|---|
| DESIGN: | H Sartain | DRAWN: | S Vizuete | CHKD.: | N Vrey |
| DATE: | 11/18/2016 | SCALE: | AS SHOWN | REVISION: | 0 |
| FILE: | D:\AGL_Macon\MXD\2016 10 3rdVRPPrgRpt\ApxB_GWRptAug2016\Mcn_ApxB_3-3AlluvBenz082016.mxd | | | | |

- Shallow Well
- Abandoned Shallow Well
- Destroyed Shallow Well
- Intermediate Well

**Benzene Concentration Contour**

- >9 µg/L (Type 4 RRS), <100 µg/L
- >100 µg/L
- ISS Mass

(63) Benzene Concentration
(ND) Non Detect
(NS) Not Sampled

FIGURE B3-3 - BENZENE IN ALLUVIAL GROUNDWATER AUGUST 2016

Atlanta Gas Light Company

Former Manufactured Gas Plant

Macon, Bibb County, Georgia

Basemap: Image Source: April 2013 - Settimio Consulting Services, Inc.

ERM

# Environmental Resources Management

| | | | | | |
|---|---|---|---|---|---|
| DESIGN: | H Sartain | DRAWN: | S Vizuete | CHKD.: | N Vrey |
| DATE: | 11/18/2016 | SCALE: | AS SHOWN | REVISION: | 0 |
| FILE: | D:\AGL_Macon\MXD\2016 10 3rdVRPPrgRpt\ApxB_GWRptAug2016\Mcn_ApxB_3-4AlluvNaph082016.mxd | | | | |

- Shallow Well
- Abandoned Shallow Well
- Destroyed Shallow Well
- Intermediate Well

**Naphthalene Concentration Contour**

- >20 µg/L (Type 4 RRS), <100 µg/L
- ISS Mass

(40) Naphthalene Concentration
(ND) Non Detect
(NS) Not Sampled

FIGURE B3-4 - NAPHTHALENE IN ALLUVIAL GROUNDWATER AUGUST 2016

Atlanta Gas Light Company

Former Manufactured Gas Plant

Macon, Bibb County, Georgia

**Attachment B**

**Select Pages from Appendix B7 of the 3rd Semiannual Progress Report:**
**Summary of Alluvium Groundwater Analytical Data**

**Appendix B-7a**
**Summary of Alluvium Groundwater Analytical Data**
**November 2001 through August 2016**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-07 | | | | | MW-08 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/06/13 | 08/13 DUP | 02/08/13 | 08/11/09 | 03/05/04 | 08/25/16 | 04/05/16 | 04/27/15 | 08/05/13 | 02/04/13 | 02/08/12 | 02/17/11 | 02/23/10 | 08/11/09 | 12/12/02 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.12 | | 5.86 | 6.59 | 5.72 | 5.73 | 6.29 | 5.95 | 5.08 | 5.55 | 5.51 | 2.19 | 6.02 | 5.79 | 6.10 |
| Specific Conductance | mS/cm | N/A | N/A | 185 | | 191 | 230 | 171 | 240.2 | 300 | 271 | 419 | 273 | 262 | 198 | 339 | 481 | 289 |
| Temperature | °Celsius | N/A | N/A | 24.16 | | 15.37 | 25.85 | 18.88 | 25.60 | 20.84 | 19.59 | 25.97 | 20.01 | 21.22 | 17.64 | 17.89 | 23.98 | 23.37 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 4.35 | | 6.27 | 5.75 | 2.10 | 0.79 | 5.56 | 3.85 | 3.29 | 2.10 | 2.23 | 2.00 | 3.43 | 2.96 | 0.24 |
| ORP | mV | N/A | N/A | -25.1 | | 130.5 | -122.4 | 97.0 | 29.0 | 73.5 | 59.2 | 34.6 | 186.2 | 73.2 | 5.7 | 73.4 | -179.9 | -8.2 |
| Turbidity | NTU | N/A | N/A | 8.62 | | 2.97 | 1.82 | 12.9 | 0.76 | 7.76 | 1.01 | 0.21 | 6.62 | 5.2 | 78.3 | 4.31 | 1.50 | 1.64 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.894 |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | 1.3 | 0.45 | -- | -- | -- | -- | -- | 0.26 | 0.38 | 0.065 | 0.091 | < 0.050 | < 0.0500 |
| Sulfate | mg/L | N/A | N/A | -- | -- | 33 | 59 | -- | -- | -- | -- | -- | 60 | 55 | 35 | 64 | 92 | 27.5 |
| Sulfide | mg/L | N/A | N/A | -- | -- | < 1.0 | < 1.0 | -- | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.00 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.169 |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | 0.218 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.175 |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | < 0.10 HF | < 0.010 HF | -- | -- | -- | -- | -- | 1.3 HF | 0.40 HF | 0.19 HF | 0.29 | 2.8 | 4.86 |
| Total Iron | mg/L | N/A | N/A | -- | -- | 19 | 0.16 | 1.21 | -- | -- | -- | -- | 1.8 | 0.79 | 1.2 | 0.99 | 3.1 | 4.82 |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | 120 | 0.37 | -- | -- | -- | -- | -- | 110 | 1800 | 1.2 | 1.1 | 0.77 | 120 |
| Methane | mg/L | N/A | N/A | -- | -- | < 0.58 | <0.19 | -- | -- | -- | -- | -- | 9.3 | 1.7 | 3.3 | 12 | 3.7 | 100 |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | 4.4 | -- | -- | -- | -- | -- | 17 | 5300 | 3.9 | 4.2 | 4.7 | 16 |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | 6.5 | 1.6 | -- | -- | -- | -- | -- | 5.2 | 1700 | 1.4 | 1.5 | 1.7 | 7.5 |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9 | < 5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 5.0 | < 5.0 | < 2.0 | -- | -- | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | < 5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | < 5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | < 5.0 | < 5.0 | < 2.0 | < 5.0 | < 5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | < 10 | < 10 | 16 | -- | < 10 | <0.50 | < 0.50 | < 10 | < 10 | 1.3 | -- | -- | -- | -- | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | < 10 | < 10 | 13 | -- | < 10 | <1.0 | < 1.0 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | < 10 |
| Anthracene | µg/L | 4,700 | 31, 000 | < 10 | < 10 | < 0.20 | -- | < 10 | <0.050 | < 0.050 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | < 0.20 | < 0.20 | < 0.20 | -- | -- | <0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.19 | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | < 0.20 | < 0.20 | < 0.20 | -- | -- | <0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.19 | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | < 0.20 | < 0.20 | < 0.20 | -- | -- | <0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.19 | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 10 | < 10 | < 0.20 | -- | -- | <0.10 | < 0.10 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 10 | < 10 | < 0.20 | -- | -- | <0.050 | < 0.050 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | < 10 | < 10 | < 0.20 | -- | -- | <0.050 | < 0.050 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | < 0.20 | < 0.20 | < 0.20 | -- | -- | <0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.19 | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | < 10 | < 10 | < 2.0 | -- | < 10 | <10 | < 10 | < 10 | < 10 | < 1.9 | -- | -- | -- | -- | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 10 | < 10 | 1.6 | -- | < 10 | <0.10 | < 0.10 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | < 10 | < 10 | 6.0 | -- | < 10 | <0.10 | < 0.10 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | < 0.20 | < 0.20 | < 0.20 | -- | -- | <0.050 | 0.10 | < 0.050 | < 0.20 | < 0.19 | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 10 | < 10 | < 2.0 | -- | < 10 | <10 | < 10 | < 10 | < 10 | < 1.9 | -- | -- | -- | -- | < 10 |
| 4-Methylphenol | µg/L | 78 | 510 | < 10 | < 10 | < 2.0 | -- | < 10 | <10 | < 10 | < 10 | < 10 | < 1.9 | -- | -- | -- | -- | < 10 |
| Naphthalene | µg/L | 20* | 20* | < 10 | < 10 | 7.8 | < 9.8 | < 10 | <0.50 | < 0.50 | < 10 | < 10 | < 0.19 | < 5.0 | < 9.4 | < 9.4 | < 11 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | < 10 | < 10 | 0.48 | -- | < 10 | <0.050 | < 0.050 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | < 10 | < 10 | < 0.99 | -- | < 10 | <10 | < 10 | < 10 | < 10 | < 0.97 | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | < 10 | < 10 | 4.7 | -- | < 10 | 0.16 | < 0.050 | < 10 | < 10 | 0.29 | -- | -- | -- | -- | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20.0 | < 20.0 | < 20 | -- | < 40 | < 20.0 | < 20.0 | < 20.0 | < 20.0 | < 20 | -- | -- | -- | -- | < 40 |
| Arsenic | µg/L | 50* | 50* | < 50.0 | < 50.0 | < 20 | -- | < 50 | < 50.0 | < 50.0 | < 50.0 | < 50.0 | < 20 | -- | -- | -- | -- | < 50 |
| Barium | µg/L | 2,000 | 7,200 | 31.2 | 31.4 | 100 | 59 | 39.6 | 59.5 | 48.6 | 72.5 | 61.6 | 66 | 69 | 58 | 64 | 0.11 | 56 |
| Beryllium | µg/L | 31 | 200 | < 10.0 | < 10.0 | < 4.0 | -- | -- | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 4.0 | -- | -- | -- | -- | -- |
| Cadmium | mg/L | 7.8 | 51 | < 5.0 | < 5.0 | < 5.0 | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10.0 | < 10.0 | < 20 | < 20 | < 10 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 20 | < 20 | < 20 | < 20 | < 20 | < 10 |
| Lead | µg/L | 15* | 15* | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 20.0 | < 20.0 | < 40 | < 40 | < 20 | < 20.0 | < 20.0 | < 20.0 | < 20.0 | < 40 | < 40 | < 40 | < 40 | < 40 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | < 20.0 | < 20.0 | < 20 | -- | < 20 | < 20.0 | < 20.0 | < 20.0 | < 20.0 | < 20 | -- | -- | -- | -- | < 20 |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | -- | < 0.5 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
mS/cm - millisiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix B-7a**
**Summary of Alluvium Groundwater Analytical Data**
**November 2001 through August 2016**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-14 | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/25/16 | 02/05/13 | 02/15/12 | 02/22/11 | 02/23/10 | 08/11/09 | 06/06/06 | 03/09/06 | 12/21/05 | 09/30/05 | 3/1505 | 12/14/04 | 10/01/04 | 06/08/04 | 03/03/04 | 12/16/03 | 09/08/03 | 06/11/03 | 03/11/03 | 12/10/02 | 09/17/02 | 11/08/01 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.13 | 6.08 | 6.18 | 6.27 | 6.14 | 6.3 | 6.20 | 6.32 | 6.38 | 6.25 | 6.33 | 7.28 | 6.20 | 6.33 | 6.32 | 6.46 | 6.34 | 6.4 | 6.43 | 6.28 | 6.14 | 6.32 |
| Specific Conductance | mS/cm | N/A | N/A | 236.8 | 212 | 184 | 177 | 179 | 241 | 229 | 210 | 198 | 288 | 200 | 258 | 252 | 296 | 172 | 236 | 289 | 269 | 243 | 376 | 380 | 502 |
| Temperature | °Celsius | N/A | N/A | 24.99 | 17.04 | 19.74 | 17.87 | 15.20 | 30.97 | 22.75 | 18.28 | 18.88 | 26.47 | 17.93 | 19.33 | 26.73 | 23.39 | 15.66 | 19.42 | 26.43 | 22.86 | 17.15 | 20.85 | 26.37 | 24.36 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.74 | 3.22 | 2.77 | 3.62 | 3.82 | 4.81 | 0.33 | 0.99 | 3.74 | 0.68 | 3.71 | 0.57 | 1.32 | 1.34 | 4.42 | 4.35 | 1.03 | 1.8 | 2.66 | 1.39 | 0.55 | 0.24 |
| ORP | mV | N/A | N/A | 64.8 | 230.1 | -36.6 | 6.3 | 108 | 53.9 | 82.1 | 79.1 | 144.3 | 25.9 | 141.0 | 120.5 | 108.9 | 91.2 | 108.2 | 117.6 | 3.4 | 37.2 | 201.0 | 79.9 | 168.9 | -23.5 |
| Turbidity | NTU | N/A | N/A | 4.01 | 1.86 | 23.70 | 41.7 | 9.27 | 9.09 | 4.89 | 9.68 | 10.56 | 4.96 | 9.53 | 3.15 | 7.5 | 5.40 | 21.6 | -- | 4.02 | 15.4 | 17.9 | 11.4 | 12.8 | 8.89 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 | 0.22 | < 0.20 | 0.38 | < 0.20 | < 0.20 | 0.33 | < 0.200 | < 0.200 | 1.92 | 1.09 | 3.59 |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | 0.81 | 0.18 | 0.23 | 1.0 | 0.086 | -- | -- | -- | -- | 0.266 | < 0.0500 | 0.121 | < 0.0500 | 1.17 | 1.42 | 0.596 | 0.779 | 1.63 | 0.469 | 1.35 | < 0.500 |
| Sulfate | mg/L | N/A | N/A | -- | 21 | 71 | 20 | 19 | 22 | -- | -- | -- | -- | 20.8 | 18.0 | 22.3 | 16.5 | 22.0 | 22.4 | 24.7 | 17.9 | 25.1 | 36.2 | 64.5 | 25.8 |
| Sulfide | mg/L | N/A | N/A | -- | < 1.0 | 1.4 | < 1.0 | < 1.0 | < 1.0 | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.00 | < 1.00 | < 1.00 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.0534 | 0.0996 | 0.126 | 0.355 | 0.0168 | 0.367 | 0.140 | 0.128 | < 0.0050 | 0.922 | 0.368 | 3.02 |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.0787 | 0.107 | 0.136 | 0.417 | 0.0308 | 0.551 | 0.174 | 0.231 | 0.643 | 1.13 | 0.347 | 3.08 |
| Ferrous Iron | mg/L | N/A | N/A | -- | < 0.10 HF | 3.5 HF | < 0.010 HF | < 0.010 | < 0.010 | -- | -- | -- | -- | < 0.1 | 0.1 | 0.1 | 0.2 | < 0.1 | < 0.1 | 0.1 | 0.1 | < 0.100 | 1.60 | 0.206 | 3.47 |
| Total Iron | mg/L | N/A | N/A | -- | < 0.10 | 4.2 | 1.0 | 0.59 | 0.57 | -- | -- | -- | -- | 0.380 | 0.307 | 0.320 | 0.351 | 0.74 | 0.795 | 0.333 | 1.68 | 3.87 | 6.75 | 1.39 | 3.06 |
| Carbon Dioxide | mg/L | N/A | N/A | -- | 54 | 1.7 | 0.47 | 0.50 | 0.46 | -- | -- | -- | -- | 53 | 85 | 75 | 78 | 46 | 50 | 64 | 82 | 60 | 84 | 66 | 120 |
| Methane | mg/L | N/A | N/A | -- | 1.8 | 9.7 | 7.9 | <0.19 | 1.5 | -- | -- | -- | -- | 22 | 230 | 48 | 5.4 | 0.95 | 3.9 | 2.4 | 10 | 3.5 | 40 | 11 | 87 |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | 20 | 5.4 | 4.6 | 4.1 | 4.5 | -- | -- | -- | -- | 23 | 20 | 16 | 18 | 20 | 18 | 14 | 14 | 17 | 17 | 14 | 13 |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | 8.6 | 1.7 | 1.6 | 1.5 | 1.6 | -- | -- | -- | -- | 4.7 | 3.5 | 3.0 | 2.8 | 4.9 | 5.9 | 2.2 | 1.5 | 3.7 | 8.4 | 5.6 | 2.0 |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9.0 | <5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Naphthalene | µg/L | 31,000 | 200,000 | <5.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | 4.1 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | 4.0 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31, 000 | 0.12 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | 0.14 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | <10 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | 0.38 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | 1.9 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 4-Methylphenol | µg/L | 78 | 510 | <10 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | < 0.22 | < 5.0 | < 5.0 | < 10 | <9.4 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | 0.051 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | < 1.1 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | 0.84 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | 112 | 90 | 120 | 89 | 83 | 140 | 112 | 98.1 | 356 | 156 | 97.8 | 119 | 114 | 142 | 83.2 | 106 | 121 | 120 | 117 | 171 | 180 | 325 |
| Beryllium | µg/L | 31 | 200 | <10 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | <5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 17.6 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 10 | < 10 | 44.7 | < 10 | 1,640 | 617 | 10.2 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 88.8 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 20 | < 20 | < 20.0 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | 297 | 126 | < 20 | 22.6 | < 20 | < 20 | < 20 | 24.3 | 47 | 36 | < 20 | 37 |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 12 | < 10 | < 10 | 43 | 52 | 120 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 2 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
mS/cm - millisiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix B-7a**
**Summary of Alluvium Groundwater Analytical Data**
**November 2001 through August 2016**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-14I | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/25/16 | 04/05/16 | 02/04/13 | 02/15/12 | 02/22/11 | 02/23/10 | 08/11/09 | 06/06/06 | 03/09/06 | 12/21/05 | 09/28/05 | 03/15/05 | 12/15/04 | 09/30/04 | 07/15/04 | 06/09/04 | 03/03/04 | 12/16/03 | 09/08/03 | 06/11/03 | 03/11/03 | 03/03 DUP | 12/10/02 | 09/17/02 | 11/08/01 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.24 | 6.52 | 6.69 | 5.83 | 5.87 | 6.18 | 5.95 | 6.24 | 6.17 | 6.11 | 6.31 | 6.15 | 7.39 | 6.15 | -- | 6.10 | 6.11 | 6.2 | 5.15 | 6.38 | 6.27 | 6.27 | 6.08 | 6.13 | 6.17 |
| Specific Conductance | mS/cm | N/A | N/A | 514.8 | 0.4 | 269 | 250 | 278 | 315 | 423 | 448 | 416 | 401 | 432 | 399 | 417 | 467 | -- | 463 | 393 | 436 | 421 | 421 | 453 | 453 | 429 | 464 | 461 |
| Temperature | °Celsius | N/A | N/A | 24.83 | 19.77 | 19.53 | 19.58 | 20.67 | 18.22 | 26.35 | 23.02 | 20.43 | 22.05 | 23.40 | 20.69 | 22.48 | 24.15 | -- | 20.95 | 19.96 | 21.57 | 23.43 | 20.86 | 20.58 | 20.58 | 22.27 | 23.47 | 22.61 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.19 | 0.21 | 0.32 | 0.85 | 0.39 | 1.46 | 5.67 | 0.20 | 0.40 | 0.42 | 0.55 | 1.71 | 0.19 | 0.28 | -- | 0.21 | 0.57 | 0.22 | 0.34 | 0.03 | 0.09 | 0.09 | 0.06 | 0.16 | 0.19 |
| ORP | mV | N/A | N/A | -27.7 | 4.9 | -56.4 | 41.2 | -9.5 | 27 | -9.9 | -37.3 | -8.2 | -13.6 | -5.9 | -13.4 | -148.1 | -59.1 | -- | -86.6 | 58.0 | -109.2 | -79.3 | -151.8 | *** | *** | -43.2 | -49.9 | -79.4 |
| Turbidity | NTU | N/A | N/A | 2.89 | 24.9 | 3.62 | 8.23 | 8.27 | 1.52 | 1.41 | 0.33 | 1.46 | 2.54 | 0.50 | 1.52 | 2.82 | 0.65 | -- | 0.40 | 2.83 | -- | 1.49 | 9.72 | 4.92 | 4.92 | 2.30 | 1.31 | 9.50 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 11.7 | 12.0 | 11.5 | -- | 10.6 | 12.8 | 11.6 | 11.4 | 11.1 | 12 | 12.2 | 10.5 | 12.2 | 11.2 |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | < 0.050 | 0.18 | < 0.050 | 0.097 | < 0.050 | -- | -- | -- | -- | < 0.500 | < 0.0500 | < 0.0500 | -- | < 0.5 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.0500 | 0.297 |
| Sulfate | mg/L | N/A | N/A | -- | -- | 44 | 18 | 54 | 32 | 41 | -- | -- | -- | -- | 47.3 | 39.5 | 39.6 | -- | 73.7 | 49.0 | 47.7 | 32.0 | 17.2 | 36.9 | 39.6 | 43.2 | 40.5 | 31.5 |
| Sulfide | mg/L | N/A | N/A | -- | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.00 | < 1.00 | < 1.00 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.62 | 1.53 | 1.78 | -- | 1.5 | 1.57 | 1.77 | 1.92 | 1.81 | 1.76 | 1.7 | 1.63 | 1.66 | 1.35 |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.55 | 1.56 | 1.78 | -- | 1.51 | 1.52 | 1.64 | 1.95 | 1.80 | 1.77 | 1.87 | 1.55 | 1.64 | 1.88 |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | 6.4 HF | < 0.10 HF | 3.4 HF | 7.5 | 6.8 | -- | -- | -- | -- | 17.7 | 12.2 | 13.5 | -- | 16.7 | 6.2 | 6.5 | 12.6 | 13.0 | 12.2 | 13.4 | 14.5 | 14.1 | 11.1 |
| Total Iron | mg/L | N/A | N/A | -- | -- | 7.8 | 0.20 | 3.9 | 8.6 | 16 | -- | -- | -- | -- | 8.89 | 11.4 | 12.5 | -- | 11.6 | 7.15 | 10.4 | 12.7 | 14.9 | 11.7 | 12.3 | 9.94 | 11.4 | 12.9 |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | 87 | 830 | 1.0 | 1.5 | 1.3 | -- | -- | -- | -- | 160 | 170 | 160 | -- | 180 | 160 | 140 | 96 | 160 | 170 | 200 | 170 | 180 | 150 |
| Methane | mg/L | N/A | N/A | -- | -- | 74 | 2.4 | 14 | 82 | 69 | -- | -- | -- | -- | 320 | 430 | 420 | -- | 400 | 44 | 340 | 550 | 610 | 470 | 700 | 520 | 650 | 280 |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | 18 | 5100 | 4.2 | 3.1 | 4.1 | -- | -- | -- | -- | 26 | 15 | 16 | -- | 15 | 17 | 20 | 14 | 14 | 18 | 16 | 16 | 17 | 13 |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | 5.0 | 1800 | 1.4 | 1.0 | 1.4 | -- | -- | -- | -- | 4.2 | 1.1 | 1.2 | -- | 0.44 | 0.89 | 3.6 | 0.53 | 0.66 | 2.9 | 0.55 | 6.6 | 6.4 | 0.79 |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9.0 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | 8.2 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | < 5.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | 16 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | 10 | 7.7 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Naphthalene | µg/L | 31,000 | 200,000 | <5.0 | < 5.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | 5.3 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | 4.1 | 4.4 | 3.4 | -- | -- | -- | -- | -- | -- | -- | -- | 38 | 48 | 43 | < 5.0 | 24 | 20 | 29 | 38 | 57 | 33 J | 37 J | 35 | 36 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | 4.0 | 3.3 | 1.2 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 41 |
| Anthracene | µg/L | 4,700 | 31, 000 | 0.12 | 0.056 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | < 0.050 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.392 | 0.14 | < 0.050 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | < 0.10 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | < 0.10 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 12 | 39 | <0.050 | < 0.050 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | < 0.050 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.392 | <0.10 | < 0.10 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | <10 | < 10 | < 1.9 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | 0.38 | 0.11 | 0.48 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | 1.60 | 0.89 | -- | -- | -- | -- | -- | -- | -- | -- | 11 | 14 | 11 | < 10 | < 10 | < 10 | < 10 | < 10 | 12 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | 1.9 | < 0.050 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | < 10 | < 1.9 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 4-Methylphenol | µg/L | 78 | 510 | <10 | < 10 | < 1.9 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | < 0.50 | < 0.19 | < 5.0 | < 5.0 | < 10 | <9.9 | < 10 | 80 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 23 | 19 | 21 | 58 | 48 | 24 |
| Phenanthrene | µg/L | 470 | 3,100 | 0.051 | < 0.050 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | < 10 | 1.2 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | 0.84 | 0.27 | 0.93 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20.0 | < 20.0 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | < 50.0 | < 50.0 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | 112 | 129 | 71 | 180 | 180 | 300 | 220 | 276 | 281 | 287 | 301 | 296 | 292 | 339 | 292 | 292 | 277 | 292 | 369 | 343 | 379 | 404 | 314 | 314 | 394 |
| Beryllium | µg/L | 31 | 200 | < 10.0 | < 10.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10.0 | < 10.0 | < 20 | < 20 | < 20 | < 20 | < 20 | < 10 | < 10 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 20.0 | < 20.0 | < 40 | < 40 | < 40 | < 40 | < 40 | < 20 | < 20 | < 20.0 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | <20 | 20.9 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 14 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 2 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
mS/cm - millisiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix B-7a**
**Summary of Alluvium Groundwater Analytical Data**
**November 2001 through August 2016**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/25/16 | 04/06/16 | 4/16 DUP | 08/12/15 | 02/17/15 | 02/06/13 | 02/13 DUP | 02/14/12 | 02/12 DUP | 02/23/11 | 02/25/10 | 08/12/09 | 06/06/06 | 03/08/06 | 12/21/05 | 09/28/05 | 03/16/05 | 12/14/04 | 09/30/04 | 06/08/04 | 03/03/04 | 12/16/03 | 09/09/03 | 06/10/03 | 03/12/03 | 12/10/02 | 09/19/02 | 11/06/01 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.68 | 5.45 | | 5.71 | 5.09 | 4.64 | | 4.92 | | 5.37 | 5.56 | 5.40 | 5.74 | 6.06 | 5.74 | 5.69 | 6.20 | 5.84 | 6.16 | 5.95 | 5.98 | 5.69 | 5.77 | 6.05 | 6.11 | 5.80 | 5.99 | 5.98 |
| Specific Conductance | mS/cm | N/A | N/A | 811.3 | 400 | | 880 | 851 | 1044 | | 938 | | 485 | 774 | 987 | 915 | 781 | 795 | 1165 | 568 | 828 | 650 | 1,022 | 1,000 | 1532 | 952 | 717 | 891 | 754 | 934 | 976 |
| Temperature | °Celsius | N/A | N/A | 26.16 | 20.45 | | 24.28 | 14.83 | 16.01 | | 15.57 | | 14.96 | 11.36 | 23.86 | 21.23 | 17.58 | 19.02 | 25.54 | 16.39 | 20.03 | 25.08 | 21.11 | 16.63 | 20.66 | 24.33 | 21.06 | 16.85 | 20.10 | 24.28 | 22.16 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.24 | 0.33 | | 0.18 | 0.66 | 0.47 | | 0.39 | | 1.13 | 0.59 | 3.07 | 0.24 | 0.52 | 0.79 | 0.28 | 1.20 | 2.97 | 0.76 | 1.04 | 0.69 | 0.18 | 0.24 | 0.34 | 0.58 | 1.79 | 0.10 | 1.5 |
| ORP | mV | N/A | N/A | 24.1 | 116.5 | | -18.3 | 99.7 | 301.1 | | 73.2 | | 210.3 | 154.4 | -187 | 192.3 | 157.2 | 220.8 | -18.1 | 219.9 | 233.5 | 47.9 | 122.3 | 106.1 | 69.1 | 31.2 | 118.1 | 250.3 | 87.4 | 6.00 | 30.0 |
| Turbidity | NTU | N/A | N/A | 3.40 | 11.10 | | 3.28 | 8.81 | 1.34 | | 3.95 | | 4.67 | 9.82 | 0.46 | 0.23 | 1.66 | 4.98 | 1.36 | 4.90 | 2.6 | 1.11 | 1.06 | 1.49 | -- | 4.45 | 6.53 | 17.7 | 1.82 | 1.50 | 9.02 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 | 15.7 | 1.54 | 25.6 | 5.97 | 27.8 | 25.8 | 8.15 | 2.62 | 28.4 | 37.9 | 36.0 |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | 31 | 30 | 21 | 22 | 4.8 | 6.9 | 6.4 | -- | -- | -- | -- | 13.6 | 10.3 | 6.93 | 33.6 | 35.2 | 45.2 | 58.8 | 38.9 | 45.9 | 17.7 | 0.0654 | 0.515 |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | 370 | 370 | 310 | 310 | 310 | 330 | 350 | -- | -- | -- | -- | 124 | 4.83 | 95.8 | 248 | 240 | 153 | 116 | 71.9 | 100 | 201 | 263 | 281 |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | 1.00 | < 1.00 | < 1.00 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.58 | 2.86 | 0.592 | 3.95 | 2.54 | 3.54 | 4.23 | 2.93 | 1.53 | 5.52 | 6.86 | 7.35 |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.40 | 2.89 | 0.692 | 3.99 | 2.66 | 3.54 | 4.32 | 3.01 | 1.55 | 5.42 | 6.05 | 7.30 |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | 0.13 HF | 0.28 HF | < 0.10 HF | 0.11 HF | < 0.010 HF | < 0.010 | < 0.010 | -- | -- | -- | -- | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.100 | 12.7 | 22.0 | 21.7 |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | 0.18 | 0.18 | 0.16 | 0.18 | 0.12 | 0.50 | < 0.010 | -- | -- | -- | -- | 0.213 | 0.230 | 0.159 | 0.166 | 0.293 | 0.104 | 0.338 | 0.781 | 1.89 | 9.12 | 21.4 | 19.9 |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | 110 | 99 | 2.7 | 2.8 | 1.7 | 1.4 | 1.2 | -- | -- | -- | -- | 140 | 140 | 120 | 180 | 160 | 170 | 170 | 210 | 120 | 190 | 250 | 200 |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | -- | 2.4 | 2.2 | 1.8 | 2.1 | <0.58 | 0.58 | <0.19 | -- | -- | -- | -- | 0.77 | 1.1 | 3.2 | 1.4 | 0.62 | 1.5 | 2.2 | 2.4 | 1.4 | 35 | 93 | 330 |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | 5.1 | 5.3 | 3.8 | 4.1 | 4.3 | -- | -- | -- | -- | 26 | 21 | 17 | 17 | 18 | 15 | 14 | 14 | 16 | 16 | 16 | 12 |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | 6.6 | 7.2 | 1.6 | 1.7 | 1.3 | 1.3 | 1.6 | -- | -- | -- | -- | 6.8 | 2.6 | 4.4 | 0.97 | 1.6 | 1.1 | 1.8 | 1.3 | 3.6 | 7.5 | 5.5 | 1.8 |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1700.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | < 0.50 | < 0.50 | < 0.50 | < 10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | < 1.0 | < 1.0 | < 1.0 | < 10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31, 000 | 0.14 | < 0.050 | < 0.050 | 0.11 | < 10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | 0.13 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | 0.14 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | 0.12 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | 0.16 | < 0.10 | < 0.10 | < 0.10 | < 10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | 0.14 | < 0.050 | < 0.050 | < 0.050 | < 10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | 0.15 | < 0.050 | < 0.050 | < 0.050 | < 10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | 0.13 | < 10 | < 10 | < 10 | < 10 | < 2.1 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | 0.15 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | < 10 | < 10 | < 10 | < 10 | < 2.1 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 4-Methylphenol | µg/L | 78 | 510 | <10 | < 10 | < 10 | < 10 | < 10 | < 2.1 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | < 0.50 | < 0.50 | < 0.50 | < 10 | < 0.21 | < 0.21 | < 5.0 | < 5.0 | < 5.0 | <9.8 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | < 10 | < 10 | < 10 | < 10 | < 1.1 | < 1.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | 0.055 | < 0.050 | < 0.050 | < 0.050 | < 10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20.0 | < 20.0 | < 20.0 | < 20.0 | < 20.0 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | < 50.0 | < 50.0 | < 50.0 | < 50.0 | < 50.0 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | 31.7 | 31.5 | 32.6 | 33.6 | 50 | 16 | 16 | 19 | 18 | 41 | 49 | 35 | 21.8 | 33.7 | 28.5 | 38.7 | 84.7 | 38.3 | 87.3 | 35.4 | 80.8 | 48.7 | 74.6 | 105 | 119 | 34 | 34 | 35 |
| Beryllium | µg/L | 31 | 200 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 20.0 | < 20.0 | < 20.0 | < 20.0 | < 20.0 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 20.0 | < 20.0 | < 20.0 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | 23.9 | 50.0 | 50.6 | < 20.0 | 297 | 320 | 330 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | 14.1 | 14 | 12 | 11.3 | 108 | 120 | 120 | 130 | 130 | 65 | 110 | 150 | 167 | 315 | 121 | 282 | 199 | 355 | 216 | 236 | 403 | 173 | 189 | 51 | 248 | 181 | 276 | 227 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
mS/cm - millisiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix B-7a**
**Summary of Alluvium Groundwater Analytical Data**
**November 2001 through August 2016**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-21 | | | | MW-23 | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/25/16 | 04/06/16 | 04/30/15 | 07/12/06 | 02/13/12 | 02/24/11 | 03/05/04 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | |
| pH | SU | N/A | N/A | | 5.92 | 5.99 | -- | 6.07 | 6.16 | 6.20 |
| Specific Conductance | mS/cm | N/A | N/A | | 95 | 58 | -- | 287 | 272 | 347 |
| Temperature | °Celsius | N/A | N/A | | 17.35 | 16.44 | -- | 19.25 | 16.63 | 20.76 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | | 0.19 | 0.98 | -- | 6.32 | 1.42 | 1.86 |
| ORP | mV | N/A | N/A | | 5.7 | -44.1 | -- | 0.5 | 9.1 | 42.5 |
| Turbidity | NTU | N/A | N/A | | 6.8 | 14.1 | -- | 3.89 | 0.56 | 10.65 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | -- | -- | 0.85 | 0.75 | -- |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | 36 | 35 | -- |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | < 1.0 | < 1.0 | -- |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | < 0.005 |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | < 0.10 HF | < 0.010 HF | -- |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | < 0.10 | < 0.010 | 0.171 |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | 1.6 | 1.0 | -- |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | < 0.58 | <0.58 | -- |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | 5.0 | 4.4 | -- |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | 1.6 | 1.5 | -- |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Naphthalene | µg/L | 31,000 | 200,000 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | < 0.50 | < 10 | < 10 | -- | -- | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | < 1.0 | < 10 | < 10 | -- | -- | < 10 |
| Anthracene | µg/L | 4,700 | 31, 000 | <0.050 | < 0.050 | < 10 | < 10 | -- | -- | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | < 0.050 | < 0.050 | < 0.050 | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | < 0.050 | < 0.050 | < 0.050 | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | < 0.10 | < 0.10 | < 0.10 | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | < 0.10 | < 10 | < 10 | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | < 0.050 | < 10 | < 10 | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | < 0.050 | < 10 | < 0.050 | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | < 0.10 | < 0.10 | < 0.10 | -- | -- | -- |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | < 10 | < 10 | -- | -- | -- | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | < 0.10 | < 10 | < 10 | -- | -- | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | < 0.10 | < 10 | < 10 | -- | -- | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | < 0.050 | < 0.050 | < 0.050 | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | < 10 | < 10 | -- | -- | -- | < 10 |
| 4-Methylphenol | µg/L | 78 | 510 | <10 | < 10 | < 10 | -- | -- | -- | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | < 0.50 | < 10 | < 10 | < 5.0 | < 5.0 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | < 0.050 | < 10 | < 10 | -- | -- | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | < 10 | < 10 | -- | -- | -- | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | <0.050 | < 0.050 | < 10 | < 10 | -- | -- | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | <0.0200 | < 20.0 | < 20.0 | < 20.0 | -- | -- | < 40 |
| Arsenic | µg/L | 50* | 50* | <0.0500 | < 50.0 | < 50.0 | < 50.0 | -- | -- | < 50 |
| Barium | µg/L | 2,000 | 7,200 | **0.158** | 96.8 | 75.6 | 73 | 74 | 67 | 71.8 |
| Beryllium | µg/L | 31 | 200 | <0.0100 | < 10.0 | < 10.0 | < 10.0 | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | 0.0055 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | <0.0100 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | 0.0143 | < 10.0 | < 10.0 | < 10.0 | < 20 | < 20 | < 10 |
| Lead | µg/L | 15* | 15* | <0.0100 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | <0.0200 | < 20.0 | < 20.0 | < 20.0 | < 40 | < 40 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | 0.134 | 165 | < 20.0 | < 20.0 | -- | -- | < 20 |
| Mercury | µg/L | 2* | 2* | <0.00020 | < 0.20 | < 0.20 | < 0.20 | -- | -- | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | <0.010 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 2 RRS**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
mS/cm - millisiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix B-7a**
**Summary of Alluvium Groundwater Analytical Data**
**November 2001 through August 2016**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-102 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/25/16 | 04/06/16 | 08/11/15 | 02/18/15 | 08/06/13 | 02/05/13 | 11/06/12 | 08/07/12 | 05/15/12 | 02/13/12 | 11/15/11 | 08/10/11 | 05/04/11 | 02/24/11 | 11/10/10 | 08/10/10 | 05/11/10 | 02/25/10 | 08/12/09 | 06/06/06 | 03/08/06 | 12/20/05 | 09/28/05 | 03/16/05 | 12/14/04 | 09/30/04 | 06/08/04 | 03/03/04 | 12/16/03 | 09/10/03 | 06/10/03 | 03/12/03 | 12/11/02*** | 09/19/02 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.72 | 5.95 | 5.89 | 6.49 | 5.93 | 6.54 | 6.53 | 5.5 | 5.95 | 6.54 | 5.77 | 6.08 | 6.07 | 6.41 | 6.06 | 6.25 | 6.61 | 6.66 | 5.93 | 5.93 | 6.20 | 6.64 | 6.17 | 6.34 | 6.24 | 6.79 | 6.33 | 6.34 | 6.3 | 6.4 | 6.69 | 6.98 | NM | 6.34 |
| Specific Conductance | mS/cm | N/A | N/A | 876.0 | 300 | 888 | 451 | 706 | 824 | 575 | 645 | 739 | 711 | 594 | 472 | 414 | 322 | 253 | 300 | 320 | 246 | 749 | 302 | 341 | 312 | 277 | 308 | 358 | 361 | 463 | 450 | 705 | 561 | 525 | 616 | NM | 799 |
| Temperature | °Celsius | N/A | N/A | 25.40 | 16.08 | 27.50 | 13.84 | 24.87 | 20.69 | 20.89 | 26.12 | 23.47 | 16.77 | 23.72 | 27.53 | 20.58 | 16.6 | 22.19 | 25.33 | 19.87 | 12.47 | 30.10 | 22.76 | 17.74 | 19.58 | 26.38 | 15.74 | 20.28 | 26.12 | 22.74 | 16.35 | 20.69 | 25.3 | 22.39 | 17.59 | NM | 25.75 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.42 | 0.26 | 0.98 | 5.83 | 1.71 | 0.51 | 1.75 | 0.81 | 2.20 | 1.56 | 0.97 | 0.92 | 0.90 | 2.03 | 0.50 | 3.0 | 0.8 | 5.85 | 2.69 | 0.29 | 0.59 | 0.44 | 0.20 | 0.63 | 3.14 | 1.28 | $8.10^{4}$ | 0.55 | 0.23 | 0.40 | 0.06 | 0.12 | NM | 0.50 |
| ORP | mV | N/A | N/A | 94.1 | 59.0 | -15.6 | 81.0 | -114.2 | 151.3 | 76.5 | 160.4 | 88.4 | 58.1 | 191.3 | 79.1 | 123.5 | 142.8 | 69.7 | 55.8 | 22.4 | 88 | -160.1 | 45.1 | 135.2 | -30.9 | -77.8 | -59.1 | 16.9 | -100.2 | 52.2 | 56.4 | -62.9 | -75.5 | -206.5 | -124.5 | NM | 2.4 |
| Turbidity | NTU | N/A | N/A | 1.60 | 9.22 | 9.62 | 9.52 | 2.24 | 0.42 | 6.17 | 16.4 | 4.62 | 2.04 | 41.1 | 11.6 | 4.76 | 5.05 | 0.12 | 2.42 | 7.12 | 5.21 | 3.45 | 0.21 | 0.02 | 1.58 | 2.71 | 2.50 | 2.2 | 0.2 | 109.2 | 1.96 | -- | 1.87 | 5.15 | 4.65 | NM | 18.0 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.59 | 0.32 | 1.07 | 1.84 | 1.95 | 1.72 | 4.71 | 3.80 | 5.21 | 8.85 | 14.5 |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | 0.13 | -- | -- | -- | 0.26 | -- | -- | -- | 0.064 | -- | -- | -- | 7.4 | 0.81 | -- | -- | -- | -- | 0.134 | 0.459 | 0.517 | 0.43 | 5.51 | 0.412 | < 0.0500 | < 0.500 | < 0.0500 | 2.47 | 0.114 |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | 350 | -- | -- | -- | 220 | -- | -- | -- | 66 | -- | -- | -- | 29 | 220 | -- | -- | -- | -- | 51.5 | 4.83 | 30.4 | 81.7 | 78.3 | 50.0 | 104 | 71.9 | 94.1 | 183 | 105 |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | < 1.0 | -- | -- | -- | < 1.0 | -- | -- | -- | < 1.0 | -- | -- | -- | < 1.0 | < 1.0 | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.00 | < 1.00 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2.66 | 1.75 | 0.778 | 0.827 | 1.84 | 0.255 | 1.72 | 1.43 | 1.74 | 1.22 | 1.14 |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2.59 | 1.82 | 0.826 | 0.651 | 2.03 | 0.223 | 1.74 | 1.41 | 1.92 | 1.24 | 0.968 |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | < 0.10 HF | -- | -- | -- | < 0.10 HF | -- | -- | -- | < 0.010 HF | -- | -- | -- | 0.12 | < 0.010 | -- | -- | -- | -- | 3.0 | 0.6 | 1.1 | 0.2 | 2.6 | 0.4 | 15.2 | 9.4 | 9.02 | 0.133 | 3.72 |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | 0.11 | -- | -- | -- | < 0.10 | -- | -- | -- | 0.13 | -- | -- | -- | 0.6 | 0.57 | -- | -- | -- | -- | 2.60 | 0.915 | 1.24 | 10.2 | 3.79 | 0.515 | 15.8 | 8.97 | 7.93 | 4.94 | 6.83 |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | 37 | -- | -- | -- | 0.97 | -- | -- | -- | 0.78 | -- | -- | -- | 0.45 | 1.1 | -- | -- | -- | -- | 100 | 83 | 49 | 160 | 120 | 98 | 120 | 90 | 49 | 81 | 150 |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | -- | < 0.58 | -- | -- | -- | < 0.58 | -- | -- | -- | 3.5 | -- | -- | -- | 15 | 0.23 | -- | -- | -- | -- | 180 | 74 | 23 | 7.1 | 0.87 | 2.5 | 7.8 | 150 | 110 | 14 | 27 |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | 19 | -- | -- | -- | 5.0 | -- | -- | -- | 4.5 | -- | -- | -- | 3.9 | 4.4 | -- | -- | -- | -- | 26 | 15 | 16 | 16 | 22 | 16 | 13 | 15 | 21 | 15 | 16 |
| Dissolved Oxyger | mg/L | N/A | N/A | -- | -- | -- | -- | -- | 7.8 | -- | -- | -- | 1.6 | -- | -- | -- | 1.5 | -- | -- | -- | 1.4 | 1.5 | -- | -- | -- | -- | 6.5 | 1.4 | 1.9 | 0.92 | 1.1 | 1.6 | 0.47 | 0.48 | 0.69 | 7.5 | 6.7 |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | < 0.50 | < 0.50 | < 10 | < 10 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | < 1.0 | < 1.0 | < 10 | < 10 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31,000 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | 0.069 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylpheno | µg/L | 700* | 700* | <10 | < 10 | < 10 | < 10 | < 10 | < 2.5 | < 2.0 | < 1.9 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylpheno | µg/L | 780 | 5,100 | <10 | < 10 | < 10 | < 10 | < 10 | < 2.5 | < 2.0 | < 1.9 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 4-Methylpheno | µg/L | 78 | 510 | <10 | < 10 | < 10 | < 10 | < 10 | < 2.5 | < 2.0 | < 1.9 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | < 0.50 | < 0.50 | < 10 | < 10 | < 0.25 | 1.2 | < 0.19 | < 0.22 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | <9.8 | <9.8 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 37 |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | < 10 | < 10 | < 10 | < 10 | < 1.2 | < 0.99 | < 0.95 | < 1.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 11 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| **Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20.0 | < 20.0 | < 20.0 | < 20.0 | < 20.0 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | < 50.0 | < 50.0 | < 50.0 | < 50.0 | < 50.0 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | **129** | 58.4 | 210 | 68.7 | 180 | 51 | 110 | 110 | 110 | 97 | 120 | 290 | 180 | 88 | -- | -- | -- | 82 | 220 | 154 | 158 | 116 | 125 | 147 | 129 | 106 | 146 | 149 | 104 | 163 | 137 | 104 | 180 | 183 |
| Beryllium | µg/L | 31 | 200 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | < 20 | < 20 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | 20.1 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | <20 | 0.0408 | < 20.0 | < 20.0 | < 20.0 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | -- | -- | -- | < 40 | < 40 | < 20.0 | < 20.0 | < 20.0 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | 304 | 532 | 242 | 124 | 184 | 470 | 28 | < 20 | 30 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 20 | < 20 | < 20 | 55 | < 20 | < 20 | < 20 | < 20 | < 20 | 30 | < 20 |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | 247 | < 10.0 | < 10.0 | 17 | 106 | 22 | 21 | 180 | 170 | 34 | -- | -- | -- | 55 | -- | -- | -- | 46 | 390 | 57 | 56 | 57 | 59 | 41 | 35 | 90 | 95 | 101 | 159 | 133 | 46 | 190 | 293 | 283 |

Notes:
**Analyte was detected above laboratory detection limi**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well locatior**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
mS/cm - millisiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix B-7a**
**Summary of Alluvium Groundwater Analytical Data**
**November 2001 through August 2016**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-400 | | | | MW-401 |
|---|---|---|---|---|---|---|---|---|
| | | | | 8/24/2016 | 8/16 DUP | 4/6/2016 | 04/29/15 | 08/24/16 |
| **oundwater Quality Parameters** | | | | | | | | |
| pH | SU | N/A | N/A | 5.53 | | 5.54 | 5.90 | 5.73 |
| Specific Conductance | mS/cm | N/A | N/A | 817.2 | | 1000 | 520 | 201.2 |
| Temperature | °Celsius | N/A | N/A | 30.62 | | 21.48 | 16.72 | 25.01 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 3.81 | | 0.24 | 2.71 | 0.27 |
| ORP | mV | N/A | N/A | 151.5 | | 119.7 | -7.1 | 48.4 |
| Turbidity | NTU | N/A | N/A | 1.38 | | 4.37 | 9.2 | 8.19 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | -- |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | -- |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | -- |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | -- |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | -- |
| **Laboratory Results - Organic Constituents** | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | |
| Benzene | µg/L | 5* | 9 | <5.0 | <5.0 | 11 | < 5.0 | <5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | < 5.0 | < 5.0 | <5.0 |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | < 5.0 | < 5.0 | <5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 5.0 | < 5.0 | <5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | < 5.0 | < 5.0 | <5.0 |
| Semivolatile Organic Compounds | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | 0.52 | 1.0 | < 10 | <0.50 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | <1.0 | 1.30 | < 10 | <1.0 |
| Anthracene | µg/L | 4,700 | 31,000 | 0.14 | 0.17 | 0.15 | < 10 | 0.093 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | <0.050 | <0.050 |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | < 0.050 | < 0.050 | <0.050 |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | < 0.10 | < 0.10 | <0.10 |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | < 0.10 | < 10 | <0.10 |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | < 0.050 | < 10 | <0.050 |
| Chrysene | µg/L | 117 | 392 | <0.050 | <0.050 | < 0.050 | < 10 | <0.050 |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | < 0.10 | < 0.10 | <0.10 |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | <10 | < 10 | < 10 | <10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | 0.11 | < 10 | <0.10 |
| Fluorene | µg/L | 1,000* | 4,100 | 0.19 | 0.21 | 0.28 | < 10 | <0.10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.050 | <0.050 |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 10 | < 10 | <10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 10 | < 10 | <10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | <0.50 | 1.70 | < 10 | <0.50 |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | <0.050 | < 0.050 | < 10 | <0.050 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | < 10 | <10 |
| Pyrene | µg/L | 1,000* | 3,100 | 0.13 | 0.13 | 0.14 | < 10 | 1.0 |
| **Inorganic Constituents** | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20.0 | < 20.0 | < 20.0 | < 20.0 | < 20.0 |
| Arsenic | µg/L | 50* | 50* | < 50.0 | < 50.0 | < 50.0 | < 50.0 | < 50.0 |
| Barium | µg/L | 2,000 | 7,200 | 68 | 67.6 | 67.6 | 38.1 | 122 |
| Beryllium | µg/L | 31 | 200 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chromium | µg/L | 100 | 310 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 |
| Copper | µg/L | 630 | 4,100 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 |
| Lead | µg/L | 15* | 15* | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 |
| Nickel | µg/L | 100 | 2,000 | < 20.0 | < 20.0 | < 20.0 | < 20.0 | < 20.0 |
| Zinc | µg/L | 4,700 | 31,000 | 145 | 147 | 88.7 | < 20.0 | 166 |
| Mercury | µg/L | 2* | 2* | <0.20 | <0.20 | < 0.20 | < 0.20 | <0.20 |
| Total Cyanide | µg/L | 310 | 2,000 | 288 | 167 | < 10 | 9.9 | <10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
mS/cm - millisiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

# Groundwater Sampling Logs (CD ONLY)

*Appendix B*

*Project No. 0366660*
*Atlanta Gas Light Company*

**Environmental Resources Management**
3200 Windy Hill Road SE, Suite 1500W
Atlanta, Georgia 30339
(678) 486-2700

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.: 0366660
Sampling Date: 2/21/17
Site/Location: Macon
Sampler's Name: K. Spevacek
Well ID: AMW-6
Pump Type/Model: Alexis Peristaltic
Sample Collection Time: 1410
Total Depth (ft)[a]: 20.99
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 0.1
Depth to Water (ft): 11.27
Pump Intake Depth (ft): 16
Sample ID: AMW-6-20170221-01
Well Diameter (in): 2
Purge Method: Low Flow
QA/QC Collected? NO
*Well Volume (gal) = 0.041d²h:
Start/Stop Purge Time: 1330 / 1355
QA/QC I.D. —
Purge Rate (L/min)[b]: 0.1
Total Purge Volume (L): 2.5
Laboratory Analyses: CoC

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: ☒ soda straw
(check all that apply) ☒ pump head discharge
☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (µS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1335 | 21.06 | 600.10 | 3.89 | 6.45 | 107.4 | 20.1 | 0.5 | 11.41 | |
| 1340 | 21.28 | 599.60 | 3.89 | 6.45 | 106.9 | 13.3 | 1.0 | 11.45 | |
| 1345 | 21.31 | 601.3 | 3.79 | 6.45 | 106.8 | 13.8 | 1.5 | 11.47 | |
| 1350 | 21.31 | 599.1 | 4.25 | 6.45 | 106.7 | 11.3 | 2.0 | 11.48 | |
| 1355 | 21.49 | 599.4 | 4.68 | 6.45 | 106.8 | 9.2 | 2.5 | 11.48 | - Stable |
| | | | | | | | | | Sampled @ 1410 |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.: 0366660
Sampling Date: 2/22/17
Site/Location: Macon
Sampler's Name: K. Speraack
Well ID: MW-08
Pump Type/Model: Alex 15 Peri
Sample Collection Time: 1640
Total Depth (ft)[a]: 19.08'
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 0.1
Depth to Water (ft): 12.92'
Pump Intake Depth (ft): 14'
Sample ID: MW-8-20170222-01
Well Diameter (in): 2"
Purge Method: Low Flow
QA/QC Collected? No
*Well Volume (gal) = 0.041d²h:
Start/Stop Purge Time: 1600
QA/QC I.D. —
Purge Rate (L/min)[b]: 0.1
Total Purge Volume (L): 2.5
Laboratory Analyses: CoC

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: ☒ soda straw
(check all that apply) ☒ pump head discharge
☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (µS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1605 | 21.49 | 208.2 | 6.90 | 6.53 | 111.8 | 9.17 | 0.5 | 12.94 | |
| 1610 | 20.75 | 211.00 | 6.58 | 6.49 | 107.8 | 6.56 | 1.0 | 12.94 | |
| 1615 | 20.66 | 212.00 | 6.48 | 6.73 | 106.9 | 4.37 | 1.5 | 12.94 | |
| 1620 | 20.51 | 212.60 | 6.40 | 6.47 | 107.3 | 7.14 | 2.0 | 12.94 | |
| 1625 | 20.65 | 214.10 | 6.44 | 6.44 | 106.6 | 5.15 | 2.5 | 12.94 | - Stable Sample @ 1640 |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGC - Macon
Project No.: 0366660
Sampling Date: 02-22-17
Site/Location: Macon, Ga
Sampler's Name: M. Burch
Well ID: AMW-11
Pump Type/Model: Alexis / peri
Sample Collection Time: 1235
Total Depth (ft)[a]: 15
Tubing Material: COPE
Sample Purge Rate (L/min)[c]: 200 mL/min
Depth to Water (ft): 8.31
Pump Intake Depth (ft): 10
Sample ID: AMW-11-20170222-01
Well Diameter (in): 2
Purge Method: Low Flow
QA/QC Collected? —
*Well Volume (gal) = 0.041d²h:
Start/Stop Purge Time: 1203 / 1228
QA/QC I.D. —
Purge Rate (L/min)[b]: 200
Total Purge Volume (L): 5
Laboratory Analyses:

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply)
☐ soda straw
☐ pump head discharge
☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1208 | 20.79 | 670.20 | 0.19 | 6.10 | 70.10 | 15.5 | 1.0 | 8.65 | Weather - Cloudy & windy |
| 1213 | 20.79 | 667.80 | 0.19 | 6.09 | 65.20 | 9.78 | 2.0 | 8.69 | 65F |
| 1218 | 21.03 | 663.90 | 0.23 | 6.09 | 65.10 | 5.60 | 3.0 | 8.72 | |
| 1223 | 21.16 | 658.90 | 0.26 | 6.10 | 66.90 | 3.89 | 4.0 | 8.74 | |
| 1228 | 21.24 | 655.00 | 0.32 | 6.12 | 67.60 | 3.11 | 5.0 | 8.74 | -Parameters are stabilizing quickly. |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.: 0366660
Sampling Date: 2/21/17
Site/Location: Macon
Sampler's Name: K. Spevacek
Well ID: AMW-12
Pump Type/Model: Alexis Peri
Sample Collection Time: 1140
Total Depth (ft)[a]: 19.78
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 0.1
Depth to Water (ft): [redacted] 9.78'
Pump Intake Depth (ft): 15'
Sample ID: AMW-12-20170221-01
Well Diameter (in): 2"
Purge Method: Low Flow
QA/QC Collected? No
*Well Volume (gal) = 0.041d²h:
Start/Stop Purge Time: 1100/1125
QA/QC I.D.
Purge Rate (L/min)[b]: 0.1
Total Purge Volume (L): 2.5
Laboratory Analyses: C, C

Well Type: (Flush) / Stick Up
Well Cap Condition: (Good) / Replace / Other
Well Lock: (Yes) / No
Well Bolted: (Yes) / No
Bolts Needed: Yes / (No)

Sampling Method: (check all that apply) ☒ soda straw ☒ pump head discharge ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (µS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1105 | 21.37 | 355.7 | 3.59 | 5.67 | 139.00 | 1.38 | 0.5 | 9.80 | |
| 1110 | 21.26 | 357.7 | 3.32 | 5.65 | 138.20 | 1.01 | 1.0 | 9.81 | |
| 1115 | 21.11 | 356.6 | 3.27 | 5.65 | 137.6 | 1.24 | 1.5 | 9.81 | |
| 1120 | 21.03 | 356.1 | 3.26 | 5.65 | 137.5 | 1.13 | 2.0 | 9.82 | |
| 1125 | 21.05 | 356.8 | 3.27 | 5.65 | 137.5 | 1.00 | 2.5 | 9.82 | - Stable |
| | | | | | | | | | Sampled @ 1140 |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.:
Sampling Date: 2/24/17
Site/Location: Macon, GA
Sampler's Name: T. Kenyon
Well ID: MW-101R
Pump Type/Model: Aqua Rex
Sample Collection Time: 1000
Total Depth (ft)[a]: 21.94
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 0.1
Depth to Water (ft): 7.95
Pump Intake Depth (ft): 15
Sample ID: MW-101R-20170224-01
Well Diameter (in): 2
Purge Method: low flow
QA/QC Collected? No
*Well Volume (gal) = 0.041d²h:
Start/Stop Purge Time: 930 /
QA/QC I.D. No
Purge Rate (L/min)[b]: 0.1
Total Purge Volume (L):
Laboratory Analyses: VOC, SVOC

Well Type: Flush / Stick Up
Sampling Method: ☑ soda straw
(check all that apply) ☐ pump head discharge
Well Cap Condition: Good / Replace / Other
☐ Bailer (only used if necessary)
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 941 | 21.24 | 678.4 | 0.36 | 5.56 | 85.4 | 8.41 | 0.5 | 7.99 | |
| 946 | 21.13 | 686.3 | 0.33 | 5.57 | 84.4 | 7.87 | 1 | 8.01 | |
| 951 | 21.21 | 687.2 | 0.26 | 5.58 | 85.9 | 7.21 | 1.5 | 8.01 | |
| 956 | 21.62 | 685.1 | 0.28 | 5.58 | 88.4 | 9.2 | 2 | 8.01 | |
| | Well Sampled @ 1000 | | | | | 976 | | | |
| | Final DTW: 21.60 | | | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since initial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

# GROUND WATER SAMPLING LOG SHEET

ERM

Client: A62
Site/Location: Meeker
Well ID: MW-12R
Total Depth (ft)[a]: 15.1
Depth to Water (ft): 3.8
Well Diameter (in): 2
*Well Volume (gal) = 0.041d²h:

Project No.:
Pump Type/Model: Aqua Pro
Tubing Material: PE
Pump Intake Depth (ft): 5
Purge Method: Low flow
Start/Stop Purge Time: 1041 / 1101
Purge Rate (L/min)[b]: 0.2
Total Purge Volume (L): 4

Sampling Date: 1/13/17
Sampler's Name: T. Pagan
Sample Collection Time: 1105
Sample Purge Rate (L/min)[c]: 0.2
Sample ID: MW-12R-20170113-01
QA/QC Collected? No
QA/QC I.D. NA
Laboratory Analyses: VOC, VOL

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply) ☐ soda straw ☑ pump head discharge ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1046 | 10.40 | 676.8 | 0.41 | 3.97 | 108.9 | 4.59 | 1 | 4.2 | |
| 1051 | 15.55 | 684.4 | 0.28 | 3.91 | 132.5 | 1.73 | 2 | 4.2 | |
| 1056 | 17.99 | 685.2 | 0.23 | 3.9 | 168.4 | 1.17 | 3 | 4.2 | |
| 1101 | 20.40 | 684 | 0.17 | 3.88 | 200.9 | 1.17 | 4 | 4.2 | |
| | | Sample @ 1101 | | | | | | | |
| | | Sample @ MDV | | | | | | | |
| | | | | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL - Macon
Project No.: 0366660
Sampling Date: 02-22-17
Sampler's Name: Markus Burch
Site/Location: Macon, Ga
Sample Collection Time: 1515
Well ID: AMW-13-20170222-01
Pump Type/Model: Alexis/Peri
Sample Purge Rate (L/min)[c]: 200mL/min
Tubing Material: LDPE
Total Depth (ft)[a]: 20
Sample ID: AMW-13-20170222-01
Depth to Water (ft): 12.72
Pump Intake Depth (ft): 15
QA/QC Collected? —
Well Diameter (in): 2
Purge Method: Low Flow
QA/QC I.D. —
*Well Volume (gal) = 0.041d²h:
Start/Stop Purge Time: 1430/1505
Laboratory Analyses:
Purge Rate (L/min)[b]: 200
Total Purge Volume (L): 7

Sampling Method: ☑ soda straw
(check all that apply) ☐ pump head discharge
☐ Bailer (only used if necessary)

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1435 | 24.15 | 131.80 | 3.31 | 5.69 | 197.50 | 2.20 | 1.0 | 13.21 | As I opened the well Lid |
| 1440 | 24.06 | 130.60 | 3.22 | 5.65 | 201.40 | 1.98 | 2.0 | 13.41 | there were Fire Ants (Several) |
| 1445 | 23.92 | 126.00 | 2.69 | 5.66 | 200.40 | 1.93 | 3.0 | 13.49 | Present. I waited until they |
| 1450 | 23.88 | 121.30 | 2.32 | 5.67 | 198.00 | 1.91 | 4.0 | 13.48 | Settled down before I started |
| 1455 | 24.33 | 121.00 | 2.06 | 5.68 | 197.10 | 1.77 | 5.0 | 13.50 | on well. |
| 1500 | 24.06 | 124.70 | 2.10 | 5.68 | 196.70 | 1.69 | 6.0 | 13.49 | |
| 1505 | 23.77 | 117.30 | 1.64 | 5.71 | 191.20 | 1.75 | 7.0 | 13.50 | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.: 0366660
Sampling Date: 2/2/17
Site/Location: Macon
Sampler's Name: K. Speracek
Well ID: AMW-14
Pump Type/Model: Alexis Peristaltic
Sample Collection Time: 1630
Total Depth (ft)[a]: 23.01
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 0.2
Depth to Water (ft): 9.55
Pump Intake Depth (ft): 12/17
Sample ID: AMW-14-20170221-01
Well Diameter (in): 2
Purge Method: Low Flow
QA/QC Collected? NO
*Well Volume (gal) = 0.041d²h: 1.7 gal = 6.5 L
Start/Stop Purge Time: 1455
QA/QC I.D. —
Purge Rate (L/min)[b]: 0.1
Total Purge Volume (L): 22.0
Laboratory Analyses: COC

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes No
Bolts Needed: Yes No

Sampling Method: (check all that apply) ☒ soda straw ☒ pump head discharge ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (µS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1500 | 22.93 | 259.0 | 3.64 | 6.41 | 109.40 | 3.62 | 0.5 | 9.95 | |
| 1505 | 22.97 | 260.60 | 3.38 | 6.36 | 106.10 | 1.41 | 1.0 | 10.20 | |
| 1510 | 22.40 | 260.20 | 3.36 | 6.34 | 105.60 | 1.15 | 1.5 | 10.38 | Excessive Drawdown |
| | | | | | | | | | Flow Set @ 0.4 L/min |
| | | | | | | | | | Water Level Chased Down |
| 1522 | 21.01 | 259.3 | 3.18 | 6.34 | 106.9 | 5.64 | 6.5 | 14.4 | 1st Volume |
| | | | | | | | | | |
| 1538 | 22.40 | 258.3 | 5.95 | 6.35 | 108.8 | 8.62 | 13.0 | 17.45 | 2nd volume |
| | | | | | | | | | Flow Reduced to 0.25 L/min |
| 1604 | 23.15 | 257.8 | 5.27 | 6.36 | 112.3 | 8.67 | 19.5 | 17.41 | 3rd volume |
| 1609 | 23.34 | 255.5 | 6.02 | 6.39 | 115.0 | 7.21 | 20.75 | 17.34 | |
| 1614 | 23.21 | 258.3 | 5.38 | 6.38 | 113.8 | 7.88 | 22.00 | 17.28 | Stable |
| | | | | | | | | | Sampled @ 1630 |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since itilial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL - Macon
Project No.: 03066660
Sampling Date: 02-24-17
Site/Location: Macon, Ga
Sampler's Name: M. Burch
Well ID: MW-14
Pump Type/Model: Alexis/Peri
Sample Collection Time: 1150
Total Depth (ft)[a]: 15
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]:
Depth to Water (ft): 6.50
Pump Intake Depth (ft): 11
Sample ID:
Well Diameter (in): 2
Purge Method: Low Flow
QA/QC Collected?
*Well Volume (gal) = $0.041d^2h$:
Start/Stop Purge Time: 0957
QA/QC I.D.:
Purge Rate (L/min)[b]: 200
Total Purge Volume (L):
Laboratory Analyses:

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply)
- ☑ soda straw
- ☐ pump head discharge
- ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1002 | 19.06 | 145.90 | 0.57 | 6.57 | 130.20 | 9.48 | 1.0 | 7.06 | |
| 1007 | 19.10 | 148.70 | 0.41 | 6.28 | 126.00 | 9.71 | 2.0 | 7.50 | Taking Purge Rate down |
| 1012 | 19.40 | 153.70 | 0.41 | 6.18 | 123.50 | 8.15 | 3.0 | 7.43 | to 150mL Due to draw |
| 1017 | 19.38 | 153.20 | 0.49 | 6.16 | 123.90 | 8.67 | 4.0 | 8.45 | down - |
| 1022 | | | | | | | 5.0 | | |
| | | | | | | | | | 3 well volumes are needed |
| 1040 | 20.12 | 154.80 | 7.58 | 6.36 | 93.60 | 12.7 | 5.50 | 10.29 | due to continous draw |
| 1047 | 20.93 | 149.10 | 7.91 | 6.53 | 88.80 | 8.76 | 6.0 | 10.29 | down |
| 1054 | 21.20 | 124.10 | 8.13 | 6.63 | 82.40 | 7.65 | 6.50 | 10.29 | |
| | | | | | | | | | |
| 1101 | 21.33 | 151.40 | 3.48 | 6.33 | 120.70 | 7.25 | 7.75 | 10.29 | |
| 1106 | 20.93 | 153.60 | 6.36 | 6.30 | 116.80 | 9.15 | 7.0 | 10.29 | |
| 1111 | 21.64 | 154.80 | 7.37 | 6.38 | 109.70 | 9.96 | 7.25 | 10.27 | |
| 1116 | 22.09 | 153.70 | 4.22 | 6.31 | 119.00 | 10.7 | 7.50 | 10.26 | |
| 1121 | 21.87 | 155.70 | 4.94 | 6.23 | 125.50 | 12.3 | 7.75 | 10.26 | |
| 1126 | 22.04 | 157.00 | 5.07 | 6.21 | 130.60 | 12.7 | 8.0 | 10.26 | |
| 1131 | 21.91 | 158.00 | 5.10 | 6.21 | 131.00 | 15.0 | 8.25 | 10.24 | |
| 1136 | 22.09 | 158.90 | 5.24 | 6.21 | 131.10 | 15.7 | 8.50 | 10.24 | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL - Macon
Project No.: 0366660
Sampling Date: 02-23-17
Site/Location: Macon, Ga
Sampler's Name: M. Burch
Well ID: MW-14I
Pump Type/Model: Alexis / Peri
Sample Collection Time: 1645
Total Depth (ft)[a]: 15
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 100mL/min
Depth to Water (ft): 6.73
Pump Intake Depth (ft): 10
Sample ID: MW-14I-20170223-17
Well Diameter (in): 2
Purge Method: Low Flow
QA/QC Collected? —
*Well Volume (gal) = 0.041d²h:
Start/Stop Purge Time: 1143
QA/QC I.D. —
Purge Rate (L/min)[b]: 200
Total Purge Volume (L):
Laboratory Analyses:

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply)
- ☑ soda straw
- ☐ pump head discharge
- ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1448 | 21.57 | 87.80 | 0.15 | 6.54 | 134.50 | 3.95 | 1.0 | 7.21 | Well missing a bolt, I replaced |
| 1453 | 21.80 | 88.30 | 0.11 | 6.48 | 116.80 | 4.07 | 2.0 | 7.21 | with new one - Weather - Sunny 71F |
| 1458 | 21.55 | 91.10 | 0.11 | 6.43 | 84.70 | 3.78 | 3.0 | 7.21 | |
| 1503 | 21.78 | 96.10 | 0.09 | 6.39 | 70.10 | 3.15 | 4.0 | 7.21 | Spec. Cond is rising each |
| 1508 | 21.43 | 105.30 | 0.09 | 6.34 | 59.80 | 3.27 | 5.0 | 7.21 | reading and is out of tolerance |
| 1513 | 21.65 | 118.60 | 0.09 | 6.28 | 53.30 | 3.30 | 6.0 | 7.21 | level. |
| 1518 | 21.85 | 135.40 | 0.09 | 6.24 | 52.60 | 3.74 | 7.0 | 7.21 | |
| 1523 | 22.53 | 152.90 | 0.08 | 6.19 | 51.70 | 3.97 | 8.0 | 7.21 | |
| 1528 | 22.50 | 160.40 | 0.08 | 6.15 | 52.00 | 3.81 | ~~9.0~~ 9.5 | 7.21 | Slowed Purge rate down |
| 1533 | 22.40 | 171.70 | 0.06 | 6.11 | 53.80 | 3.70 | 10.0 | 7.21 | to 150mL Due to Conductivity |
| 1538 | 22.53 | 194 | 0.06 | 6.07 | 56.40 | 3.49 | 10.5 | 7.17 | rising. |
| 1543 | 22.62 | 198.30 | 0.07 | 6.06 | 61.00 | 3.45 | 11.0 | 7.15 | |
| 1548 | 22.20 | 224.60 | 0.07 | 6.02 | 62.60 | 3.50 | 11.5 | 7.15 | |
| 1553 | 21.77 | 242.10 | 0.08 | 6.00 | 63.60 | 3.07 | 12.0 | 7.15 | |
| 1558 | 21.54 | 249.10 | 0.08 | 5.99 | 61.20 | 3.14 | 12.5 | 7.09 | |
| 1603 | 21.42 | 252.60 | 0.08 | 5.98 | 58.90 | 3.06 | 13.0 | 7.09 | |
| 1608 | 22.28 | 253.60 | 0.08 | 5.98 | 57.80 | 2.00 | 13.5 | 7.09 | |
| 1613 | 22.62 | 265.80 | 0.08 | 5.97 | 58.10 | 2.68 | 14.0 | 7.11 | |
| 1618 | 22.58 | 276.60 | 0.08 | 5.95 | 60.70 | 2.59 | 14.5 | 7.11 | |
| 1623 | 21.69 | 284.80 | 0.08 | 5.95 | 62.10 | 2.62 | 15.0 | 7.11 | |
| 1628 | 21.42 | 297.00 | 0.08 | 5.94 | 60.80 | 2.41 | 15.5 | 7.12 | |
| 1633 | 21.37 | 295.30 | 0.10 | 5.94 | 58.40 | 2.47 | 16.0 | 7.05 | Drop Purge Rate to 100mL/min |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL-Macon
Project No.: 0366666
Sampling Date: 02-23-17
Site/Location: Macon, Ga
Sampler's Name: M. Burch
Well ID: MW-14I
Pump Type/Model: Alexis/Peri
Sample Collection Time: 1645
Total Depth (ft)[a]: 15
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 100mL/min
Depth to Water (ft): 6.73
Pump Intake Depth (ft): 10
Sample ID: MW-14I-20170223-01
Well Diameter (in): 2
Purge Method: Low Flow
QA/QC Collected? —
*Well Volume (gal) = $0.041d^2h$:
Start/Stop Purge Time: 1443/
QA/QC I.D. —
Purge Rate (L/min)[b]: 200
Total Purge Volume (L):
Laboratory Analyses:

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply)
- ☐ soda straw
- ☐ pump head discharge
- ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1638 | 21.24 | 298.50 | 0.11 | 5.93 | 56.60 | 2.32 | 16.25 | 7.00 | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.: 036660
Sampling Date: 2/23/17
Sampler's Name: K. Spevacek
Sample Collection Time: 1155
Site/Location: Macon
Pump Type/Model: Alexis Peristaltic
Sample Purge Rate (L/min)[c]: 0.1
Well ID: AMW-15
Tubing Material: LDPE
Sample ID: AMW-15-20170223-01
Total Depth (ft)[a]: 24.55
Pump Intake Depth (ft): 15'
QA/QC Collected? Yes
Depth to Water (ft): 9.70
Purge Method: Low Flow / 3 volumes
QA/QC I.D. Dup-02-20170223-01
Well Diameter (in): 2"
Start/Stop Purge Time: 1345 / 1450
Laboratory Analyses: CoC
*Well Volume (gal) = 0.041d²h: 1.85 gal = 7.0L
Purge Rate (L/min)[b]: 0.1 / 0.5
Total Purge Volume (L):
Sampling Method: (check all that apply) ☒ soda straw ☒ pump head discharge ☐ Bailer (only used if necessary)

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

| Time[d] | Temp. (°C) | Spec. Cond. (µS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1350 | 21.97 | 170.7 | 1.98 | 5.76 | 143.3 | 7.77 | 0.5 | 10.24 | |
| 1355 | 21.35 | 171.6 | 1.60 | 5.72 | 140.6 | 8.80 | 1.0 | 10.44 | |
| 1400 | 21.40 | 172.4 | 1.54 | 5.71 | 137.8 | 5.93 | 1.5 | 10.65 | |
| 1405 | 22.09 | 171.9 | 1.46 | 5.70 | 135.1 | 3.11 | 2.0 | 10.93 | |
| 1410 | 22.09 | 170.8 | 1.46 | 5.70 | 133.3 | 1.37 | 2.5 | 11.50 | - Drawdown Excessive - Water level chased down Flow Set @ 0.5 L/min |
| 1419 | 21.73 | 181.3 | 1.31 | 5.76 | 126.6 | 5.46 | 7.0 | 16.97 | 1st volume |
| 1433 | 22.21 | 175.7 | 1.98 | 5.71 | 128.7 | 6.85 | 14.0 | 19.74 | 2nd volume Flow Set @ 0.3 L/min |
| | | | | | | | ~~26.0~~ | | ~~3rd volume~~ ~~Flow Set @ 0.2 L/min~~ KS 2/22/17 |
| KS 2/22/17 1456 | | | | | | | | 24.45 | well DRY |
| 1450 | — | — | — | — | — | — | — | 14.54 | Sampled Recharge |
| 2/23/17 1155 | — | — | — | — | — | — | — | | |

| | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] |
|---|---|---|---|---|---|---|---|

[g] ...re resuspending fines that may be resting on the well bottom

[h] ...n keep drawdown below 0.3 ft before switching to three well volume method

* d = well diameter (inches); h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL-Macon
Project No.: 0366660
Sampling Date: 02-23-17
Site/Location: Macon, Ga
Sampler's Name: M. Burch
Well ID: MW-15
Pump Type/Model: Alexis / Peri
Sample Collection Time: 1050
Total Depth (ft)[a]: 14.5
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 200mL/min
Depth to Water (ft): 6.55
Pump Intake Depth (ft): 9.5
Sample ID: MW-15-20170223-01
Well Diameter (in): 2
Purge Method: Lowflow
QA/QC Collected? —
*Well Volume (gal) = 0.041d²h:
Start/Stop Purge Time: 1005 / 1040
QA/QC I.D. —
Purge Rate (L/min)[b]: 200
Total Purge Volume (L): 7
Laboratory Analyses:

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply)
☐ soda straw
☐ pump head discharge
☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1010 | 18.88 | 1011.20 | 0.15 | 4.90 | 207.70 | 7.78 | 1.0 | 6.65 | Weather 70F & Sunny - Well |
| 1015 | 18.78 | 1007.00 | 0.13 | 4.89 | 191.90 | 5.54 | 2.0 | 6.67 | Seems to be in good condition |
| 1020 | 18.92 | 988.20 | 0.14 | 5.01 | 184.60 | 1.52 | 3.0 | 6.68 | all bolts are accounted For. |
| 1025 | 18.92 | 975.50 | 0.16 | 5.08 | 181.40 | 1.50 | 4.0 | 6.68 | |
| 1030 | 18.88 | 979.00 | 0.16 | 5.09 | 182.60 | 1.03 | 5.0 | 6.68 | |
| 1035 | 18.83 | 976.70 | 0.19 | 5.11 | 181.60 | 1.01 | 6.0 | 6.68 | |
| 1040 | 18.47 | 979.90 | 0.23 | 5.11 | 180.60 | 1.23 | 7.0 | 6.68 | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.: 0366660
Sampling Date: 2/27/17
Site/Location: Macon
Sampler's Name: K. Speracek / M. Rogers
Well ID: MW-21
Pump Type/Model: Alexis Peri
Sample Collection Time: 1300
Total Depth (ft)[a]: 9.36
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 0.20
Depth to Water (ft): 3.65
Pump Intake Depth (ft): 7'
Sample ID: MW-21-20170227-01
Well Diameter (in): 2
Purge Method: Low Flow
QA/QC Collected? NO
*Well Volume (gal) = 0.041d²h: 1.04 gal = 4.0 L
Start/Stop Purge Time: 1135
QA/QC I.D. —
Purge Rate (L/min)[b]: 0.1
Total Purge Volume (L): 15.75
Laboratory Analyses: 8260B, 8270C

Well Type: (Flush) / Stick Up
Well Cap Condition: (Good) / Replace / Other
Well Lock: (Yes) / No
Well Bolted: (Yes) / No
Bolts Needed: Yes / (No)

Sampling Method: ☒ soda straw
(check all that apply) ☒ pump head discharge
☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1140 | 17.41 | 146.10 | 3.53 | 5.51 | 62.70 | 14.7 | 0.5 | 4.00 | |
| 1145 | 17.18 | 170.20 | 3.07 | 5.49 | 67.40 | 10.7 | 1.0 | 4.13 | |
| 1150 ~~1200~~ | 17.09 | 193.6 | 2.67 | 5.45 | 71.20 | 9.31 | 1.5 | 4.24 | |
| 1155 ~~1205~~ | 17.06 | 213.5 | 2.41 | 5.42 | 74.2 | 8.11 | 2.0 | 4.27 | |
| 1200 ~~1210~~ | 17.00 | 208.5 | 2.29 | 5.43 | 74.1 | 6.45 | 2.5 | 4.28 | |
| 1205 ~~1215~~ | 17.00 | 226.9 | 2.19 | 5.42 | 76.2 | 7.11 | 3.0 | 4.40 | - Excessive Drawdown |
| | | | | | | | | | Flow set @ 0.5 L/min and water level chased down |
| 1207 ~~1217~~ | 16.84 | 228.8 | 2.00 | 5.40 | 77.0 | 7.33 | 4.0 | 4.60 | 1st volume |
| 1215 ~~1225~~ | 16.69 | 244.2 | 1.70 | 5.41 | 76.8 | 8.95 | 8.0 | 5.42 | 2nd volume |
| | | | | | | | | | Flow Reduced to 0.25 L/min |
| 1231 ~~1238~~ | 16.96 | 262.7 | 1.60 | 5.37 | 79.1 | 4.98 | 12.0 | 5.64 | 3rd volume |
| 1236 | 17.32 | 268.8 | 1.81 | 5.39 | 77.6 | 4.77 | 12.25 | 5.60 | |
| 1241 | 17.38 | 265.5 | 1.93 | 5.38 | 79.8 | 3.13 | 14.50 | 5.62 | 14.50 Total volume |
| 1246 | 17.37 | 263.6 | 1.78 | 5.37 | 80.4 | 2.65 | ~~[illegible]~~ | 5.62 | - Stable |
| | | | | | | | 15.75 | | Sampled @ 1300 |
| | | | | | | | | | |
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| | | | | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since initial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL Macon
Project No.: 0366660
Sampling Date: 02-23-17
Site/Location: Macon, Ga
Sampler's Name: M. Burch
Well ID: MW-101
Pump Type/Model: Alex/Peri
Sample Collection Time: 1205
Total Depth (ft)[a]: 15
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 200mL/min
Depth to Water (ft): 8.01
Pump Intake Depth (ft): 10
Sample ID: MW-101-20170223-01
Well Diameter (in): 2
Purge Method: Low flow
QA/QC Collected? Yes
*Well Volume (gal) = $0.041d^2h$:
Start/Stop Purge Time: 1133/1158
QA/QC I.D. Dup 1
Purge Rate (L/min)[b]: 200
Total Purge Volume (L): 5
Laboratory Analyses:

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply)
☐ soda straw
☐ pump head discharge
☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1138 | 20.35 | 359.80 | 0.16 | 6.14 | 134.40 | 7.55 | 1.0 | 8.39 | Will take Dup From this |
| 1143 | 19.99 | 354.30 | 0.12 | 6.12 | 126.40 | 8.47 | 2.0 | 8.61 | well. |
| 1148 | 20.04 | 354.00 | 0.10 | 6.09 | 116.30 | 5.86 | 3.0 | 8.69 | |
| 1153 | 20.04 | 360.10 | 0.08 | 6.07 | 100.80 | 4.75 | 4.0 | 8.71 | |
| 1158 | 20.08 | 366.20 | 0.08 | 6.05 | 98.30 | 3.65 | 5.0 | 8.73 | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.: 0366660
Sampling Date: 2/27/17
Site/Location: Macon Ga
Sampler's Name: M. Rogers / K. Spevacek
Well ID: MW-102
Pump Type/Model: Alexis Peristaltic
Sample Collection Time: 0910
Total Depth (ft)[a]: 10
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 0.1
Depth to Water (ft): 9.01
Pump Intake Depth (ft): ~12
Sample ID: MW-102-2017
Well Diameter (in): 2
Purge Method: Low flow
QA/QC Collected? Yes
*Well Volume (gal) = 0.041d²h:
Start/Stop Purge Time: 0825
QA/QC I.D. MS/MSD
Purge Rate (L/min)[b]: .1
Total Purge Volume (L):
Laboratory Analyses: See COC

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply) ☒ soda straw ☒ pump head discharge ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. µS/cm | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 0830 | 16.43 | 794.9 | 1.90 | 5.65 | 123.2 | 1.26 | 0.5 | 9.08 | |
| 0835 | 16.87 | 714.8 | 0.92 | 5.57 | 117.3 | 1.42 | 1.0 | 9.10 | |
| 0840 | 16.92 | 724.5 | 0.90 | 5.57 | 114.2 | 0.52 | 1.5 | 9.11 | |
| 0845 | 17.05 | 758.9 | 1.31 | 5.55 | 112.1 | 0.96 | 2.0 | 9.14 | |
| 0850 | 17.22 | 755.8 | 1.02 | 5.56 | 110.1 | 0.88 | 2.5 | 9.15 | |
| 0855 | 17.27 | 760.7 | 0.97 | 5.56 | 109.0 | 0.71 | 3.0 | 9.15 | - Stable |
| | | | | | | | | | Sampled @ 0910 |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.:
Sampling Date: 2/24/17
Site/Location: Macon
Sampler's Name: J. Fye
Well ID: MW-103
Pump Type/Model: Aquatech
Sample Collection Time: 1280
Total Depth (ft)[a]: 20.43
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 0.2
Depth to Water (ft): 14.88
Pump Intake Depth (ft): 19
Sample ID: MW-103-20170224-D
Well Diameter (in):
Purge Method: low flow
QA/QC Collected? No
*Well Volume (gal) = 0.041d²h:
Start/Stop Purge Time: 1140 / 1214
QA/QC I.D. NA
Purge Rate (L/min)[b]: 0.2
Total Purge Volume (L): 7
Laboratory Analyses: VOC, NVOC

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply)
- ☐ soda straw
- ☑ pump head discharge
- ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1154 | 22.81 | 79.5 | 6.88 | 5.02 | 143.3 | 4.88 | 1 | 14.91 | |
| 1159 | 1155 | 81.2 | 6.34 | 5.08 | 131.2 | 4.5 | 2 | 14.91 | |
| 1204 | 21.88 | 81.1 | 6.12 | 5.11 | 120.8 | 4.43 | 3 | 14.91 | |
| 1209 | 22.23 | 83.9 | 5.8 | 5.14 | 109.5 | 3.87 | 4 | 14.91 | |
| 1214 | 22.02 | 84.4 | 5.69 | 5.15 | 100.7 | 3.75 | 5 | 14.91 | |
| | | | | | | | | | |
| | | Well dry @ 1214 | | | | | | | |
| | | Sample @ 1220 | | | | | | | |
| | | for D-20.03 | | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SFSD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SFSD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Site/Location: Melton
Well ID: MW-104
Total Depth (ft)[a]: 19.49
Depth to Water (ft): 6.35
Well Diameter (in): 2
*Well Volume (gal) = 0.041d²h:

Project No.:
Pump Type/Model: Alexis Rc
Tubing Material: LDPE
Pump Intake Depth (ft): 7
Purge Method: low flow
Start/Stop Purge Time: 1355 / 1445
Purge Rate (L/min)[b]: 0.1
Total Purge Volume (L): 3.5

Sampling Date: 2/24/17
Sampler's Name: J. Ryan
Sample Collection Time: 1455
Sample Purge Rate (L/min)[c]: 0.1
Sample ID: MW-104-1077024-01
QA/QC Collected? No
QA/QC I.D. NA
Laboratory Analyses:

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: ☑ soda straw
(check all that apply) ☑ pump head discharge
☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| ~~1355~~ 1400 | 22.83 | 178.3 | 1.75 | 5.73 | 165.3 | 27.9 | 0.5 | 6.52 | |
| ~~1405~~ 1407 | 22.98 | 178.5 | 1.57 | 5.73 | 161.3 | 27.2 | 1 | 6.52 | |
| 1411 | 22.86 | 179.2 | 1.61 | 5.74 | 158.1 | 20.9 | 1.5 | 6.52 | |
| 1417 | 22.3 | 178.6 | 1.57 | 5.74 | 154.6 | 10.5 | 2 | 6.52 | |
| 1422 | 22.19 | 179.7 | 1.55 | 5.74 | 152.1 | 8.91 | 2.5 | 6.52 | |
| 1427 | 22.29 | 178.6 | 1.51 | 5.74 | 150.6 | 8.75 | 3 | 6.52 | |
| 1432 | 22.49 | 179.1 | 1.47 | 5.73 | 149.6 | 7.6 | 3.5 | 6.52 | |
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| Well Field Blank @ 1432 | | | | | | | | | |
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| Sample @ 1435 | | | | | | | | | |
| | | | | | | | | | |
| TD = 11.59 | | | | | | | | | |
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| | | | | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.: 0366660
Sampling Date: 02-22-17
Site/Location: Macon, Ga
Sampler's Name: M. Burch
Well ID: MW-108
Pump Type/Model: Alexis / Peri
Sample Collection Time: 1055
Total Depth (ft)[a]: 20ft
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 200mL/min
Depth to Water (ft): 6.05
Pump Intake Depth (ft): 15ft
Sample ID: MW-108-2017-0222-01
Well Diameter (in): 2
Purge Method: Low flow
QA/QC Collected? —
*Well Volume (gal) = 0.041d²h:
Start/Stop Purge Time: 1025 / 1050
QA/QC I.D. —
Purge Rate (L/min)[b]: 200
Total Purge Volume (L): 5
Laboratory Analyses:

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply)
- ☑ ~~soda straw~~
- ☐ pump head discharge
- ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1030 | 22.00 | 451.70 | 0.15 | 6.61 | -68.90 | 6.24 | 1.0 | 6.95 | |
| 1035 | 21.93 | 458.30 | 0.12 | 6.45 | -65.10 | 3.89 | 2.0 | 6.99 | |
| 1040 | 21.78 | 463.70 | 0.11 | 6.40 | -60.00 | 3.07 | 3.0 | 7.00 | |
| 1045 | 21.73 | 465.90 | 0.10 | 6.38 | -57.20 | 3.34 | 4.0 | 7.01 | |
| 1050 | 21.79 | 465.90 | 0.09 | 6.37 | -54.60 | 1.76 | 5.0 | 7.01 | |
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| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.: 0366660
Sampling Date: 2/22/17
Site/Location: Macon
Sampler's Name: K. Spevacek
Well ID: MW-109
Pump Type/Model: Alexis Peri
Sample Collection Time: 1040
Total Depth (ft)[a]: 23.51'
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 0.1
Depth to Water (ft): 6.45'
Pump Intake Depth (ft): 18.5'
Sample ID: MW-109-20170222-01
Well Diameter (in): 2"
Purge Method: Low Flow
QA/QC Collected? No
*Well Volume (gal) = 0.041d²h:
Start/Stop Purge Time: 1000/1025
QA/QC I.D. —
Purge Rate (L/min)[b]: 0.1
Total Purge Volume (L): 2.5
Laboratory Analyses: CoC

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply) ☒ soda straw ☒ pump head discharge ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (µS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1005 | 21.31 | 173.60 | 1.91 | 4.91 | 177.0 | 1.84 | 0.5 | 6.90 | |
| 1010 | 20.93 | 170.40 | 1.71 | 4.90 | 167.8 | 0.24 | 1.0 | 7.03 | |
| 1015 | 20.93 | 171.30 | 1.67 | 4.90 | 160.8 | 0.39 | 1.5 | 7.08 | |
| 1020 | 21.02 | 170.60 | 1.70 | 4.90 | 156.7 | 0.33 | 2.0 | 7.10 | |
| 1025 | 20.92 | 170.20 | 1.70 | 4.90 | 151.2 | 0.27 | 2.5 | 7.12 | -Stable |
| | | | | | | | | | Sampled @ 1040 |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL- Macon
Project No.: 0366660
Sampling Date: 2/22/17
Site/Location: Macon
Sampler's Name: K. Speracek
Well ID: MW-205
Pump Type/Model: Alexis Peri
Sample Collection Time: 1225
Total Depth (ft)[a]: 28.19'
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 0.1
Depth to Water (ft): 6.33'
Pump Intake Depth (ft): 22'
Sample ID: MW-205-20170222-01
Well Diameter (in): 2
Purge Method: Low Flow
QA/QC Collected? NO
*Well Volume (gal) = 0.041d²h:
Start/Stop Purge Time: 1145 / 1210
QA/QC I.D.
Purge Rate (L/min)[b]: 0.1
Total Purge Volume (L): 2.5 L
Laboratory Analyses: COC

Well Type: (Flush) / Stick Up
Well Cap Condition: (Good) / Replace / Other
Well Lock: (Yes) / No
Well Bolted: Yes / (No)
Bolts Needed: Yes (No)

Sampling Method (check all that apply): ☐ soda straw ☒ pump head discharge ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (µS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1150 | 24.14 | 286.40 | 0.78 | 6.36 | -68.20 | 9.26 | 0.5 | 6.77 | |
| 1155 | 23.63 | 288.40 | 0.76 | 6.36 | -69.80 | 2.78 | 1.0 | 6.77 | |
| 1200 | 23.24 | 287.90 | 1.04 | 6.36 | -69.60 | 7.16 | 1.5 | 6.78 | |
| 1205 | 22.71 | 288.80 | 0.61 | 6.36 | -70.10 | 4.37 | 2.0 | 6.78 | |
| 1210 | 22.40 | 289.0 | 0.91 | 6.37 | -69.80 | 5.50 | 2.5 | 6.78 | - Stable |
| | | | | | | | | | Sampled @ 1225 |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since itiial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.: 0366660
Sampling Date: 2/23/17
Site/Location: Macon
Sampler's Name: K. Spevacek
Well ID: MW-400
Pump Type/Model: Aletis Peri
Sample Collection Time: 1545
Total Depth (ft)[a]: 18.71
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 0.1
Depth to Water (ft): 13.55
Pump Intake Depth (ft): 16
Sample ID: MW-400-20170 2
Well Diameter (in): 1"
Purge Method: Low Flow
QA/QC Collected? Yes
*Well Volume (gal) = 0.041d²h:
Start/Stop Purge Time: 1435/1525
QA/QC I.D. DUP-03-20170223-01
Purge Rate (L/min)[b]: 0.1
Total Purge Volume (L): 5.0
Laboratory Analyses: 8260, 8270

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply) ☒ soda straw ☒ pump head discharge ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (µS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1440 | 22.74 | 436.6 | 1.42 | 5.32 | 105.5 | 60.7 | 0.5 | 13.75 | |
| 1445 | 22.00 | [illegible] | 0.80 | 5.38 | 99.6 | 126. | 1.0 | 13.75 | Spec Cond = 515.3 µS/cm |
| 1450 | 22.27 | 606.90 | 0.49 | 5.46 | 110.7 | 79.7 | 1.5 | 13.76 | |
| 1455 | 22.02 | 615.3 | 1.02 | 5.43 | 110.3 | 53.6 | 2.0 | 13.76 | |
| 1500 | 22.27 | 693.4 | 0.48 | 5.43 | 117.3 | 19.0 | 2.5 | 13.76 | |
| 1505 | 21.86 | 728.2 | 0.25 | 5.43 | 120.9 | 11.1 | 3.0 | 13.76 | |
| 1510 | 21.29 | 760.8 | 0.43 | 5.43 | 121.7 | 6.19 | 3.5 | 13.76 | |
| 1515 | 21.82 | 785.2 | 0.33 | 5.41 | 132.4 | 5.21 | 4.0 | 13.76 | |
| 1520 | 21.82 | 796.9 | 0.26 | 5.42 | 142.7 | 3.67 | 4.5 | 13.76 | |
| 1525 | 21.88 | 806.5 | 0.24 | 5.41 | 148.1 | 3.12 | 5.0 | 13.76 | - Stable |
| | | | | | | | | | |
| | | | | | | | | | Sampled @ 1545 |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.: 0366660
Sampling Date: 2/24/17
Site/Location: Macon
Sampler's Name: K. Speracek
Well ID: MW-401
Pump Type/Model: Alexis Peri
Sample Collection Time: 1110
Total Depth (ft)[a]: 20.15
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 0.1
Depth to Water (ft): 12.55
Pump Intake Depth (ft): 15.5
Sample ID: MW-401-20170224-01
Well Diameter (in): 1 1/2
Purge Method: Low Flow
QA/QC Collected? NO
*Well Volume (gal) = 0.041d²h:
Start/Stop Purge Time: 1025
QA/QC I.D. —
Purge Rate (L/min)[b]: 0.1
Total Purge Volume (L): 3.0
Laboratory Analyses: 8260, 8270

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply) ☒ soda straw ☒ pump head discharge ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (µS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1030 | 21.07 | 342.2 | 0.81 | 6.04 | 59.5 | 51.3 | 0.5 | 12.56 | |
| 1035 | 21.42 | 339.8 | 1.32 | 6.02 | 65.1 | 33.0 | 1.0 | 12.56 | |
| 1040 | 21.21 | 339.7 | 1.15 | 6.04 | 64.3 | 25.1 | 1.5 | 12.56 | |
| 1045 | 21.37 | 343.2 | 0.88 | 6.05 | 60.3 | 18.3 | 2.0 | 12.56 | |
| 1050 | 21.47 | 339.3 | 0.88 | 6.06 | 59.8 | 12.9 | 2.5 | 12.56 | |
| 1055 | 21.43 | 339.9 | 0.88 | 6.05 | 61.3 | 9.1 | 3.0 | 12.56 | Stable |
| | | | | | | | | | Sampled @ 1110 |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.:
Sampling Date: 2-23-17
Site/Location: Macon Ga
Sampler's Name: M Rogers
Well ID: MW-08D
Pump Type/Model: Altex Peristaltic
Sample Collection Time: 1014
Total Depth (ft)[a]: 53.5
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: .1 L/min
Depth to Water (ft): 11.69
Pump Intake Depth (ft): ~45
Sample ID: MW-08D-20170223-01
Well Diameter (in): 2
Purge Method: Low flow
QA/QC Collected? No
*Well Volume (gal) = 0.041d²h: 27.4 gal / 103.7 L
Start/Stop Purge Time: 0945
QA/QC I.D. -
Purge Rate (L/min)[b]: .2
Total Purge Volume (L):
Laboratory Analyses: See COC

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply)
- ☐ soda straw
- ☑ pump head discharge
- ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 0950 | 21.31 | 278.0 | 0.32 | 6.74 | -106.6 | 0.56 | 1 | 11.96 | |
| 0955 | 21.57 | 274.4 | 0.21 | 6.87 | -110.8 | 0.61 | 2 | 12.00 | Dec PR to .100 L/min |
| 1000 | 21.73 | 272.7 | 0.18 | 6.94 | -111.0 | 0.64 | 3 | 12.20 | ↓ ↓ ↓ |
| 1005 | 21.69 | 271.1 | 0.20 | 6.99 | -107.3 | 0.62 | 4 | 12.20 | |
| 1010 | 21.87 | 269.0 | 0.20 | 7.02 | -105.4 | 0.53 | 5 | 12.20 | |
| | | | | | | | 6 | | |
| | | Parameters Stable | | | | | | | |
| | | | | | Sampling @ 1014 | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since itilial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: Atlanta Gas Light
Project No.: 0366660.11
Sampling Date: 2-23-17
Site/Location: Abl-Mason Macon Georgia
Sampler's Name: Markham Jones
Well ID: MW-1200
Pump Type/Model: Peristaltic / Masus
Sample Collection Time: 1405
Total Depth (ft)[a]: 97.41
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: .1
Depth to Water (ft): 14.96
Pump Intake Depth (ft): 92
Sample ID: MW-1200-20170223-01
Well Diameter (in): 2
Purge Method: Low-Flow
QA/QC Collected? No
*Well Volume (gal) = 0.041d²h: 13.45
Start/Stop Purge Time: 1330/1400
QA/QC I.D.
Purge Rate (L/min)[b]: .1
Total Purge Volume (L): 3.0
Laboratory Analyses: See COC

Well Type: (Flush) / Stick Up
Well Cap Condition: (Good) / Replace / Other
Well Lock: (Yes) / No
Well Bolted: (Yes) / No
Bolts Needed: Yes / (No)

Sampling Method: (check all that apply)
- ☑ soda straw
- ☑ pump head discharge
- ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1335 | 23.48 | 164.50 | 4.66 | 7.42 | -23.40 | 2.55 | 0.5 | 15.68 | |
| 1340 | 22.04 | 222.20 | 1.32 | 7.48 | -86.30 | 1.20 | 1.0 | 16.00 | |
| 1345 | 21.95 | 229.00 | 0.69 | 7.63 | -105.70 | 1.20 | 1.5 | 16.47 | |
| 1350 | 21.91 | 223.20 | 0.49 | 7.65 | -110.40 | 1.19 | 2.0 | 17.20 | |
| 1355 | 22.09 | 225.30 | 0.40 | 7.70 | -114.80 | 1.56 | 2.5 | 17.69 | |
| 1400 | 22.45 | 225.20 | 0.34 | 7.65 | -117.00 | 1.74 | 3.0 | 18.31 | |
| | | | All Remarks Stable | | | | | | |
| | | | 14.96 Partly Cloudy, Breezy | | | | | | |
| | | | Total Depth 97.41 ft | | | | | | |
| | | | Markham L. Jones | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since itiial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.: 0366660
Sampling Date: 2-24-17
Site/Location: Macon, GA
Sampler's Name: C. Hurdle
Well ID: MW-12DRR
Pump Type/Model: alexis Peristaltic
Sample Collection Time: 1005
Total Depth (ft)[a]: 52.0ft (52.31
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 0.2
Depth to Water (ft): 9.58
Pump Intake Depth (ft): 44.5
Sample ID: MW-12DRR-20170224-01
Well Diameter (in): 2
Purge Method: low flow
QA/QC Collected? NO
*Well Volume (gal) = 0.041d²h: 6.9(6gal) / 26.33L
Start/Stop Purge Time: 0937 / 1002
QA/QC I.D. —
Purge Rate (L/min)[b]: 0.2
Total Purge Volume (L): 5.0
Laboratory Analyses: 8260, 8270C

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: ~~Yes / No~~ N/A
Bolts Needed: Yes / No

Sampling Method: (check all that apply)
- ☑ soda straw
- ☑ pump head discharge
- ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 0942 | 21.31 | 511.4 | 0.36 | 6.14 | 52.8 | 0.38 | 1.0 | 9.61 | Water Has Odor (strong) |
| 0947 | 21.28 | 510.0 | 0.23 | 6.28 | 34.1 | 0.25 | 2.0 | 9.63 | |
| 0952 | 21.14 | 505.4 | 0.24 | 6.36 | 20.5 | 1.24 | 3.0 | 9.64 | |
| 0957 | 21.52 | 500.3 | 0.21 | 6.38 | 10.5 | 0.69 | 4.0 | 9.66 | |
| 1002 | 21.91 | 493.6 | 0.18 | 6.42 | 1.00 | 0.74 | 5.0 | 9.66 | |
| | | | | | | | | | |
| water level and Parameters Stable | | | | | | | | | |
| Turbidity < 10.00 NTU | | | | | | | | | |
| | | | | | | | | | |
| Well can be Sampled | | | | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.: 0176740
Sampling Date: 02/21/2017
Site/Location: MACON, GA
Sampler's Name: A. SHOREDITS
Well ID: MW-22D
Pump Type/Model: ALEXIS PERISTALTIC
Sample Collection Time: 14:00
Total Depth (ft)[a]: (66.0) 45.73
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 0.15
Depth to Water (ft): 12.14
Pump Intake Depth (ft): 45.5
Sample ID: MW-22D-20170221-01
Well Diameter (in): 4.00
Purge Method: LOW FLOW/LOW VOLUME
QA/QC Collected? YES.
*Well Volume (gal) = 0.041d²h: 34.5 (130.5 L)
Start/Stop Purge Time: 13:30/13:55
QA/QC I.D. MS/MSD
Purge Rate (L/min)[b]: 0.1/0.15
Total Purge Volume (L): 3.50
Laboratory Analyses: SEE COC

Well Type: (Flush) / Stick Up
Well Cap Condition: (Good) / (Replace) / Other
Well Lock: (Yes) / No
Well Bolted: (Yes) / No
Bolts Needed: (Yes) / No

Sampling Method: (check all that apply) ☒ soda straw ☒ pump head discharge ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. ~~mS/cm~~ µS/cm | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 13:35 | 22.03 | 379.20 | 2.08 | 6.93 | -113.10 | 2.24 | 0.5 | 12.20 | Increased purge rate to 150 ml/min. |
| 13:40 | 21.37 | 414.00 | 0.65 | 6.94 | -131.40 | 0.62 | 1.25 | 12.25 | |
| 13:45 | 21.15 | 416.80 | 0.37 | 7.01 | -134.30 | 0.63 | 2.00 | 12.30 | |
| 13:50 | 21.15 | 418.90 | 0.30 | 6.99 | -115.60 | 0.39 | 2.75 | 12.35 | |
| 13:55 | 21.21 | 418.20 | 0.26 | 6.91 | -97.30 | 0.66 | 3.50 | 12.38 | Drawdown slowing |
| | | | | | | | | | |
| PARAMETERS ARE STABLE, WELL CAN BE SAMPLED. | | | | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C ✓ | 13 +/- 3% ✓ | +/- 10% (see note below)[g] | +/- 0.1 unit ✓ | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% ✓ | (see note below)[d] ✓ | (see note below)[f] ✓ | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.: 0176740
Sampling Date: 02/22/2017
Site/Location: MACON, GA
Sampler's Name: A. SHOREDITS
Well ID: MW-23D
Pump Type/Model: ALEXIS PERISTALTIC
Sample Collection Time: 10:40
Total Depth (ft)[a]: (36) 34.27 btoc
Tubing Material: LDPE, 0.17" I.D.
Sample Purge Rate (L/min)[c]: 0.15
Depth to Water (ft): 10.57
Pump Intake Depth (ft): 30.0 btoc
Sample ID: MW-23D-20170222-01
Well Diameter (in): 2.00
Purge Method: LOW FLOW/LOW VOLUME
QA/QC Collected? NO
*Well Volume (gal) = 0.041d²h: 16.28 (61.62L)
Start/Stop Purge Time: 10:06/10:31
QA/QC I.D. NA
Purge Rate (L/min)[b]: 0.1/0.15
Total Purge Volume (L): 3.25
Laboratory Analyses: SEE COC

Well Type: (Flush) / Stick Up
Well Cap Condition: (Good) / Replace / Other
Well Lock: (Yes) (No)
Well Bolted: Yes (No)
Bolts Needed: (Yes) / No

Sampling Method: (check all that apply)
☒ soda straw
☒ pump head discharge
☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. ~~(mS/cm)~~ µS/cm | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 10:12 | 21.51 | 392.10 | 1.11 | 6.22 | 67.00 | 12.8 | 0.5 | 10.61 | Large particles in water |
| 10:16 | 22.18 | 389.90 | 0.41 | 6.06 | 52.40 | 10.1 | 1.0 | 10.62 | Increased purge rate to 150ml/min |
| 10:21 | 22.38 | 389.30 | 0.31 | 6.04 | 47.10 | 10.5 | 1.75 | 10.64 | |
| 10:26 | 22.38 | 385.70 | 0.25 | 6.04 | 44.80 | ~~8.36~~ 8.5 | 2.50 | 10.64 | |
| 10:31 | 22.56 | 385.10 | 0.22 | 6.04 | 43.20 | 7.84 | 3.25 | 10.64 | |
| | | | | | | | | | |
| PARAMETERS ARE STABLE, WELL CAN BE SAMPLED. | | | | | | | | | |
| Stabilizing Criteria[e] | +/- ✓ 1°C | 12 +/- ✓ 3% | +/- 10% (see note below)[g] | +/- ✓ 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.: 0366660
Sampling Date: 2/28/17
Site/Location: Macon, GA
Sampler's Name: K. Spevacek
Well ID: MW-24D
Pump Type/Model: Alexis Peristaltic
Sample Collection Time: 1000
Total Depth (ft)[a]: 40.5 (39.75)
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 0.1
Depth to Water (ft): 4.98
Pump Intake Depth (ft): 35
Sample ID: MW-24D-20170228-01
Well Diameter (in): 4"
Purge Method: Low Flow
QA/QC Collected? NO
*Well Volume (gal) = 0.041d²h:
Start/Stop Purge Time: 0923/0948
QA/QC I.D.
Purge Rate (L/min)[b]: 0.1
Total Purge Volume (L): 2.5
Laboratory Analyses: 8260, 8270

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method (check all that apply): ☒ soda straw ☒ pump head discharge ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 0928 | 16.78 | ~~5.95~~ 53.5 | 0.73 | 5.95 | 112.4 | 1.34 | 0.5 | 5.14 | cond = 53.5 uS/cm KS |
| 0933 | 17.12 | 51.00 | 0.57 | 5.75 | 101.6 | 1.30 | 1.0 | 5.24 | |
| 0938 | 17.23 | 49.10 | 0.44 | 5.71 | 94.2 | 1.41 | 1.5 | 5.29 | |
| 0943 | 17.23 | 48.80 | 0.41 | 5.70 | 91.3 | 1.79 | 2.0 | 5.33 | |
| 0948 | 17.36 | 49.20 | 0.38 | 5.70 | 90.3 | 1.39 | 2.5 | 5.36 | - stable |
| | | | | | | | | | Sampled @ 1000 |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[i] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown not to be 0.3 ft or less since initial reading. Pump/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SOP/Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SOP/Standard Operating Procedure

* r = well diameter (inches),
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: Atlanta Gas & Light
Project No.: 0366660.11
Sampling Date: 2-22-17
Site/Location: AGL - Macon, Macon Georgia
Sampler's Name: Markuvious Thomas
Well ID: MW-26D
Pump Type/Model: Geotech/Mini
Sample Collection Time: 1505
Total Depth (ft)[a]: 42
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: .1
Depth to Water (ft): 1.23
Pump Intake Depth (ft): 37
Sample ID: MW-26D-20170222-01
Well Diameter (in): 4
Purge Method: Low flow
QA/QC Collected? No
*Well Volume (gal) = 0.041d²h: 26.62 gals
Start/Stop Purge Time: 1435/1500
QA/QC I.D.
Purge Rate (L/min)[b]: .1
Total Purge Volume (L): 2.5
Laboratory Analyses: See COC

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply)
- ☑ soda straw
- ☑ pump head discharge
- ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1440 | 22.45 | 230.40 | 0.76 | 10.36 | 42.80 | 9.23 | .5 | 1.45 | |
| 1445 | 21.33 | 233.90 | 0.42 | 10.32 | 41.10 | 8.56 | 1.0 | ~~1.63~~ NLT | 1.63 |
| 1450 | 21.11 | 236.20 | 0.34 | 10.30 | 39.20 | 8.13 | 1.5 | ~~1.66~~ NLT | 1.86 |
| 1455 | 21.64 | 237.90 | ~~0.~~ NLT | 10.27 | 37.60 | 8.22 | 2.0 | 1.87 | 0.23mg/L |
| 1500 | 21.46 | 234.20 | 0.26 | 10.27 | 35.90 | 8.01 | 2.5 | 2.20 | |
| | | | All Parameters stable (except turbidity) | | | | | | |
| | | | 240°F Cloudy, light precipitation, windy | | | | | | |
| | | | Take Right, 34.4L | | | | | | |
| | | | Markuvious Thomas | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.:
Sampling Date: 2-21-17
Site/Location: AGL Macon Ga
Sampler's Name: MRogers
Well ID: MW-27D
Pump Type/Model: Alcris Peristaltic
Sample Collection Time: 1012
Total Depth (ft)[a]: 48.5
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: .2
Depth to Water (ft): 8.58
Pump Intake Depth (ft): ~ 45.5
Sample ID: MW-27D-20170221-01
Well Diameter (in): 2
Purge Method: Low flow
QA/QC Collected? No
*Well Volume (gal) = 0.041d²h:
Start/Stop Purge Time: 0932
QA/QC I.D. ~
Purge Rate (L/min)[b]: .2
Total Purge Volume (L): 7
Laboratory Analyses: See COC

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply)
☐ soda straw
☑ pump head discharge
☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 0937 | READING WAS NOT SAVED | | | | | | 1 | 8.73 | Water is dark grey |
| 0942 | 18.93 | 238.5 | 1.86 | 7.88 | -17.1 | 21.7 | 2 | 8.80 | |
| 0947 | 19.33 | 225.5 | 0.24 | 6.93 | -20.6 | 18.63 | 3 | 8.84 | |
| 0952 | 19.37 | 220.4 | 0.16 | 6.62 | -16.4 | 7.37 | 4 | 8.85 | |
| 0957 | 19.33 | 218.2 | 0.15 | 6.52 | -14.2 | 5.24 | 5 | 8.85 | |
| 1002 | 19.38 | 216.9 | 0.13 | 6.49 | -13.5 | 5.41 | 6 | 8.85 | |
| 1007 | 19.5 | 215.9 | 0.11 | 6.46 | -13.1 | 5.26 | 7 | 8.85 | |
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| | | | | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: Atlanta Gas & Light
Project No.: 0366660.11
Sampling Date: 2-22-17
Site/Location: AGL-Macon Macon Georgia
Sampler's Name: Mckenzie Thom
Well ID: MW-106D
Pump Type/Model: Peristaltic / Mono
Sample Collection Time: 1055
Total Depth (ft)[a]: 53.5
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: .1
Depth to Water (ft): 11.14
Pump Intake Depth (ft): 53.5
Sample ID: ~~MW-106~~ MW-106D-20170222-01
Well Diameter (in): 4
Purge Method: Low-flow
QA/QC Collected? No
*Well Volume (gal) = 0.041d²h: 30.926 gal
Start/Stop Purge Time: 1015 / 1050
QA/QC I.D.
Purge Rate (L/min)[b]: .1
Total Purge Volume (L): 3.5
Laboratory Analyses: See COC

Well Type: (Flush) / Stick Up
Well Cap Condition: (Good) / Replace / Other
Well Lock: (Yes) / No
Well Bolted: (Yes) / No
Bolts Needed: Yes / (No)

Sampling Method: (check all that apply)
- ☑ soda straw
- ☑ pump head discharge
- ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1020 | ~~26.15~~ NT | No | Water | in | Flow | cell 1.64 | .5 | 11.16 | |
| 1025 | ~~26.1~~ NT | 150.20 | 1.13 | 6.83 | -97.60 | 1.37 | 1.0 | 11.25 | |
| 1030 | 22.32 | 152.60 | 0.54 | 7.36 | -145.90 | 0.92 | 1.5 | 11.29 | |
| 1035 | ~~26.15~~ NT | 152.00 | 0.42 | 7.58 | -154.40 | 1.11 | 2.0 | 11.35 | |
| 1040 | 22.35 | 152.20 | 0.37 | 7.68 | -155.50 | 0.81 | 2.5 | 11.37 | |
| 1045 | 22.22 | 151.10 | 0.33 | 7.71 | -152.60 | 0.92 | 3.0 | 11.40 | |
| 1050 | 22.45 | 151.60 | 0.30 | 7.70 | -149.30 | 0.90 | 3.5 | 11.42 | |
| | | | All Parameters stable | | | | | | |
| | | | 67.0°F Clouds at Wind | | | | | | |
| | | | Total Depth 58.05 ft | | | | | | |
| | | | Mckenzie Thom | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: Atlanta Gas Light
Project No.: 0366660.11
Sampling Date: 2-23-17
Site/Location: Old - Macon Macon Georgia
Sampler's Name: Mechanus Thomas
Well ID: MW-110D
Pump Type/Model: Peristaltic Pump
Sample Collection Time: 1620
Total Depth (ft)[a]: 43
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: .1
Depth to Water (ft): 7.22
Pump Intake Depth (ft): 25 ft
Sample ID: MW-110D-20170223-01
Well Diameter (in): 2
Purge Method: Low-flow
QA/QC Collected? Yes
*Well Volume (gal) = 0.041d²h: 23.36 gal
Start/Stop Purge Time: 1550/1615
QA/QC I.D. DUP-9-20170223-01
Purge Rate (L/min)[b]: .1
Total Purge Volume (L): 2.5
Laboratory Analyses: See COC

Well Type: (Flush) / Stick Up
Well Cap Condition: (Good) / Replace / Other
Well Lock: (Yes) / No
Well Bolted: (Yes) / No
Bolts Needed: Yes / (No)

Sampling Method: (check all that apply) ☑ soda straw ☑ pump head discharge ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1555 | 23.46 | 513.30 | 1.35 | 6.57 | -40.70 | 55.9 | .5 | 7.24 | |
| 1600 | 22.93 | 517.10 | 0.36 | 6.35 | -43.50 | 11.2 | 1.0 | 7.26 | |
| 1605 | 22.75 | 523.10 | 0.28 | 6.31 | -45.90 | 7.84 | 1.5 | 7.26 | |
| 1610 | 23.14 | 522.00 | 0.21 | 6.30 | -47.50 | 4.59 | 2.0 | 7.26 | |
| 1615 | 23.35 | 519.60 | 0.19 | 6.30 | -46.50 | 5.95 | 2.5 | 7.26 | |
| | | | All Parameters | Stable | | | | | |
| | | | 77°F | Partly Cloudy, Breezy | | | | | |
| | | | Total Depth | 33.86 ft | | | | | |
| | | | Mechanus L. Thomas | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.: 0176740
Sampling Date: 02/22/2017
Site/Location: MACON, GA
Sampler's Name: A. SHOREDITS
Well ID: MW-112D
Pump Type/Model: ALEXIS PERISTALTIC
Sample Collection Time: 14:40
Total Depth (ft)[a]: (36) 35.20 bfoc
Tubing Material: LDPE, 0.17" I.D.
Sample Purge Rate (L/min)[c]: 0.1
Depth to Water (ft): 4.51
Pump Intake Depth (ft): 30.0
Sample ID: MW-112D-20170222-01
Well Diameter (in): 4.00
Purge Method: LOW FLOW / LOW VOLUME
QA/QC Collected? NO
*Well Volume (gal) = 0.041d²h: 20.15 (76.28L)
Start/Stop Purge Time: 14:03 / 14:33
QA/QC I.D. NA
Purge Rate (L/min)[b]: 0.11/0.1
Total Purge Volume (L): 3.05
Laboratory Analyses: VOCs, SVOCs

Well Type: (Flush) / Stick Up
Well Cap Condition: (Good) / Replace / Other
Well Lock: (Yes) / No
Well Bolted: (Yes) / No
Bolts Needed: (Yes) / No

Sampling Method: ☒ soda straw
(check all that apply) ☒ pump head discharge
☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. ~~(mS/cm)~~ µS/cm | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 14:08 | 21.81 | 284.80 | 5.42 | 8.99 | 85.00 | 1.71 | 0.55 | 4.72 | Lowered purge rate to 100ml/min. |
| 14:13 | 21.50 | 290.00 | 5.45 | 9.18 | 79.60 | 1.68 | 1.05 | 4.96 | Drawdown is continuing, white particles |
| 14:18 | 21.95 | 289.30 | 5.35 | 9.20 | 76.30 | 1.80 | 1.55 | 5.19 | |
| 14:23 | 22.54 | 290.00 | 5.35 | 9.20 | 73.40 | 1.80 | 2.05 | 5.38 | |
| 14:28 | 22.57 | 288.30 | 5.25 | 9.21 | 71.80 | 1.18 | 2.55 | 5.57 | |
| 14:33 | 22.10 | 287.40 | 5.23 | 9.22 | 71.10 | 1.43 | 3.05 | 5.75 | |
| | | | | | | | | | |
| PARAMETERS ARE STABLE OTHER THAN DRAWDOWN | | | | | | | | | |
| WELL VOLUMES ARE NOT FEASIBLE GIVEN THE | | | | | | | | | |
| LARGE WELL VOLUMES, SAMPLING WELL. | | | | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C ✓ | 9 +/- 3% ✓ | +/- 10% (see note below)[g] | +/- 0.1 unit ✓ | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% ✓ | (see note below)[d] | (see note below)[f] ✗ | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.: 0176740
Sampling Date: 02/22/2017
Site/Location: MACON, GA
Sampler's Name: A. SHOREDITS
Well ID: MW-113D
Pump Type/Model: ALEXIS PERISTALTIC
Sample Collection Time: 12:20
Total Depth (ft)[a]: (39.5) 39.43
Tubing Material: LDPE, 0.17" I.D.
Sample Purge Rate (L/min)[c]: 0.16
Depth to Water (ft): 7.78
Pump Intake Depth (ft): 34.0
Sample ID: MW-113D-20170222-01
Well Diameter (in): 4.00
Purge Method: LOW FLOW/LOW VOLUME
QA/QC Collected? NO
*Well Volume (gal) = 0.041d²h: 20.3 (76.8L)
Start/Stop Purge Time: 11:50/12:10
QA/QC I.D. NA
Purge Rate (L/min)[b]: 0.18/0.16
Total Purge Volume (L): 3.3
Laboratory Analyses: SEE COC (VOCs, SVOCs)

Well Type: (Flush) / Stick Up
Well Cap Condition: (Good) / Replace / Other
Well Lock: (Yes) / No
Well Bolted: (Yes) / No
Bolts Needed: Yes / (No)

Sampling Method: ☒ soda straw
(check all that apply) ☒ pump head discharge
☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. ~~(mS/cm)~~ mS/cm | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 11:55 | 22.81 | 356.50 | 0.51 | 5.87 | 68.20 | 0.75 | 0.9 | 7.86 | Lowered purge rate to 160 ml/min |
| 12:00 | 22.39 | 356.90 | 0.36 | 5.82 | 68.20 | 2.12 | 0.7 | 7.91 | |
| 12:05 | 22.25 | 356.70 | 0.25 | 5.81 | 68.30 | 1.43 | 2.5 | 7.91 | |
| 12:10 | 22.17 | 355.70 | 0.20 | 5.80 | 68.60 | 1.10 | 3.3 | 7.92 | |
| | | | | | | | | | |
| PARAMETERS ARE STABLE, WELL CAN BE SAMPLED. | | | | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C ✓ | 32 +/- 3% ✓ | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% ✓ | (see note below)[d] | (see note below)[f] ✓ | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since initial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Site/Location: AGL Macon
Well ID: MW-2 OOOR
Total Depth (ft)[a]: 39.5 , (39.8)
Depth to Water (ft): 5.78
Well Diameter (in): 2
*Well Volume (gal) = 0.041d²h:

Project No.:
Pump Type/Model: Aegis Rev
Tubing Material: LDPE
Pump Intake Depth (ft): ~32
Purge Method: Low flow
Start/Stop Purge Time: 0936
Purge Rate (L/min)[b]: .2
Total Purge Volume (L): 3

Sampling Date:
Sampler's Name: MRiggs
Sample Collection Time: 1000
Sample Purge Rate (L/min)[c]: .1 L/min
Sample ID: MW-2OOOR-20170224-01
QA/QC Collected? No
QA/QC I.D. —
Laboratory Analyses: See COC

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply)
☐ soda straw
☐ pump head discharge
☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 0941 | 20.31 | 458.7 | 0.32 | 6.51 | -57.3 | 10.8 | 1 | 6.67 | Dec PR to .1 L/min |
| 0946 | 21.02 | 454.7 | 0.26 | 6.53 | -59.0 | 10.0 | 1.5 | 6.68 | |
| 0951 | 20.83 | 455.1 | 0.25 | 6.53 | -59.3 | 9.67 | 2.0 | 6.7 | |
| 0956 | 20.88 | 454.5 | 0.22 | 6.53 | -58.9 | 1.62 | 2.5 | 6.7 | |
| 1001 | 21.06 | 454.2 | 0.21 | 6.53 | -58.8 | 1.51 | 3.0 | 6.7 | |
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| | | | | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ittial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: Atlanta Gaslight
Project No.: 0866060.11
Sampling Date: 2-24-17
Site/Location: AGL - Macon Macon Georgia
Sampler's Name: McLarrow Thomas
Well ID: MW-204D
Pump Type/Model: Aquatech Peristaltic
Sample Collection Time: 1055
Total Depth (ft)[a]: 45.5
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: .1
Depth to Water (ft): 7.5
Pump Intake Depth (ft): 40
Sample ID: MW-204D-20170224-01
Well Diameter (in): 4
Purge Method: Low-Flow
QA/QC Collected? No
*Well Volume (gal) = 0.041d²h: 24.8
Start/Stop Purge Time: 1025/1050
QA/QC I.D.
Purge Rate (L/min)[b]: .1
Total Purge Volume (L): 2.5
Laboratory Analyses: Sur Col

Well Type: (Flush) / Stick Up
Well Cap Condition: (Good) / Replace / Other
Well Lock: (Yes) / No
Well Bolted: (Yes) / No
Bolts Needed: Yes / (No)

Sampling Method: (check all that apply)
- ☑ soda straw
- ☑ pump head discharge
- ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1030 | 24.69 | 449.30 | 1.55 | 7.17 | -10.10 | 5.02 | .5 | 2.57 | |
| 1035 | 23.47 | 449.20 | 0.43 | 6.34 | -14.00 | 1.22 | 1.0 | 2.58 | |
| 1040 | 23.52 | 449.60 | 0.30 | 6.24 | -15.20 | 2.02 | 1.5 | 7.60 | |
| 1045 | 23.75 | 447.60 | 0.24 | 6.22 | -15.80 | 1.27 | 2.0 | 7.61 | |
| 1050 | 23.43 | 447.30 | 0.21 | 6.22 | -16.80 | 1.61 | 2.5 | 7.62 | |
| | | All Parameters Stable | | | | | | | |
| | | 21°F Sunny light breeze | | | | | | | |
| | | Total Depth 45.12 | | | | | | | |
| | | McLarrow Thomas | | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.: 0366660
Sampling Date: 2-24-17
Site/Location: Macon, GA
Sampler's Name: C. Hurdle
Well ID: MW-205D
Pump Type/Model: alexis Peristaltic
Sample Collection Time: 1130
Total Depth (ft)[a]: 43 (41.55)
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 0.2
Depth to Water (ft): 6.66
Pump Intake Depth (ft): 35.5
Sample ID: MW-205D-20170224-01
Well Diameter (in): 4
Purge Method: Low-flow
QA/QC Collected? yes
*Well Volume (gal) = 0.041d²h: 23.84 gal / 90.23 L
Start/Stop Purge Time: 1105 / 1125
QA/QC I.D. DUP-5-20170224-01
Purge Rate (L/min)[b]: ~~.4 L/m~~ 0.2
Total Purge Volume (L): 4.0
Laboratory Analyses: EPA-8260, 8270C

Well Type: (Flush) / Stick Up
Well Cap Condition: (Good) / Replace / Other
Well Lock: Yes / (No)
Well Bolted: (Yes) / No
Bolts Needed: (Yes) / No

Sampling Method: (check all that apply)
- ☑ soda straw
- ☑ pump head discharge
- ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1110 | 23.43 | 697.2 | 0.25 | 6.43 | -41.3 | 0.86 | 1.0 | 6.80 | Strong odor |
| 1115 | 23.52 | 688.0 | 0.19 | 6.62 | -55.5 | 1.06 | 2.0 | 6.85 | |
| 1120 | 23.16 | 686.2 | 0.14 | 6.52 | -52.8 | 1.12 | 3.0 | 6.85 | |
| 1125 | 22.92 | 673.0 | 0.12 | 6.54 | -55.1 | 0.90 | 4.0 | 6.85 | |
| | | | | | | | | | |
| Water level and Parameters Stable | | | | | | | | | |
| Turbidity <10.00 NTU | | | | | | | | | |
| | | | | | | | | | |
| Well can be Sampled | | | | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: Atlanta Gas Light
Project No.: 0866660.11
Sampling Date: 2-24-17
Site/Location: AGL - Macon Macon Georgia
Sampler's Name: Matthew Thomas
Well ID: MW-205DD
Pump Type/Model: Geotech Peristaltic
Sample Collection Time: 1245
Total Depth (ft)[a]: 100
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: .1
Depth to Water (ft): 14.95
Pump Intake Depth (ft): 95
Sample ID: MW-205DD-20170224-01
Well Diameter (in): 4
Purge Method: Low-flow
QA/QC Collected? No
*Well Volume (gal) = 0.041d²h: 55.5
Start/Stop Purge Time: 1210/1240
QA/QC I.D.
Purge Rate (L/min)[b]: .1
Total Purge Volume (L): 3.0
Laboratory Analyses: See COC

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply)
- ☐ soda straw
- ☑ pump head discharge
- ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1215 | 22.41 | 356.00 | 2.60 | 8.62 | -8.50 | 1.30 | .5 | 15.02 | |
| 1220 | 23.23 | 393.90 | 1.08 | 8.52 | -53.10 | 0.33 | 1.0 | 15.15 | |
| 1225 | 22.91 | 403.70 | 0.80 | 8.49 | -98.50 | 0.93 | 1.5 | 15.39 | |
| 1230 | 23.00 | 396.10 | 0.61 | 8.44 | -23.40 | 1.34 | 2.0 | 15.52 | |
| 1235 | 23.01 | 390.00 | 0.55 | 8.46 | 6.90 | 0.63 | 2.5 | 15.69 | |
| 1240 | 22.85 | 388.60 | 0.49 | 8.50 | 26.40 | 1.29 | 3.0 | 15.85 | |
| | | | All Parameters Stable | | | | | | |
| | | | 770ft Screen, Well Screen | | | | | | |
| | | | Total Depth: 99.03 ft | | | | | | |
| | | | Matthew Thomas | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since itiial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

# GROUND WATER SAMPLING LOG SHEET

ERM

Client: AGL
Project No.: 0366660
Sampling Date: 2-27-17
Site/Location: Macon, GA
Sampler's Name: C. Hurdle
Well ID: MW-206D
Pump Type/Model: Alexis Peristaltic
Sample Collection Time: 1030
Total Depth (ft)[a]: 46.0
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 0.2
Depth to Water (ft): 6.89
Pump Intake Depth (ft): 38.5
Sample ID: MW-206D-20170227-01
Well Diameter (in): 4
Purge Method: low-flow
QA/QC Collected? NO
*Well Volume (gal) = 0.041d²h: 25.66 gal / 97.11 L
Start/Stop Purge Time: 0938 / 1028
QA/QC I.D. NO
Purge Rate (L/min)[b]: 0.2
Total Purge Volume (L): 10.0
Laboratory Analyses: See COC

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method (check all that apply): ☑ soda straw ☑ pump head discharge ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 0943 | 19.95 | 569.7 | 0.29 | 6.26 | 6.90 | 50.2 | 1.0 | 6.94 | Large Particles of red sediment in $H_2O$ |
| 0948 | 20.53 | 552.9 | 0.22 | 6.24 | 4.80 | 38.2 | 2.0 | 7.00 | Strong odor present |
| 0953 | 20.65 | 545.4 | 0.19 | 6.23 | 3.20 | 31.4 | 3.0 | 7.00 | |
| 0958 | 20.84 | 541.3 | 0.18 | 6.23 | 1.10 | 21.6 | 4.0 | 7.00 | - Parameters & water level stable |
| 1003 | 21.08 | 536.9 | 0.16 | 6.23 | -1.00 | 17.5 | 5.0 | 7.00 | |
| 1008 | 21.03 | 530.0 | 0.14 | 6.23 | -1.90 | 12.8 | 6.0 | 7.00 | |
| 1013 | 21.09 | 531.5 | 0.14 | 6.15 | 0.40 | 16.7 | 7.0 | 7.00 | |
| 1018 | 21.33 | 522.1 | 0.12 | 6.25 | -5.50 | 11.3 | 8.0 | 7.00 | - PH not stable |
| 1023 | 21.48 | 520.9 | 0.12 | 6.21 | -3.70 | 9.91 | 9.0 | 7.00 | |
| 1028 | 21.61 | 518.9 | 0.11 | 6.23 | -4.60 | 11.48 | 10.0 | 7.00 | |
| | | | | | | | | | |
| Parameters and water level Stable | | | | | | | | | |
| Turbidity not quite <10.00 NTU but hovering around it. | | | | | | | | | |
| | | | | | | | | | |
| Well can be sampled | | | | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[f] | (see note below)[f] | |

(a) Record measured depth to bottom of well immediately after purging and sampling to monitor re-suspension of sediment that may be resting on the well bottom
(b) Purge rate not to exceed 0.5 L/min or less
(c) Sampling rate to be 0.2 L/min or less
(d) Field parameter measurements to be recorded every 5 minutes
(e) Stabilization criteria based on three consecutive measurements
(f) Monitor DO every 5 min. Well should be purged to low 0.3 ft or less as a visual reading. Pump/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft or less as a visual reading or other well purge method
(g) 10% or stabilization criteria for low flow/low volume sampling - ERM Standard Operating Procedure
(h) ORP stabilization criteria for low flow/low volume sampling - ERM Standard Operating Procedure

* a = well diameter (inches),
b = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.16 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: Atlanta Gas Light
Project No.: 0566660.11
Sampling Date: 2-23-17
Site/Location: Old - Macon Macon Georgia
Sampler's Name: Markasur Thomas
Well ID: MW-207D
Pump Type/Model: Portable/Waterra
Sample Collection Time: 1205
Total Depth (ft)[a]: 46.5
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: .1
Depth to Water (ft): 6.75
Pump Intake Depth (ft): 40
Sample ID: MW-207D-20170223-01
Well Diameter (in): 4
Purge Method: Low-flow
QA/QC Collected? No
*Well Volume (gal) = 0.041d²h: 25.97 gal
Start/Stop Purge Time: 1030/1200
QA/QC I.D.
Purge Rate (L/min)[b]: .1
Total Purge Volume (L): 9.0
Laboratory Analyses: See COC

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply)
- ☐ soda straw
- ☑ pump head discharge
- ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1035 | 21.86 | 561.20 | 0.38 | 7.23 | -57.10 | 9.99 | 0.5 | 6.83 | |
| 1040 | 22.09 | 558.70 | 0.39 | 6.87 | -96.30 | 14.6 | 1.0 | 6.91 | |
| 1045 | 22.04 | 557.60 | 0.31 | 6.82 | -95.70 | 17.7 | 1.5 | 6.95 | |
| 1050 | 22.09 | 553.10 | 0.27 | 6.80 | -91.60 | 14.2 | 2.0 | 6.99 | |
| 1055 | 22.13 | 547.30 | 0.23 | 6.72 | -86.00 | 18.6 | 2.5 | 7.00 | |
| 1100 | 22.13 | 551.70 | 0.20 | 6.79 | -90.80 | 22.9 | 3.0 | 7.02 | |
| 1105 | 22.14 | 551.20 | 0.18 | 6.80 | -90.00 | 10.7 | 3.5 | 7.03 | |
| 1110 | 22.27 | 552.30 | 0.17 | 6.80 | -89.30 | 40.6 | 4.0 | 7.04 | |
| 1115 | 22.28 | 555.10 | 0.16 | 6.80 | -88.60 | 19.5 | 4.5 | 7.05 | |
| 1120 | 22.45 | 551.00 | 0.15 | 6.80 | -88.00 | 19.8 | 5.0 | 7.06 | |
| 1125 | 22.52 | 550.50 | 0.14 | 6.80 | -87.40 | 23.9 | 5.5 | 7.06 | |
| 1130 | 22.57 | 549.60 | 0.13 | 6.80 | -86.30 | 12.3 | 6.0 | 7.06 | |
| 1135 | 22.49 | 548.60 | 0.13 | 6.80 | -86.30 | 11.9 | 6.5 | 7.06 | |
| 1140 | 22.61 | 544.90 | 0.12 | 6.80 | -85.70 | 10.9 | 7.0 | 7.06 | |
| 1145 | 22.62 | 548.30 | 0.12 | 6.80 | -85.60 | 10.7 | 7.5 | 7.06 | |
| 1150 | 22.67 | 543.50 | 0.12 | 6.81 | -85.00 | 9.65 | 8.0 | 7.06 | |
| 1155 | 22.80 | 546.60 | 0.11 | 6.80 | -85.40 | 10.0 | 8.5 | 7.07 | |
| 1200 | 22.93 | 543.10 | 0.11 | 6.80 | -85.10 | 8.45 | 9.0 | 7.07 | |
| | | | All Parameters Stable | | | | | | |
| | | | 22.0°F Partly Cloudy / Breezy | | | | | | |
| | | | Total Depth 46.54 ft | | | | | | |
| | | | Markasur L Thomas | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: Atlanta Gas & Light
Project No.: 0366660.11
Sampling Date: 2-22-17
Site/Location: MGL - Macon / Macon, Georgia
Sampler's Name: Matthews Thomas
Well ID: MW-300D
Pump Type/Model: Peristaltic / Alexis
Sample Collection Time: 1755
Total Depth (ft)[a]: 43
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: .200
Depth to Water (ft): 4.49
Pump Intake Depth (ft): 38
Sample ID: MW-300D-20170222-01
Well Diameter (in): 2
Purge Method: Low-flow
QA/QC Collected? No
*Well Volume (gal) = 0.041d²h: 6.32 gal
Start/Stop Purge Time: 1625 / 1750
QA/QC I.D.
Purge Rate (L/min)[b]: .1-.5 L
Total Purge Volume (L): 33.5
Laboratory Analyses: See COC

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method (check all that apply): ☑ soda straw ☑ pump head discharge ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1630 | 23.84 | 0.00 | 8.02 | 10.08 | 52.10 | 1.62 | .5 | 5.02 | Smartroll installation |
| 1635 | 23.41 | 156.50 | 7.93 | 9.08 | -278.30 | 1.46 | 1.0 | 5.60 | Switch to Well Volume purge method |
| 1640 | 21.20 | 245.60 | 0.14 | 7.96 | -59.40 | 2.29 | ~~1.5~~ MLT | 7.6 | 4.50 L |
| ~~1645~~ MLT | | | | | | | | | |
| 1715 ~~1650~~ MLT | 20.98 | 265.80 | 0.22 | 6.41 | 3.30 | 1.23 | 22 | 17.73 | 1st Well Volume |
| | | | | | | | | | Reduce rate to 200mL/min @ 1730 |
| 1735 | 20.71 | 52.60 | 0.94 | 6.31 | 65.80 | 3.81 | 30.5 | 18.90 | Change SmartRoll batteries |
| 1740 | 20.72 | 336.90 | 0.27 | 6.10 | 6.10 | 3.57 | 31.5 | 16.00 | |
| 1745 | 20.64 | 342.80 | 0.12 | 6.12 | 4.90 | 3.81 | 32.5 | 14.93 | |
| 1750 | 20.70 | 339.00 | 0.11 | 6.11 | 5.30 | 3.69 | 33.5 | 10.40 | |
| | | | | All Parameters Stable | | | | | |
| | | | | 6.10 of Original Inches | | | | | |
| | | | | Total Depth 42.74 | | | | | |
| | | | | [illegible] | | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: ARL
Project No.: 0176740
Sampling Date: 02/21/2017
Site/Location: MACON, GA
Sampler's Name: A. SHOREDITS
Well ID: MW-301D
Pump Type/Model: ALEXIS PERISTALTIC
Sample Collection Time: 16:35
Total Depth (ft)[a]: (48.5) 49.89 (grip & lock) OR 49.75 TOC
Tubing Material: LDPE, 0.17" I.D.
Sample Purge Rate (L/min)[c]: 0.1
Depth to Water (ft): 11.74
Pump Intake Depth (ft): ~~40~~ 42.5 btoc!
Sample ID: MW-301D-20170221-01
Well Diameter (in): 2.00
Purge Method: LOW FLOW / LOW VOLUME
QA/QC Collected? NO
*Well Volume (gal) = 0.041d²h: 5.99 (22.68L)
Start/Stop Purge Time: 16:01 / 16:26
QA/QC I.D. NA
Purge Rate (L/min)[b]: 0.15 / 0.11
Total Purge Volume (L): 3.35
Laboratory Analyses: SEE COC

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply)
- ☒ soda straw
- ☒ pump head discharge
- ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. ~~(mS/cm)~~ µS/cm | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 16:06 | 21.37 | 765.20 | 0.97 | 6.17 | 7.80 | 4.78 | 0.75 | 12.05 | HCL odour |
| 16:11 | 20.53 | 781.70 | 0.46 | 6.07 | -6.30 | 0.52 | 1.25 | 12.19 | Lowered purge rate to 110ml/min |
| 16:16 | 20.44 | 779.80 | 0.33 | 6.06 | -11.80 | 0.80 | 2.25 | 12.30 | |
| 16:21 | 20.48 | 778.0 | 0.30 | 6.06 | -15.30 | 1.21 | 2.80 | 12.35 | |
| 16:26 | 20.53 | 774.0 | 0.29 | 6.06 | -17.00 | 0.50 | 3.35 | 12.39 | Drawdown slowing/stabilizing. |
| | | | | | | | | | |
| PARAMETERS ARE STABLE, WELL CAN BE SAMPLED. | | | | | | | | | |
| Stabilizing Criteria[e] | +/- ✓ 1°C | +/- ✓ 3% | +/- 10% (see note below)[g] | +/- ✓ 0.1 unit | +/- 10 mV (see note below)[h] | ✓ <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since itiial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: PGL
Project No.:
Sampling Date:
Site/Location: Macon Ga
Sampler's Name: Meyers
Well ID: MW-302D
Pump Type/Model: Aqua Pri
Sample Collection Time:
Total Depth (ft)[a]: 45, 47.55
Tubing Material: HDPE
Sample Purge Rate (L/min)[c]: .1
Depth to Water (ft): 13.51
Pump Intake Depth (ft): 40
Sample ID: MW-302D-20170224-01
Well Diameter (in): 2
Purge Method: Low Flow
QA/QC Collected? No
*Well Volume (gal) = 0.041d²h:
Start/Stop Purge Time: 1059
QA/QC I.D. ~
Purge Rate (L/min)[b]: .1
Total Purge Volume (L):
Laboratory Analyses: SO4 Cl

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply) ☐ soda straw ☐ pump head discharge ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1104 | 22.53 | 1024.6 | 0.88 | 5.79 | 39.4 | 14.2 | .5 | 14.57 | |
| 1109 | 22.32 | 1050.9 | 0.33 | 5.70 | 35.6 | 13.9 | 1.0 | 15.44 | |
| 1114 | 22.36 | 1048.0 | 0.26 | 5.69 | 32.9 | 13.71 | 1.5 | 16.12 | |
| 1119 | 22.48 | 1048 | 0.23 | 5.69 | 30.1 | 13.0 | 2.0 | 16.63 | |
| 1124 | 22.64 | 1038.6 | 0.22 | 5.69 | 28.0 | 13.0 | 2.5 | 17.15 | |
| 1129 | 22.62 | 1028.2 | 0.21 | 5.69 | 25.1 | 12.65 | 3.0 | 17.36 | |
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| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.:
Sampling Date: 2-23-17
Site/Location: Macon Ga
Sampler's Name: MRogers
Well ID: MW-302DD
Pump Type/Model: Alexis Peristaltic
Sample Collection Time: 1141
Total Depth (ft)[a]: ~~61~~ 100 (102.6)
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: .1 L/min
Depth to Water (ft): ~~22.41~~ 22.41
Pump Intake Depth (ft): ~~51~~ ~85
Sample ID: ~~MW-302D~~ MW-302DD-20170223-01
Well Diameter (in): 2
Purge Method: Low flow
QA/QC Collected? No
*Well Volume (gal) = 0.041d²h: ~~6.3 gal/24L~~
Start/Stop Purge Time: 1112
QA/QC I.D. —
Purge Rate (L/min)[b]: .2, .1
Total Purge Volume (L): 3
Laboratory Analyses: See COC

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply)
☐ soda straw
☑ pump head discharge
☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1117 | 23.42 | 539.5 | 1.03 | 7.31 | -98.5 | 1.06 | 1 | 22.94 | Began purging and realized this well is Actually 302DD added tubing and continued purge |
| 1122 | 21.72 | 558.5 | 0.35 | 7.42 | -147.4 | 1.05 | 1.5 | 23.19 | Dec PR to .100L/min |
| 1127 | 21.77 | 558.4 | 0.29 | 7.44 | -157.3 | 3.25 | 2.0 | 23.10 | |
| 1132 | 21.94 | 559.3 | 0.25 | 7.45 | -163.8 | 3.00 | 2.5 | 23.12 | Parameters Stable, waiting for WL to stabalize |
| 1137 | 22.27 | 557.3 | 0.21 | 7.46 | -167.7 | 2.64 | 3.0 | 23.12 | |
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| | | | | | Parameters | Stable | | | |
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| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since itiial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.:
Sampling Date: 2-23-17
Site/Location: Macon Ga
Sampler's Name: MRuggles
Well ID: MW-304D
Pump Type/Model: Alexis Peri
Sample Collection Time: 1610
Total Depth (ft)[a]: 61 (59.0)
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: .1 L/min
Depth to Water (ft): 16.17
Pump Intake Depth (ft): ~51
Sample ID: MW-304D-20170223-01
Well Diameter (in): 2 6
Purge Method: Low flow
QA/QC Collected? No
*Well Volume (gal) = 0.041d²h:
Start/Stop Purge Time: 1308
QA/QC I.D. —
Purge Rate (L/min)[b]: .2, .1, .5, .1
Total Purge Volume (L): 24
Laboratory Analyses: See COC

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other No Cap
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: (check all that apply) ☐ soda straw ☐ pump head discharge ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1313 | 21.01 | 687.4 | 0.34 | 6.93 | -25.9 | 116 | 1 | 16.34 | |
| 1318 | 20.39 | 692.5 | 0.24 | 6.69 | -18.7 | 132 | 2 | 16.45 | |
| 1323 | 20.30 | 693.3 | 0.19 | 6.61 | -15.3 | 148 | 3 | 16.58 | |
| 1328 | 20.31 | 692.7 | 0.16 | 6.57 | -12.9 | 163 | 4 | 16.70 | |
| 1333 | 20.26 | 691.9 | 0.14 | 6.55 | -16.4 | 158 | 5 | 16.81 | Dec PR to .1 L/min |
| 1338 | 20.31 | 692.0 | 0.18 | 6.54 | -7.4 | 146 | 5.5 | 16.85 | |
| 1343 | 20.31 | 691.8 | 0.17 | 6.53 | -5.4 | 160 | 6.0 | 16.90 | |
| 1348 | 20.22 | 691.7 | 0.16 | 6.52 | -4.1 | 152 | 6.5 | 16.91 | |
| 1353 | 20.13 | 692.3 | 0.15 | 6.52 | -2.90 | 143 | 7.0 | 16.96 | |
| 1358 | 20.31 | 691.9 | 0.14 | 6.52 | -2.30 | 145 | 7.5 | 16.98 | |
| 1403 | 20.39 | 691.7 | 0.13 | 6.51 | -2.80 | 139 | 8.0 | 16.98 | Raising pump to .500 L/min Attempting to clear out this orange particulate material |
| 1408 | 20.12 | 690.7 | 0.06 | 6.51 | -2.20 | 171 | 10.5 | 17.48 | |
| 1413 | 20.17 | 689.4 | 0.06 | 6.51 | -2.40 | 167 | 12.0 | 17.63 | |
| 1418 | 20.22 | 686.1 | 0.06 | 6.51 | -2.3 | 174 | 14.5 | 17.63 | |
| 1423 | 20.26 | 687.8 | 0.06 | 6.51 | -2.2 | 184 | 16.0 | 17.63 | |
| 1428 | 20.24 | 690.2 | 0.08 | 6.51 | -2.0 | 180 | 16.5 | 17.63 | |
| 1548 ~~1553~~ | 20.39 | 690.7 | 0.07 | 6.53 | -0.7 | 116 | 22.5 | 17.56 | |
| 1553 ~~1558~~ | 20.30 | 696.8 | 0.07 | 6.53 | -1.20 | 118 | 23.0 | 17.56 | |
| 1558 ~~1603~~ | 20.24 | 689.7 | 0.07 | 6.53 | -1.3 | 118 | 23.5 | 17.55 | |
| 1603 | 2024 | 688.9 | 0.07 | 6.55 | -10.2 | 121 | 24.0 | 17.54 | |
| | | | | | | | | | Parameters Stable Sampling @ 1610 |
| | | | | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since ititial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.: 0366660
Sampling Date: 2-27-17
Site/Location: Macon, GA
Sampler's Name: C. Hurdle
Well ID: MW-305D
Pump Type/Model: Alexis Peristaltic
Sample Collection Time: ~~1130~~ 1200
Total Depth (ft)[a]: 41.5
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 0.1
Depth to Water (ft): 17.55
Pump Intake Depth (ft): 38
Sample ID: MW-305D-20170227-01
Well Diameter (in): 4
Purge Method: Low flow
QA/QC Collected? NO
*Well Volume (gal) = 0.041d²h:
Start/Stop Purge Time: 1130/1155
QA/QC I.D.
Purge Rate (L/min)[b]: 0.1
Total Purge Volume (L): 2.5
Laboratory Analyses: See COC

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method (check all that apply): ☐ Soda straw ☒ pump head discharge ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1135 | 21.27 | 5124.0 | 4.11 | 12.09 | -69.2 | 2.14 | 0.5 | 17.85 | >0.3 ft of drawdown, but already @ |
| 1140 | 21.20 | 5113.4 | 3.87 | 12.20 | -65.7 | 1.62 | 1.0 | 18.10 | min purge rate & 3 well volume |
| 1145 | 21.11 | 5106.1 | 3.72 | 12.27 | -59.0 | 1.88 | 1.5 | 18.35 | method not feasible |
| 1150 | 21.06 | 5093.1 | 3.63 | 12.33 | -54.5 | 1.54 | 2.0 | 18.60 | · also unusually high pH, but |
| 1155 | 21.05 | 5070.3 | 3.56 | 12.36 | -47.4 | 1.46 | 2.5 | 18.80 | consistant w/ historical |
| Parameters Stable, Turbidity <10.00 NTU | | | | | | | | | |
| well can be Sampled | | | | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) – Record to same depth in each event well is sampled after purging and sampling to ensure consistent pump intake and that may be resting on the well bottom
(b) – Purge rate to be 0.5 lpm or less
(c) – Sampling rate to be 0.25 lpm or less
(d) – Field parameter measurements to be recorded every 5 minutes
(e) – Stabilization criteria based on three consecutive readings
(f) – Monitor DTW every 5 min. Well should recover to less than 0.3 ft of drawdown initial reading. Pump/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft for each hydrostratigraphic unit and well
(g) – DO must be stabilized or as relevant for the "Groundwater Sampling" SOP/Standard Operating Procedure
(h) – ORP must be stabilized or as relevant for the "Groundwater Sampling" SOP/Standard Operating Procedure

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.02 |
| 2 in | 0.16 |
| 4 in | 0.64 |

# GROUNDWATER SAMPLING LOG SHEET

ERM

Client: AGL
Site: Macon, GA
Well ID: MW-306D
Total Depth (ft)[1]: 51 (50.20)
Depth to Water (ft): 5.82
Well Diameter (in): 6
Well Volume (gal) = 0.041d²h: 66.64 gal
Well Volume (L) = gal * 3.785: 252.41 L
d = well diameter (inches) h = length of water column (feet)

Project No.: 0366660
Location: —
Pump Type/Model: Alexis Peristaltic
Tubing Material: LDPE
Pump Intake Depth (ft): 41.75
Start/Stop Purge Time: 1230/1255
Purge Rate (L/min)[2]: 0.2
Total Purge Volume (L): 5.0
Purge Method: (Low-Flow) Well Volume Other:
Sampling Method: (Pump Discharge) Other: Soda-Straw

Sampling Date: 2-24-17
Sampler's Name: C. Hurdle
Sample Collection Time: 1300
Sample Purge Rate (L/min)[3]: 0.2
Sample ID: MW-306D-20170224-01
Laboratory Analyses: 8260, 8270C
QA/QC Collected? NO
QA/QC I.D.

Well Type: (Flush) Stick Up
Well Lock: (Yes) No
Well Bolted: (Yes) No Bolts Needed: yes
Well Cap Condition: (Good) Replace Other
Well Tag Present: Yes (No) Water in Vault: Yes (No)

All sample containers requiring chemical preservation properly preserved prior to demob from well? (Yes) No

| Time | Temp. (°C) | Spec. Cond. (mS/cm) (µS/cm) | DO mg/L ~~(%)~~ | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Rate (mL/min) | Purged Volume (L) | $H_2O$ Depth (ft btoc) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1235 | 23.04 | 1560.6 | 5.32 | 11.26 | -33.9 | 1.87 | 200 | 1.0 | 6.00 | |
| 1240 | 22.72 | 1570.8 | 5.39 | 11.32 | -34.3 | 1.30 | 200 | 2.0 | 6.20 | |
| 1245 | 22.92 | 1572.3 | 5.30 | 11.42 | -34.9 | 1.00 | 200 | 3.0 | 6.40 | Excessive drawdown, but bedrock well |
| 1250 | 22.95 | 1566.8 | 5.37 | 11.41 | -31.6 | 0.82 | 200 | 4.0 | ~~6.35~~ 6.55 | so continuing with low flow |
| 1255 | 22.85 | 1574.6 | 5.42 | 11.42 | -28.8 | 0.66 | 200 | 5.0 | 6.65 | method |
| Parameters stable, water level not stable, but bedrock well with large volume. | | | | | | | | | | |
| Turbidity < 10.00 NTU | | | | | | | | | | |
| Well can be sampled | | | | | | | | | | |
| Stabilizing Criteria[4,5] | | +/- 5% | 0.2 mg/L or 10% whichever is greater[9] | +/- 0.2 unit | | <5 NTUs | >100 mL < 250 mL | >3L | <0.33 ft | |

(1) - Maximum purge rate of 250 mL/min
(2) - Sample rate to be between 100 mL/min and 250 mL/min
(3) - Collect sample from pump discharge without tubing contacting sample container
(4) - Field parameter measurements to be recorded every 3 to 5 minutes.
(5) - Stabilization criteria based on three most recent consecutive measurements.
(6) - Monitor depth to water every 3 to 5 minutes. Well drawdown to be 0.33 ft or less. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.33 ft.
(7) - Contact field team lead if drawdown > 0.33 ft - do not switch to 3 well volume method until instructed
(8) - Preserve all samples as appropriate immediately following collection
(9) - DO 0.2 mg/L or 10% whichever is greater (no criteria apply if DO < 0.5 mg/L)

Purge Log QA/QC'd By:
Date:

Purge Log QA/QC'd By:
Date:

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: AGL
Project No.: 0176740
Sampling Date: 02/22/2017
Site/Location: MACON, GA
Sampler's Name: A. SHOREDITS
Well ID: MW-307D
Pump Type/Model: ALERIS PERISTALTIC
Sample Collection Time: 16:20
Total Depth (ft)[a]: (58) 57.63
Tubing Material: LDPE, 0.17" I.D.
Sample Purge Rate (L/min)[c]: 0.1
Depth to Water (ft): 8.84
Pump Intake Depth (ft): 45.0
Sample ID: MW-307D-20170222-01
Well Diameter (in): 6.00
Purge Method: LOW FLOW/LOW VOLUME
QA/QC Collected? NO
*Well Volume (gal) = 0.041d²h: 8.01 (30.33L) (for 2" dia.)
Start/Stop Purge Time: 15:49/16:14
QA/QC I.D. NA
Purge Rate (L/min)[b]: 0.15/0.1
Total Purge Volume (L): 3.50
Laboratory Analyses: VOCs, SVOCs

Well Type: (Flush) / Stick Up
Well Cap Condition: (Good) / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No

Sampling Method: ☐ soda straw
(check all that apply) ☒ pump head discharge
☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. ~~(uS/cm)~~ mS/cm | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 15:54 | 22.26 | 8,029.60 | 2.10 | 12.20 | 91.20 | 7.68 | 0.75 | 8.92 | White particles in water. |
| 15:59 | 21.55 | 8,527.70 | 1.92 | 12.28 | 48.20 | 2.94 | 1.50 | 9.01 | |
| 16:04 | 21.35 | 8,570.00 | 1.71 | 12.30 | -15.00 | 3.91 | 2.25 | 9.10 | |
| 16:09 | 21.45 | 8,559.10 | 1.61 | 12.31 | -43.70 | 1.61 | 3.00 | 9.17 | Lowered purge rate to 100ml/min. |
| 16:14 | 21.33 | 8,534.90 | 1.54 | 12.32 | -40.90 | 2.83 | 3.50 | 9.20 | |
| | | | | | | | | | |
| PARAMETERS ARE STABLE, WELL VOLUME METHOD | | | | | | | | | |
| NOT FEASIBLE WITH DRAWDOWN, WELL CAN BE | | | | | | | | | |
| SAMPLED. | | | | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C ✓ | 25b +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit ✓ | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% ✓ | (see note below)[d] | (see note below)[f] ✗ | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since itilial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

ERM

# GROUND WATER SAMPLING LOG SHEET

Client: Atlanta Gas Light
Project No.: 0566060-11
Sampling Date: 2-22-17
Site/Location: AGL-Macon Macon Georgia
Sampler's Name: Matthew Thomas
Well ID: MW-303D
Pump Type/Model: Peristaltic / Alexis
Sample Collection Time: 1235
Total Depth (ft)[a]: 110
Tubing Material: LDPE
Sample Purge Rate (L/min)[c]: 1
Depth to Water (ft): 17.53
Pump Intake Depth (ft): 91
Sample ID: MW-303D-20170222-01
Well Diameter (in): 6
Purge Method: Low-Flow
QA/QC Collected? No
*Well Volume (gal) = 0.041d²h: 135.838 gal
Start/Stop Purge Time: 1205/1230
QA/QC I.D.
Purge Rate (L/min)[b]: .2-.1
Total Purge Volume (L): 3.0
Laboratory Analyses: See COC

Well Type: Flush / Stick Up
Well Cap Condition: Good / Replace / Other
Well Lock: Yes / No
Well Bolted: Yes / No
Bolts Needed: Yes / No 1 bolt

Sampling Method: (check all that apply)
- ☑ soda straw
- ☑ pump head discharge
- ☐ Bailer (only used if necessary)

| Time[d] | Temp. (°C) | Spec. Cond. (mS/cm) | DO (mg/L) | pH (SU) | ORP (mV) | Turbidity (NTUs) | Purge Volume (L) | $H_2O$ Depth (ft) | Notes (Purge method, water clarity, odor, purge rate, issues with pump/well/weather/etc.) |
|---|---|---|---|---|---|---|---|---|---|
| 1210 | 22.31 | 4274.30 | 5.16 | 12.22 | -12.10 | 5.89 | 1.0 | 17.60 | Reduce purge rate to 100ml/min |
| 1215 | 22.36 | 4263.30 | 2.70 | 12.24 | -15.50 | 3.38 | 1.5 | 17.76 | |
| 1220 | 23.39 | 4234.70 | 2.63 | 12.22 | -21.90 | 4.90 | 2.0 | 17.84 | |
| 1225 | 23.07 | 4222.50 | 2.62 | 12.21 | -9.30 | 5.09 | 2.5 | 17.90 | |
| 1230 | 23.21 | 4220.50 | 2.59 | 12.21 | -4.00 | 5.62 | 3.0 | 17.95 | |
| | | | All Parameters Stable | | | | | | |
| | | | 10NTU Clearer and Winder | | | | | | |
| | | | Total Depth MW = 100ft | | | | | | |
| | | | Matthew L Thomas | | | | | | |
| Stabilizing Criteria[e] | +/- 1°C | +/- 3% | +/- 10% (see note below)[g] | +/- 0.1 unit | +/- 10 mV (see note below)[h] | <10 NTUs OR +/- 10% | (see note below)[d] | (see note below)[f] | |

(a) - Do not measure depth to bottom of well until after purging and sampling to reduce resuspending fines that may be resting on the well bottom
(b) - Purge rate to be 0.5 lpm or less
(c) - Sampling rate to be 0.25 lpm or less
(d) - Field parameter measurements to be recorded every 3 to 5 minutes
(e) - Stabilization criteria based on three most recent consecutive measurements
(f) - Monitor DTW every 5 min. Well drawdown to be 0.3 ft or less since itilial reading. Purge/sampling rate to be lowered as necessary to keep drawdown below 0.3 ft before switching to three well volume method
(g) - DO is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure
(h) - ORP is not a stabilization criterion for the "Groundwater sampling" SESD Standard Operating Procedure.

* d = well diameter (inches);
h = length of water column (feet)

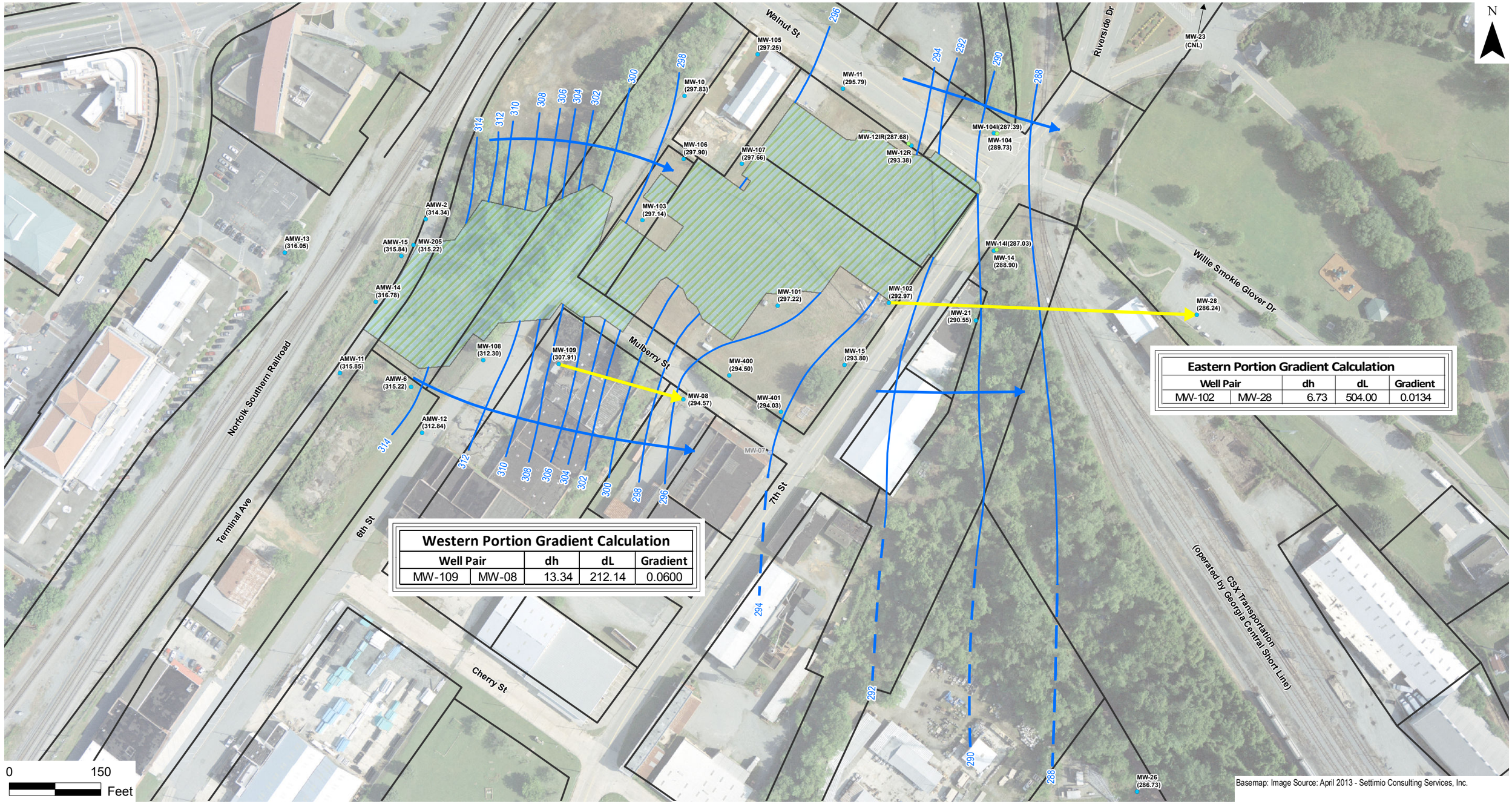
| Casing Diameter | Gallons per foot |
|---|---|
| 1 in | 0.12 |
| 2 in | 0.16 |
| 4 in | 0.64 |

# Groundwater Gradient Estimation Figures

*Appendix C*

*Project No. 0366660*
*Atlanta Gas Light Company*

**Environmental Resources Management**
3200 Windy Hill Road SE, Suite 1500W
Atlanta, Georgia 30339
(678) 486-2700




**Eastern Portion Gradient Calculation**

| Well Pair | | dh | dL | Gradient |
|---|---|---|---|---|
| MW-102 | MW-28 | 6.73 | 504.00 | 0.0134 |

**Western Portion Gradient Calculation**

| Well Pair | | dh | dL | Gradient |
|---|---|---|---|---|
| MW-109 | MW-08 | 13.34 | 212.14 | 0.0600 |

ERM

# Environmental Resources Management

| | | | | | |
|---|---|---|---|---|---|
| DESIGN: | H Sartain | DRAWN: | S Vizuete | CHKD.: | A Reimer |
| DATE: | 4/17/2017 | SCALE: | AS SHOWN | REVISION: | 1 |

FILE: 0366660 AGL Resources Macon GW Pathforward.AR\05 - ERM Outputs\Figures\AGL_Macon\MXD\2017 04 4thVRPPrgRpt\AppB_All.mxd

- Shallow Well
- Destroyed Shallow Well
- Intermediate Well
- Deep Bedrock Well
- Apparent Groundwater Flow Used for Gradient Calculations
- Groundwater Elevation Contour (ft AMSL)
- Inferred Groundwater Elevation Contour (ft AMSL)
- Groundwater Flow Direction
- Property Line
- ISS Mass

NOTES:

(315.85) = Groundwater Elevation (ft AMSL)

(NM) = Not Measured

(CNL) = Could Not Locate

FT AMSL = Feet Above Mean Sea Level

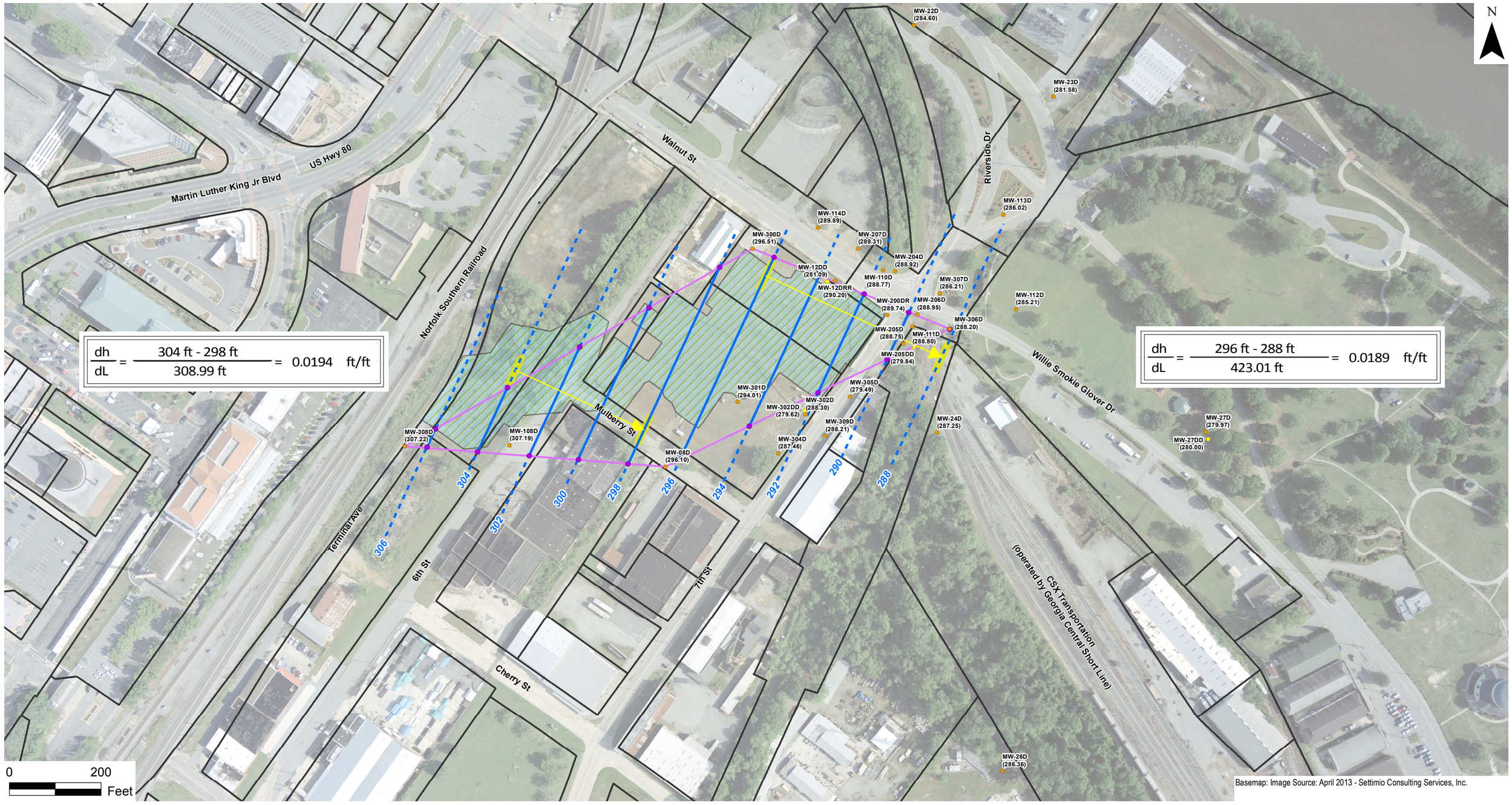
Intermediate wells MW-14I and MW-12IR not used in contouring.

APPENDIX C - ALLUVIUM GROUNDWATER GRADIENT ESTIMATION MAP - FEBRUARY 20, 2017

Atlanta Gas Light Company

Former Manufactured Gas Plant

Macon, Bibb County, Georgia




ERM

# Environmental Resources Management

| DESIGN: | H Sartain | DRAWN: | S Vizuete | CHKD.: | A Reimer |
|---|---|---|---|---|---|
| DATE: | 5/11/2017 | SCALE: | AS SHOWN | REVISION: | 0 |

FILE: 0366660 AGL Resources Macon GW Pathforward.AR\05 - ERM Outputs\Figures\AGL_Macon\MXD\2017 04 4thVRPPrgRpt\AppB_Bed.mxd

- Shallow Bedrock Well
- Deep Bedrock Well
- Estimated Groundwater Contour (Ft AMSL)
- Inferred Groundwater Elevation Contour (Ft AMSL)
- Apparent Groundwater Flow Used for Gradient Calculations
- Property Line
- ISS Mass

NOTES:

(307.19) = Groundwater Elevation (Ft AMSL)

(NM) = Not Measured

Deep bedrock wells MW-12DD, MW-27DD, MW-205DD and MW-302DD not used in flow direction calculations.

FT AMSL = Feet Above Mean Sea Level

Yellow highlight indicates GW contour used in gradient estimation.

APPENDIX C - SHALLOW BEDROCK GROUNDWATER GRADIENT ESTIMATION MAP - FEBRUARY 20, 2017

Atlanta Gas Light Company

Former Manufactured Gas Plant

Macon, Bibb County, Georgia

# Laboratory Analytical Reports (CD ONLY)

*Appendix D*

*Project No. 0366660*
*Atlanta Gas Light Company*

**Environmental Resources Management**
3200 Windy Hill Road SE, Suite 1500W
Atlanta, Georgia 30339
(678) 486-2700

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

AES

March 03, 2017

Adria Reimer
ERM-Southeast
3200 Windy Hill Rd
Atlanta GA 30339

TEL: (678) 486-2700
FAX: (404) 745-0103

RE: AGLC Macon

Dear Adria Reimer: Order No: 1702K47

Analytical Environmental Services, Inc. received 27 samples on 2/23/2017 1:16:00 PM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES's accreditations are as follows:
-NELAC/Florida State Laboratory ID E87582 for analysis of Non-Potable Water, Solid & Chemical Materials, and Drinking Water Microbiology, effective 07/01/16-06/30/17.
-NELAC/Louisiana Agency Interest No. 100818 for or analysis of Non-Potable Water and Solid & Chemical Materials, effective 07/01/16-06/30/17.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Metals, PCM Asbestos, Gravimetric), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) Direct Examination, effective until 09/01/17.

These results relate only to the items tested. This report may only be reproduced in full.

Mirzeta Kararic

Mirzeta Kararic
Project Manager

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3080 Presidential Drive, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

# CHAIN OF CUSTODY

Work Order: 1702KM7

Date: 2/23/17 Page 1 of 2

COMPANY: ERM

ADDRESS: 3200 Windy Hill ATL GA 30339

PHONE: 678-486-2700

FAX:

SAMPLED BY: KS, AS, MR, MT, MB

SIGNATURE:

ANALYSIS REQUESTED: 8260B, 8270C

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

| # | SAMPLE ID | SAMPLED DATE | SAMPLED TIME | Grab | Composite | Matrix (See codes) | PRESERVATION (See codes) 8260B: H+I | PRESERVATION (See codes) 8270C: I | REMARKS | No # of Containers |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | AMW-2-20170221-01 | 2/21/17 | 1010 | X | | GW | 2 | 2 | | 4 |
| 2 | AMW-12-20170221-01 | 2/21/17 | 1140 | | | | | | | 4 |
| 3 | AMW-6-20170221-01 | 2/21/17 | 1410 | | | | | | | 4 |
| 4 | AMW-14-20170221-01 | 2/21/17 | 1630 | | | | | | | 4 |
| 5 | MW-27D-20170221-01 | | 1012 | | | | | | | 4 |
| 6 | MW-22D-20170221-01 | | 1400 | | | | 6 | 6 | MS/MSD | 12 |
| 7 | MW-301D-20170221-01 | | 1635 | | | | 2 | 2 | | 4 |
| 8 | MW-109-20170222-01 | 2/22/17 | 1040 | | | | | | | 4 |
| 9 | MW-205-20170222-01 | | 1225 | | | | | | | 4 |
| 10 | MW-108-20170222-01 | | 1055 | | | | | | | 4 |
| 11 | AMW-11-20170222-01 | | 1235 | | | | | | | 4 |
| 12 | AMW-13-20170222-01 | | 1515 | | | | | | | 4 |
| 13 | MW-108D-20170222-01 | | 1055 | | | | | | | 4 |
| 14 | MW-23D-20170222-01 | | 1040 | | | | | | | 4 |

| RELINQUISHED BY | DATE/TIME | RECEIVED BY | DATE/TIME |
|---|---|---|---|
| 1: [signature] | 2/23/17 | 1: [signature] | 2-23-17 8:50 |
| 2: [signature] | 2-23-17 0850 1:16 | 2: [signature] | 2/23/17 1:16pm |
| 3: | | 3: | |

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER

PROJECT INFORMATION
PROJECT NAME: AGL Macon
PROJECT #:
SITE ADDRESS: Walnut St.
SEND REPORT TO: adria.reimer@erm.com
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#: 0366660

RECEIPT
Total # of Containers

Turnaround Time Request
- [x] Standard 5 Business Days
- [ ] 2 Business Day Rush
- [ ] Next Business Day Rush
- [ ] Same Day Rush (auth req.)
- [ ] Other

STATE PROGRAM (if any):
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3080 Presidential Drive, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

# CHAIN OF CUSTODY

Work Order: 1702K47

Date: 2/23/17 Page 2 of 2

COMPANY: ERM
ADDRESS: 3200 Windy Hill Rd ATL GA 30339
PHONE: 678-486-2700
FAX:
SAMPLED BY: KS, AS, MR, MT, MB
SIGNATURE:

ANALYSIS REQUESTED: 8260B, 8270C

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

| # | SAMPLE ID | SAMPLED DATE | SAMPLED TIME | Grab | Composite | Matrix (See codes) | 8260B (PRESERVATION: H+I) | 8270C (PRESERVATION: I) | REMARKS | No # of Containers |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-113D-20170222-01 | 2/22/17 | 1220 | X | | GW | 2 | 2 | | 4 |
| 2 | MW-308D-20170222-01 | | 1235 | | | | 2 | 2 | | 4 |
| 3 | MW-112D-20170222-01 | | 1440 | | | | 2 | 2 | | 4 |
| 4 | MW-8-20170222-01 | | 1640 | | | | 2 | 2 | | 4 |
| 5 | MW-26D-20170222-01 | | 1505 | | | | 2 | 2 | | 4 |
| 6 | MW-307D-20170222-01 | | 1620 | | | | 2 | 2 | | 4 |
| 7 | MW-300D-20170222-01 | | 1755 | | | | 2 | 2 | | 4 |
| 8 | TB-01-20170223-01 | 2/23/17 | — | | | W | 2 | | | 2 |
| 9 | TB-02-20170223-01 | | — | | | | 2 | | | 2 |
| 10 | TB-03-20170223-01 | | — | | | | 2 | | | 2 |
| 11 | TB-04-20170223-01 | | — | | | | 2 | | | 2 |
| 12 | TB-05-20170223-01 | | — | | | | 2 | | | 2 |
| 13 | TB-06-20170223-01 | | — | | | | 2 | | | 2 |
| 14 | | | | | | | | | | |

| RELINQUISHED BY | DATE/TIME | RECEIVED BY | DATE/TIME |
|---|---|---|---|
| 1: [signature] | 2-23-17 | 1: [signature] | 2-23-17 8:50 |
| 2: [signature] | 2-23-17 1:16 2/23/17 0850 | 2: [signature] | 2/23/17 1:16pm |
| 3: | | 3: | |

PROJECT INFORMATION
PROJECT NAME: AGL Macon
PROJECT #:
SITE ADDRESS: Walnut St.
SEND REPORT TO: adria.reimer@erm.com
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#: 036666 0

RECEIPT
Total # of Containers

Turnaround Time Request
- [x] Standard 5 Business Days
- [ ] 2 Business Day Rush
- [ ] Next Business Day Rush
- [ ] Same Day Rush (auth req.)
- [ ] Other

STATE PROGRAM (if any):
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER

**SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.**

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None



White Copy - Original; Yellow Copy - Client

# Analytical Environmental Services, Inc

**Date:** 3-Mar-17

**Client:** ERM-Southeast
**Project:** AGLC Macon
**Lab ID:** 1702K47

## Case Narrative

Sample Receiving Nonconformance:

One of the Trip Blank vials were received broken "TB-05-20170223-01." Sufficient samples remains the lab proceed with the analysis.

**Analytical Environmental Services, Inc** **Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | AMW-2-20170221-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/21/2017 10:10:00 AM |
| **Lab ID:** | 1702K47-001 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 01:34 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 01:34 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 01:34 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 01:34 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 01:34 | NP |
| Surr: 4-Bromofluorobenzene | 94.7 | 66.1-129 | | %REC | 238828 | 1 | 03/01/2017 01:34 | NP |
| Surr: Dibromofluoromethane | 95.2 | 83.6-123 | | %REC | 238828 | 1 | 03/01/2017 01:34 | NP |
| Surr: Toluene-d8 | 91.6 | 81.8-118 | | %REC | 238828 | 1 | 03/01/2017 01:34 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 13:18 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238651 | 1 | 02/28/2017 13:18 | YH |
| Acenaphthene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 13:18 | YH |
| Fluorene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 13:18 | YH |
| Phenanthrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 13:18 | YH |
| Anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 13:18 | YH |
| Fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 13:18 | YH |
| Pyrene | 0.052 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 13:18 | YH |
| Benz(a)anthracene | 0.19 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 13:18 | YH |
| Chrysene | 0.20 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 13:18 | YH |
| Benzo(b)fluoranthene | 0.12 | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 13:18 | YH |
| Benzo(k)fluoranthene | 0.14 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 13:18 | YH |
| Benzo(a)pyrene | 0.12 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 13:18 | YH |
| Indeno(1,2,3-cd)pyrene | 0.13 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 13:18 | YH |
| Dibenz(a,h)anthracene | 0.11 | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 13:18 | YH |
| Benzo(g,h,i)perylene | 0.15 | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 13:18 | YH |
| Surr: 4-Terphenyl-d14 | 99.2 | 58.5-125 | | %REC | 238651 | 1 | 02/28/2017 13:18 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238499 | 1 | 02/24/2017 19:14 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238499 | 1 | 02/24/2017 19:14 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238499 | 1 | 02/24/2017 19:14 | YH |
| Phenol | BRL | 10 | | ug/L | 238499 | 1 | 02/24/2017 19:14 | YH |
| Surr: 2,4,6-Tribromophenol | 78 | 50-142 | | %REC | 238499 | 1 | 02/24/2017 19:14 | YH |
| Surr: 2-Fluorobiphenyl | 59.4 | 46-124 | | %REC | 238499 | 1 | 02/24/2017 19:14 | YH |
| Surr: 2-Fluorophenol | 48.2 | 25.3-120 | | %REC | 238499 | 1 | 02/24/2017 19:14 | YH |
| Surr: 4-Terphenyl-d14 | 80.1 | 45.1-133 | | %REC | 238499 | 1 | 02/24/2017 19:14 | YH |
| Surr: Nitrobenzene-d5 | 59.6 | 40.1-121 | | %REC | 238499 | 1 | 02/24/2017 19:14 | YH |
| Surr: Phenol-d5 | 36 | 16.3-120 | | %REC | 238499 | 1 | 02/24/2017 19:14 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | AMW-12-20170221-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/21/2017 11:40:00 AM |
| **Lab ID:** | 1702K47-002 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238828 | 1 | 02/28/2017 23:50 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238828 | 1 | 02/28/2017 23:50 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238828 | 1 | 02/28/2017 23:50 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238828 | 1 | 02/28/2017 23:50 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238828 | 1 | 02/28/2017 23:50 | NP |
| Surr: 4-Bromofluorobenzene | 94.9 | 66.1-129 | | %REC | 238828 | 1 | 02/28/2017 23:50 | NP |
| Surr: Dibromofluoromethane | 96.2 | 83.6-123 | | %REC | 238828 | 1 | 02/28/2017 23:50 | NP |
| Surr: Toluene-d8 | 92.7 | 81.8-118 | | %REC | 238828 | 1 | 02/28/2017 23:50 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 13:45 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238651 | 1 | 02/28/2017 13:45 | YH |
| Acenaphthene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 13:45 | YH |
| Fluorene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 13:45 | YH |
| Phenanthrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 13:45 | YH |
| Anthracene | 0.053 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 13:45 | YH |
| Fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 13:45 | YH |
| Pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 13:45 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 13:45 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 13:45 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 13:45 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 13:45 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 13:45 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 13:45 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 13:45 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 13:45 | YH |
| Surr: 4-Terphenyl-d14 | 92.3 | 58.5-125 | | %REC | 238651 | 1 | 02/28/2017 13:45 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238499 | 1 | 02/24/2017 19:39 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238499 | 1 | 02/24/2017 19:39 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238499 | 1 | 02/24/2017 19:39 | YH |
| Phenol | BRL | 10 | | ug/L | 238499 | 1 | 02/24/2017 19:39 | YH |
| Surr: 2,4,6-Tribromophenol | 81.5 | 50-142 | | %REC | 238499 | 1 | 02/24/2017 19:39 | YH |
| Surr: 2-Fluorobiphenyl | 61.6 | 46-124 | | %REC | 238499 | 1 | 02/24/2017 19:39 | YH |
| Surr: 2-Fluorophenol | 45.9 | 25.3-120 | | %REC | 238499 | 1 | 02/24/2017 19:39 | YH |
| Surr: 4-Terphenyl-d14 | 82.4 | 45.1-133 | | %REC | 238499 | 1 | 02/24/2017 19:39 | YH |
| Surr: Nitrobenzene-d5 | 58.3 | 40.1-121 | | %REC | 238499 | 1 | 02/24/2017 19:39 | YH |
| Surr: Phenol-d5 | 34.5 | 16.3-120 | | %REC | 238499 | 1 | 02/24/2017 19:39 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | AMW-6-20170221-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/21/2017 2:10:00 PM |
| **Lab ID:** | 1702K47-003 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 00:16 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 00:16 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 00:16 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 00:16 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 00:16 | NP |
| Surr: 4-Bromofluorobenzene | 95 | 66.1-129 | | %REC | 238828 | 1 | 03/01/2017 00:16 | NP |
| Surr: Dibromofluoromethane | 96.8 | 83.6-123 | | %REC | 238828 | 1 | 03/01/2017 00:16 | NP |
| Surr: Toluene-d8 | 93.3 | 81.8-118 | | %REC | 238828 | 1 | 03/01/2017 00:16 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 14:11 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238651 | 1 | 02/28/2017 14:11 | YH |
| Acenaphthene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 14:11 | YH |
| Fluorene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 14:11 | YH |
| Phenanthrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 14:11 | YH |
| Anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 14:11 | YH |
| Fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 14:11 | YH |
| Pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 14:11 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 14:11 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 14:11 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 14:11 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 14:11 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 14:11 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 14:11 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 14:11 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 14:11 | YH |
| Surr: 4-Terphenyl-d14 | 98.9 | 58.5-125 | | %REC | 238651 | 1 | 02/28/2017 14:11 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238499 | 1 | 02/24/2017 20:04 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238499 | 1 | 02/24/2017 20:04 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238499 | 1 | 02/24/2017 20:04 | YH |
| Phenol | BRL | 10 | | ug/L | 238499 | 1 | 02/24/2017 20:04 | YH |
| Surr: 2,4,6-Tribromophenol | 77.9 | 50-142 | | %REC | 238499 | 1 | 02/24/2017 20:04 | YH |
| Surr: 2-Fluorobiphenyl | 57.9 | 46-124 | | %REC | 238499 | 1 | 02/24/2017 20:04 | YH |
| Surr: 2-Fluorophenol | 46.1 | 25.3-120 | | %REC | 238499 | 1 | 02/24/2017 20:04 | YH |
| Surr: 4-Terphenyl-d14 | 81.7 | 45.1-133 | | %REC | 238499 | 1 | 02/24/2017 20:04 | YH |
| Surr: Nitrobenzene-d5 | 57.1 | 40.1-121 | | %REC | 238499 | 1 | 02/24/2017 20:04 | YH |
| Surr: Phenol-d5 | 33.4 | 16.3-120 | | %REC | 238499 | 1 | 02/24/2017 20:04 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | AMW-14-20170221-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/21/2017 4:30:00 PM |
| **Lab ID:** | 1702K47-004 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 00:42 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 00:42 | NP |
| Ethylbenzene | 14 | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 00:42 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 00:42 | NP |
| Xylenes, Total | 16 | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 00:42 | NP |
| Surr: 4-Bromofluorobenzene | 97.8 | 66.1-129 | | %REC | 238828 | 1 | 03/01/2017 00:42 | NP |
| Surr: Dibromofluoromethane | 97.5 | 83.6-123 | | %REC | 238828 | 1 | 03/01/2017 00:42 | NP |
| Surr: Toluene-d8 | 94.3 | 81.8-118 | | %REC | 238828 | 1 | 03/01/2017 00:42 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | 18 | 5.0 | | ug/L | 238651 | 100 | 03/01/2017 16:35 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238651 | 1 | 02/28/2017 16:28 | YH |
| Acenaphthene | 0.71 | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 16:28 | YH |
| Fluorene | 0.28 | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 16:28 | YH |
| Phenanthrene | 0.30 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 16:28 | YH |
| Anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 16:28 | YH |
| Fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 16:28 | YH |
| Pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 16:28 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 16:28 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 16:28 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 16:28 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 16:28 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 16:28 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 16:28 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 16:28 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 16:28 | YH |
| Surr: 4-Terphenyl-d14 | 22.8 | 58.5-125 | S | %REC | 238651 | 1 | 02/28/2017 16:28 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 17:58 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 17:58 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 17:58 | YH |
| Phenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 17:58 | YH |
| Surr: 2,4,6-Tribromophenol | 94.8 | 50-142 | | %REC | 238646 | 1 | 02/27/2017 17:58 | YH |
| Surr: 2-Fluorobiphenyl | 71.7 | 46-124 | | %REC | 238646 | 1 | 02/27/2017 17:58 | YH |
| Surr: 2-Fluorophenol | 47.1 | 25.3-120 | | %REC | 238646 | 1 | 02/27/2017 17:58 | YH |
| Surr: 4-Terphenyl-d14 | 80.6 | 45.1-133 | | %REC | 238646 | 1 | 02/27/2017 17:58 | YH |
| Surr: Nitrobenzene-d5 | 72.6 | 40.1-121 | | %REC | 238646 | 1 | 02/27/2017 17:58 | YH |
| Surr: Phenol-d5 | 32.8 | 16.3-120 | | %REC | 238646 | 1 | 02/27/2017 17:58 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-27D-20170221-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/21/2017 10:12:00 AM |
| **Lab ID:** | 1702K47-005 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 01:08 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 01:08 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 01:08 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 01:08 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 01:08 | NP |
| Surr: 4-Bromofluorobenzene | 94.6 | 66.1-129 | | %REC | 238828 | 1 | 03/01/2017 01:08 | NP |
| Surr: Dibromofluoromethane | 97.5 | 83.6-123 | | %REC | 238828 | 1 | 03/01/2017 01:08 | NP |
| Surr: Toluene-d8 | 94.3 | 81.8-118 | | %REC | 238828 | 1 | 03/01/2017 01:08 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 16:52 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238651 | 1 | 02/28/2017 16:52 | YH |
| Acenaphthene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 16:52 | YH |
| Fluorene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 16:52 | YH |
| Phenanthrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 16:52 | YH |
| Anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 16:52 | YH |
| Fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 16:52 | YH |
| Pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 16:52 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 16:52 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 16:52 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 16:52 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 16:52 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 16:52 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 16:52 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 16:52 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 16:52 | YH |
| Surr: 4-Terphenyl-d14 | 114 | 58.5-125 | | %REC | 238651 | 1 | 02/28/2017 16:52 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 16:37 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 16:37 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 16:37 | YH |
| Phenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 16:37 | YH |
| Surr: 2,4,6-Tribromophenol | 100 | 50-142 | | %REC | 238646 | 1 | 02/27/2017 16:37 | YH |
| Surr: 2-Fluorobiphenyl | 79.6 | 46-124 | | %REC | 238646 | 1 | 02/27/2017 16:37 | YH |
| Surr: 2-Fluorophenol | 54.7 | 25.3-120 | | %REC | 238646 | 1 | 02/27/2017 16:37 | YH |
| Surr: 4-Terphenyl-d14 | 84.4 | 45.1-133 | | %REC | 238646 | 1 | 02/27/2017 16:37 | YH |
| Surr: Nitrobenzene-d5 | 82.4 | 40.1-121 | | %REC | 238646 | 1 | 02/27/2017 16:37 | YH |
| Surr: Phenol-d5 | 38.9 | 16.3-120 | | %REC | 238646 | 1 | 02/27/2017 16:37 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-22D-20170221-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/21/2017 2:00:00 PM |
| **Lab ID:** | 1702K47-006 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238828 | 1 | 02/28/2017 22:33 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238828 | 1 | 02/28/2017 22:33 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238828 | 1 | 02/28/2017 22:33 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238828 | 1 | 02/28/2017 22:33 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238828 | 1 | 02/28/2017 22:33 | NP |
| Surr: 4-Bromofluorobenzene | 94.3 | 66.1-129 | | %REC | 238828 | 1 | 02/28/2017 22:33 | NP |
| Surr: Dibromofluoromethane | 98.7 | 83.6-123 | | %REC | 238828 | 1 | 02/28/2017 22:33 | NP |
| Surr: Toluene-d8 | 94.4 | 81.8-118 | | %REC | 238828 | 1 | 02/28/2017 22:33 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 17:19 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238651 | 1 | 02/28/2017 17:19 | YH |
| Acenaphthene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 17:19 | YH |
| Fluorene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 17:19 | YH |
| Phenanthrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 17:19 | YH |
| Anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 17:19 | YH |
| Fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 17:19 | YH |
| Pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 17:19 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 17:19 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 17:19 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 17:19 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 17:19 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 17:19 | YH |
| Indeno(1,2,3-cd)pyrene | 0.056 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 17:19 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 17:19 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 17:19 | YH |
| Surr: 4-Terphenyl-d14 | 101 | 58.5-125 | | %REC | 238651 | 1 | 02/28/2017 17:19 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 18:25 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 18:25 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 18:25 | YH |
| Phenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 18:25 | YH |
| Surr: 2,4,6-Tribromophenol | 95.3 | 50-142 | | %REC | 238646 | 1 | 02/27/2017 18:25 | YH |
| Surr: 2-Fluorobiphenyl | 72.9 | 46-124 | | %REC | 238646 | 1 | 02/27/2017 18:25 | YH |
| Surr: 2-Fluorophenol | 34.8 | 25.3-120 | | %REC | 238646 | 1 | 02/27/2017 18:25 | YH |
| Surr: 4-Terphenyl-d14 | 80.6 | 45.1-133 | | %REC | 238646 | 1 | 02/27/2017 18:25 | YH |
| Surr: Nitrobenzene-d5 | 75.4 | 40.1-121 | | %REC | 238646 | 1 | 02/27/2017 18:25 | YH |
| Surr: Phenol-d5 | 20.8 | 16.3-120 | | %REC | 238646 | 1 | 02/27/2017 18:25 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-301D-20170221-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/21/2017 4:35:00 PM |
| **Lab ID:** | 1702K47-007 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | 9.3 | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 01:59 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 01:59 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 01:59 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 01:59 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 01:59 | NP |
| Surr: 4-Bromofluorobenzene | 96.2 | 66.1-129 | | %REC | 238828 | 1 | 03/01/2017 01:59 | NP |
| Surr: Dibromofluoromethane | 96.2 | 83.6-123 | | %REC | 238828 | 1 | 03/01/2017 01:59 | NP |
| Surr: Toluene-d8 | 92.9 | 81.8-118 | | %REC | 238828 | 1 | 03/01/2017 01:59 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | 430 | 50 | | ug/L | 238651 | 100 | 03/01/2017 17:03 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238651 | 1 | 02/28/2017 17:46 | YH |
| Acenaphthene | 0.75 | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 17:46 | YH |
| Fluorene | 3.8 | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 17:46 | YH |
| Phenanthrene | 1.3 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 17:46 | YH |
| Anthracene | 0.25 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 17:46 | YH |
| Fluoranthene | 0.16 | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 17:46 | YH |
| Pyrene | 0.11 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 17:46 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 17:46 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 17:46 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 17:46 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 17:46 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 17:46 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 17:46 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 17:46 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 17:46 | YH |
| Surr: 4-Terphenyl-d14 | 114 | 58.5-125 | | %REC | 238651 | 1 | 02/28/2017 17:46 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 19:18 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 19:18 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 19:18 | YH |
| Phenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 19:18 | YH |
| Surr: 2,4,6-Tribromophenol | 92.6 | 50-142 | | %REC | 238646 | 1 | 02/27/2017 19:18 | YH |
| Surr: 2-Fluorobiphenyl | 70.3 | 46-124 | | %REC | 238646 | 1 | 02/27/2017 19:18 | YH |
| Surr: 2-Fluorophenol | 50.7 | 25.3-120 | | %REC | 238646 | 1 | 02/27/2017 19:18 | YH |
| Surr: 4-Terphenyl-d14 | 80.4 | 45.1-133 | | %REC | 238646 | 1 | 02/27/2017 19:18 | YH |
| Surr: Nitrobenzene-d5 | 74.2 | 40.1-121 | | %REC | 238646 | 1 | 02/27/2017 19:18 | YH |
| Surr: Phenol-d5 | 36.9 | 16.3-120 | | %REC | 238646 | 1 | 02/27/2017 19:18 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-109-20170222-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/22/2017 10:40:00 AM |
| **Lab ID:** | 1702K47-008 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 02:25 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 02:25 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 02:25 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 02:25 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 02:25 | NP |
| Surr: 4-Bromofluorobenzene | 95.6 | 66.1-129 | | %REC | 238828 | 1 | 03/01/2017 02:25 | NP |
| Surr: Dibromofluoromethane | 96.4 | 83.6-123 | | %REC | 238828 | 1 | 03/01/2017 02:25 | NP |
| Surr: Toluene-d8 | 93 | 81.8-118 | | %REC | 238828 | 1 | 03/01/2017 02:25 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 18:10 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238651 | 1 | 02/28/2017 18:10 | YH |
| Acenaphthene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 18:10 | YH |
| Fluorene | 0.17 | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 18:10 | YH |
| Phenanthrene | 0.10 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 18:10 | YH |
| Anthracene | 0.099 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 18:10 | YH |
| Fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 18:10 | YH |
| Pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 18:10 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 18:10 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 18:10 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 18:10 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 18:10 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 18:10 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 18:10 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 18:10 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 18:10 | YH |
| Surr: 4-Terphenyl-d14 | 96.6 | 58.5-125 | | %REC | 238651 | 1 | 02/28/2017 18:10 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 19:21 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 19:21 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 19:21 | YH |
| Phenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 19:21 | YH |
| Surr: 2,4,6-Tribromophenol | 85.9 | 50-142 | | %REC | 238646 | 1 | 02/27/2017 19:21 | YH |
| Surr: 2-Fluorobiphenyl | 67.9 | 46-124 | | %REC | 238646 | 1 | 02/27/2017 19:21 | YH |
| Surr: 2-Fluorophenol | 53.2 | 25.3-120 | | %REC | 238646 | 1 | 02/27/2017 19:21 | YH |
| Surr: 4-Terphenyl-d14 | 90.4 | 45.1-133 | | %REC | 238646 | 1 | 02/27/2017 19:21 | YH |
| Surr: Nitrobenzene-d5 | 72.6 | 40.1-121 | | %REC | 238646 | 1 | 02/27/2017 19:21 | YH |
| Surr: Phenol-d5 | 35.4 | 16.3-120 | | %REC | 238646 | 1 | 02/27/2017 19:21 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-205-20170222-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/22/2017 12:25:00 PM |
| **Lab ID:** | 1702K47-009 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | 35 | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 02:51 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 02:51 | NP |
| Ethylbenzene | 50 | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 02:51 | NP |
| Toluene | 5.5 | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 02:51 | NP |
| Xylenes, Total | 36 | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 02:51 | NP |
| Surr: 4-Bromofluorobenzene | 98 | 66.1-129 | | %REC | 238828 | 1 | 03/01/2017 02:51 | NP |
| Surr: Dibromofluoromethane | 97.8 | 83.6-123 | | %REC | 238828 | 1 | 03/01/2017 02:51 | NP |
| Surr: Toluene-d8 | 93.6 | 81.8-118 | | %REC | 238828 | 1 | 03/01/2017 02:51 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | 46 | 5.0 | | ug/L | 238651 | 100 | 03/01/2017 17:31 | YH |
| Acenaphthylene | 3.0 | 1.0 | | ug/L | 238651 | 1 | 02/28/2017 18:36 | YH |
| Acenaphthene | 25 | 5.0 | | ug/L | 238651 | 100 | 03/01/2017 17:31 | YH |
| Fluorene | 10 | 10 | | ug/L | 238651 | 100 | 03/01/2017 17:31 | YH |
| Phenanthrene | 5.9 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 18:36 | YH |
| Anthracene | 1.3 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 18:36 | YH |
| Fluoranthene | 1.7 | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 18:36 | YH |
| Pyrene | 1.8 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 18:36 | YH |
| Benz(a)anthracene | 0.11 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 18:36 | YH |
| Chrysene | 0.12 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 18:36 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 18:36 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 18:36 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 18:36 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 18:36 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 18:36 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 18:36 | YH |
| Surr: 4-Terphenyl-d14 | 109 | 58.5-125 | | %REC | 238651 | 1 | 02/28/2017 18:36 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 19:47 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 19:47 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 19:47 | YH |
| Phenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 19:47 | YH |
| Surr: 2,4,6-Tribromophenol | 83.3 | 50-142 | | %REC | 238646 | 1 | 02/27/2017 19:47 | YH |
| Surr: 2-Fluorobiphenyl | 65.8 | 46-124 | | %REC | 238646 | 1 | 02/27/2017 19:47 | YH |
| Surr: 2-Fluorophenol | 42.8 | 25.3-120 | | %REC | 238646 | 1 | 02/27/2017 19:47 | YH |
| Surr: 4-Terphenyl-d14 | 86 | 45.1-133 | | %REC | 238646 | 1 | 02/27/2017 19:47 | YH |
| Surr: Nitrobenzene-d5 | 66.5 | 40.1-121 | | %REC | 238646 | 1 | 02/27/2017 19:47 | YH |
| Surr: Phenol-d5 | 29.4 | 16.3-120 | | %REC | 238646 | 1 | 02/27/2017 19:47 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-108-20170222-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/22/2017 10:55:00 AM |
| **Lab ID:** | 1702K47-010 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 03:17 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 03:17 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 03:17 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 03:17 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 03:17 | NP |
| Surr: 4-Bromofluorobenzene | 95.4 | 66.1-129 | | %REC | 238828 | 1 | 03/01/2017 03:17 | NP |
| Surr: Dibromofluoromethane | 96.7 | 83.6-123 | | %REC | 238828 | 1 | 03/01/2017 03:17 | NP |
| Surr: Toluene-d8 | 93.5 | 81.8-118 | | %REC | 238828 | 1 | 03/01/2017 03:17 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 19:00 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238651 | 1 | 02/28/2017 19:00 | YH |
| Acenaphthene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 19:00 | YH |
| Fluorene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 19:00 | YH |
| Phenanthrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:00 | YH |
| Anthracene | 0.29 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:00 | YH |
| Fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 19:00 | YH |
| Pyrene | 0.27 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:00 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:00 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:00 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 19:00 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:00 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:00 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:00 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 19:00 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 19:00 | YH |
| Surr: 4-Terphenyl-d14 | 88.2 | 58.5-125 | | %REC | 238651 | 1 | 02/28/2017 19:00 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 20:12 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 20:12 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 20:12 | YH |
| Phenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 20:12 | YH |
| Surr: 2,4,6-Tribromophenol | 87.2 | 50-142 | | %REC | 238646 | 1 | 02/27/2017 20:12 | YH |
| Surr: 2-Fluorobiphenyl | 67.8 | 46-124 | | %REC | 238646 | 1 | 02/27/2017 20:12 | YH |
| Surr: 2-Fluorophenol | 50.4 | 25.3-120 | | %REC | 238646 | 1 | 02/27/2017 20:12 | YH |
| Surr: 4-Terphenyl-d14 | 86.1 | 45.1-133 | | %REC | 238646 | 1 | 02/27/2017 20:12 | YH |
| Surr: Nitrobenzene-d5 | 68.1 | 40.1-121 | | %REC | 238646 | 1 | 02/27/2017 20:12 | YH |
| Surr: Phenol-d5 | 34 | 16.3-120 | | %REC | 238646 | 1 | 02/27/2017 20:12 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | AMW-11-20170222-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/22/2017 12:35:00 PM |
| **Lab ID:** | 1702K47-011 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 03:43 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 03:43 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 03:43 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 03:43 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 03:43 | NP |
| Surr: 4-Bromofluorobenzene | 94.4 | 66.1-129 | | %REC | 238828 | 1 | 03/01/2017 03:43 | NP |
| Surr: Dibromofluoromethane | 97.8 | 83.6-123 | | %REC | 238828 | 1 | 03/01/2017 03:43 | NP |
| Surr: Toluene-d8 | 92.6 | 81.8-118 | | %REC | 238828 | 1 | 03/01/2017 03:43 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 19:26 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238651 | 1 | 02/28/2017 19:26 | YH |
| Acenaphthene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 19:26 | YH |
| Fluorene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 19:26 | YH |
| Phenanthrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:26 | YH |
| Anthracene | 0.066 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:26 | YH |
| Fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 19:26 | YH |
| Pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:26 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:26 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:26 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 19:26 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:26 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:26 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:26 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 19:26 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 19:26 | YH |
| Surr: 4-Terphenyl-d14 | 87.2 | 58.5-125 | | %REC | 238651 | 1 | 02/28/2017 19:26 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 20:37 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 20:37 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 20:37 | YH |
| Phenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 20:37 | YH |
| Surr: 2,4,6-Tribromophenol | 79.9 | 50-142 | | %REC | 238646 | 1 | 02/27/2017 20:37 | YH |
| Surr: 2-Fluorobiphenyl | 64.3 | 46-124 | | %REC | 238646 | 1 | 02/27/2017 20:37 | YH |
| Surr: 2-Fluorophenol | 53.4 | 25.3-120 | | %REC | 238646 | 1 | 02/27/2017 20:37 | YH |
| Surr: 4-Terphenyl-d14 | 84.4 | 45.1-133 | | %REC | 238646 | 1 | 02/27/2017 20:37 | YH |
| Surr: Nitrobenzene-d5 | 67.9 | 40.1-121 | | %REC | 238646 | 1 | 02/27/2017 20:37 | YH |
| Surr: Phenol-d5 | 37.5 | 16.3-120 | | %REC | 238646 | 1 | 02/27/2017 20:37 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | AMW-13-20170222-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/22/2017 3:15:00 PM |
| **Lab ID:** | 1702K47-012 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 04:09 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 04:09 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 04:09 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 04:09 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 04:09 | NP |
| Surr: 4-Bromofluorobenzene | 95.3 | 66.1-129 | | %REC | 238828 | 1 | 03/01/2017 04:09 | NP |
| Surr: Dibromofluoromethane | 96.7 | 83.6-123 | | %REC | 238828 | 1 | 03/01/2017 04:09 | NP |
| Surr: Toluene-d8 | 93.1 | 81.8-118 | | %REC | 238828 | 1 | 03/01/2017 04:09 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 19:51 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238651 | 1 | 02/28/2017 19:51 | YH |
| Acenaphthene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 19:51 | YH |
| Fluorene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 19:51 | YH |
| Phenanthrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:51 | YH |
| Anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:51 | YH |
| Fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 19:51 | YH |
| Pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:51 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:51 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:51 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 19:51 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:51 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:51 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 19:51 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 19:51 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 19:51 | YH |
| Surr: 4-Terphenyl-d14 | 91.9 | 58.5-125 | | %REC | 238651 | 1 | 02/28/2017 19:51 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 21:03 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 21:03 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 21:03 | YH |
| Phenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 21:03 | YH |
| Surr: 2,4,6-Tribromophenol | 80.5 | 50-142 | | %REC | 238646 | 1 | 02/27/2017 21:03 | YH |
| Surr: 2-Fluorobiphenyl | 69.5 | 46-124 | | %REC | 238646 | 1 | 02/27/2017 21:03 | YH |
| Surr: 2-Fluorophenol | 52.5 | 25.3-120 | | %REC | 238646 | 1 | 02/27/2017 21:03 | YH |
| Surr: 4-Terphenyl-d14 | 87.7 | 45.1-133 | | %REC | 238646 | 1 | 02/27/2017 21:03 | YH |
| Surr: Nitrobenzene-d5 | 72.2 | 40.1-121 | | %REC | 238646 | 1 | 02/27/2017 21:03 | YH |
| Surr: Phenol-d5 | 37.2 | 16.3-120 | | %REC | 238646 | 1 | 02/27/2017 21:03 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-108D-20170222-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/22/2017 10:55:00 AM |
| **Lab ID:** | 1702K47-013 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 04:35 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 04:35 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 04:35 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 04:35 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 04:35 | NP |
| Surr: 4-Bromofluorobenzene | 95.3 | 66.1-129 | | %REC | 238828 | 1 | 03/01/2017 04:35 | NP |
| Surr: Dibromofluoromethane | 96.3 | 83.6-123 | | %REC | 238828 | 1 | 03/01/2017 04:35 | NP |
| Surr: Toluene-d8 | 92.6 | 81.8-118 | | %REC | 238828 | 1 | 03/01/2017 04:35 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 20:15 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238651 | 1 | 02/28/2017 20:15 | YH |
| Acenaphthene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 20:15 | YH |
| Fluorene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 20:15 | YH |
| Phenanthrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 20:15 | YH |
| Anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 20:15 | YH |
| Fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 20:15 | YH |
| Pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 20:15 | YH |
| Benz(a)anthracene | 0.085 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 20:15 | YH |
| Chrysene | 0.081 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 20:15 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 20:15 | YH |
| Benzo(k)fluoranthene | 0.052 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 20:15 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 20:15 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 20:15 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 20:15 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 20:15 | YH |
| Surr: 4-Terphenyl-d14 | 98.2 | 58.5-125 | | %REC | 238651 | 1 | 02/28/2017 20:15 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 21:28 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 21:28 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 21:28 | YH |
| Phenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 21:28 | YH |
| Surr: 2,4,6-Tribromophenol | 81.4 | 50-142 | | %REC | 238646 | 1 | 02/27/2017 21:28 | YH |
| Surr: 2-Fluorobiphenyl | 66.5 | 46-124 | | %REC | 238646 | 1 | 02/27/2017 21:28 | YH |
| Surr: 2-Fluorophenol | 48 | 25.3-120 | | %REC | 238646 | 1 | 02/27/2017 21:28 | YH |
| Surr: 4-Terphenyl-d14 | 84.3 | 45.1-133 | | %REC | 238646 | 1 | 02/27/2017 21:28 | YH |
| Surr: Nitrobenzene-d5 | 67.9 | 40.1-121 | | %REC | 238646 | 1 | 02/27/2017 21:28 | YH |
| Surr: Phenol-d5 | 30.6 | 16.3-120 | | %REC | 238646 | 1 | 02/27/2017 21:28 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-23D-20170222-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/22/2017 10:40:00 AM |
| **Lab ID:** | 1702K47-014 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 05:01 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 05:01 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 05:01 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 05:01 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 05:01 | NP |
| Surr: 4-Bromofluorobenzene | 96 | 66.1-129 | | %REC | 238828 | 1 | 03/01/2017 05:01 | NP |
| Surr: Dibromofluoromethane | 95.4 | 83.6-123 | | %REC | 238828 | 1 | 03/01/2017 05:01 | NP |
| Surr: Toluene-d8 | 94.3 | 81.8-118 | | %REC | 238828 | 1 | 03/01/2017 05:01 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 20:41 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238651 | 1 | 02/28/2017 20:41 | YH |
| Acenaphthene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 20:41 | YH |
| Fluorene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 20:41 | YH |
| Phenanthrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 20:41 | YH |
| Anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 20:41 | YH |
| Fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 20:41 | YH |
| Pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 20:41 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 20:41 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 20:41 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 20:41 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 20:41 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 20:41 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 20:41 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 20:41 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 20:41 | YH |
| Surr: 4-Terphenyl-d14 | 91.1 | 58.5-125 | | %REC | 238651 | 1 | 02/28/2017 20:41 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 21:54 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 21:54 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 21:54 | YH |
| Phenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 21:54 | YH |
| Surr: 2,4,6-Tribromophenol | 81.2 | 50-142 | | %REC | 238646 | 1 | 02/27/2017 21:54 | YH |
| Surr: 2-Fluorobiphenyl | 69.3 | 46-124 | | %REC | 238646 | 1 | 02/27/2017 21:54 | YH |
| Surr: 2-Fluorophenol | 48.8 | 25.3-120 | | %REC | 238646 | 1 | 02/27/2017 21:54 | YH |
| Surr: 4-Terphenyl-d14 | 84.7 | 45.1-133 | | %REC | 238646 | 1 | 02/27/2017 21:54 | YH |
| Surr: Nitrobenzene-d5 | 70.2 | 40.1-121 | | %REC | 238646 | 1 | 02/27/2017 21:54 | YH |
| Surr: Phenol-d5 | 32.8 | 16.3-120 | | %REC | 238646 | 1 | 02/27/2017 21:54 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-113D-20170222-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/22/2017 12:20:00 PM |
| **Lab ID:** | 1702K47-015 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 05:26 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 05:26 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 05:26 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 05:26 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 05:26 | NP |
| Surr: 4-Bromofluorobenzene | 94.8 | 66.1-129 | | %REC | 238828 | 1 | 03/01/2017 05:26 | NP |
| Surr: Dibromofluoromethane | 97.3 | 83.6-123 | | %REC | 238828 | 1 | 03/01/2017 05:26 | NP |
| Surr: Toluene-d8 | 92.7 | 81.8-118 | | %REC | 238828 | 1 | 03/01/2017 05:26 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 21:06 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238651 | 1 | 02/28/2017 21:06 | YH |
| Acenaphthene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 21:06 | YH |
| Fluorene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 21:06 | YH |
| Phenanthrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:06 | YH |
| Anthracene | 0.060 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:06 | YH |
| Fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 21:06 | YH |
| Pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:06 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:06 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:06 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 21:06 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:06 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:06 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:06 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 21:06 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 21:06 | YH |
| Surr: 4-Terphenyl-d14 | 89.1 | 58.5-125 | | %REC | 238651 | 1 | 02/28/2017 21:06 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 22:19 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 22:19 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 22:19 | YH |
| Phenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 22:19 | YH |
| Surr: 2,4,6-Tribromophenol | 85.6 | 50-142 | | %REC | 238646 | 1 | 02/27/2017 22:19 | YH |
| Surr: 2-Fluorobiphenyl | 67 | 46-124 | | %REC | 238646 | 1 | 02/27/2017 22:19 | YH |
| Surr: 2-Fluorophenol | 51.1 | 25.3-120 | | %REC | 238646 | 1 | 02/27/2017 22:19 | YH |
| Surr: 4-Terphenyl-d14 | 83.4 | 45.1-133 | | %REC | 238646 | 1 | 02/27/2017 22:19 | YH |
| Surr: Nitrobenzene-d5 | 68 | 40.1-121 | | %REC | 238646 | 1 | 02/27/2017 22:19 | YH |
| Surr: Phenol-d5 | 34 | 16.3-120 | | %REC | 238646 | 1 | 02/27/2017 22:19 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-308D-20170222-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/22/2017 12:35:00 PM |
| **Lab ID:** | 1702K47-016 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | 11 | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 05:52 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 05:52 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 05:52 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 05:52 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 05:52 | NP |
| Surr: 4-Bromofluorobenzene | 95.1 | 66.1-129 | | %REC | 238828 | 1 | 03/01/2017 05:52 | NP |
| Surr: Dibromofluoromethane | 95.9 | 83.6-123 | | %REC | 238828 | 1 | 03/01/2017 05:52 | NP |
| Surr: Toluene-d8 | 92.5 | 81.8-118 | | %REC | 238828 | 1 | 03/01/2017 05:52 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 21:32 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238651 | 1 | 02/28/2017 21:32 | YH |
| Acenaphthene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 21:32 | YH |
| Fluorene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 21:32 | YH |
| Phenanthrene | 0.060 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:32 | YH |
| Anthracene | 0.078 | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:32 | YH |
| Fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 21:32 | YH |
| Pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:32 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:32 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:32 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 21:32 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:32 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:32 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:32 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 21:32 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 21:32 | YH |
| Surr: 4-Terphenyl-d14 | 88.1 | 58.5-125 | | %REC | 238651 | 1 | 02/28/2017 21:32 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 22:46 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 22:46 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 22:46 | YH |
| Phenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 22:46 | YH |
| Surr: 2,4,6-Tribromophenol | 109 | 50-142 | | %REC | 238646 | 1 | 02/27/2017 22:46 | YH |
| Surr: 2-Fluorobiphenyl | 86.8 | 46-124 | | %REC | 238646 | 1 | 02/27/2017 22:46 | YH |
| Surr: 2-Fluorophenol | 55.1 | 25.3-120 | | %REC | 238646 | 1 | 02/27/2017 22:46 | YH |
| Surr: 4-Terphenyl-d14 | 108 | 45.1-133 | | %REC | 238646 | 1 | 02/27/2017 22:46 | YH |
| Surr: Nitrobenzene-d5 | 86.3 | 40.1-121 | | %REC | 238646 | 1 | 02/27/2017 22:46 | YH |
| Surr: Phenol-d5 | 35.3 | 16.3-120 | | %REC | 238646 | 1 | 02/27/2017 22:46 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-112D-20170222-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/22/2017 2:40:00 PM |
| **Lab ID:** | 1702K47-017 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 06:18 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 06:18 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 06:18 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 06:18 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 06:18 | NP |
| Surr: 4-Bromofluorobenzene | 95.6 | 66.1-129 | | %REC | 238828 | 1 | 03/01/2017 06:18 | NP |
| Surr: Dibromofluoromethane | 96.4 | 83.6-123 | | %REC | 238828 | 1 | 03/01/2017 06:18 | NP |
| Surr: Toluene-d8 | 93.5 | 81.8-118 | | %REC | 238828 | 1 | 03/01/2017 06:18 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 21:59 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238651 | 1 | 02/28/2017 21:59 | YH |
| Acenaphthene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 21:59 | YH |
| Fluorene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 21:59 | YH |
| Phenanthrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:59 | YH |
| Anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:59 | YH |
| Fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 21:59 | YH |
| Pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:59 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:59 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:59 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 21:59 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:59 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:59 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 21:59 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 21:59 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 21:59 | YH |
| Surr: 4-Terphenyl-d14 | 96.3 | 58.5-125 | | %REC | 238651 | 1 | 02/28/2017 21:59 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 23:12 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 23:12 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 23:12 | YH |
| Phenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 23:12 | YH |
| Surr: 2,4,6-Tribromophenol | 93.6 | 50-142 | | %REC | 238646 | 1 | 02/27/2017 23:12 | YH |
| Surr: 2-Fluorobiphenyl | 75.4 | 46-124 | | %REC | 238646 | 1 | 02/27/2017 23:12 | YH |
| Surr: 2-Fluorophenol | 56.7 | 25.3-120 | | %REC | 238646 | 1 | 02/27/2017 23:12 | YH |
| Surr: 4-Terphenyl-d14 | 93.3 | 45.1-133 | | %REC | 238646 | 1 | 02/27/2017 23:12 | YH |
| Surr: Nitrobenzene-d5 | 72.3 | 40.1-121 | | %REC | 238646 | 1 | 02/27/2017 23:12 | YH |
| Surr: Phenol-d5 | 38.5 | 16.3-120 | | %REC | 238646 | 1 | 02/27/2017 23:12 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-8-20170222-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/22/2017 4:40:00 PM |
| **Lab ID:** | 1702K47-018 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 06:44 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 06:44 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 06:44 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 06:44 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 06:44 | NP |
| Surr: 4-Bromofluorobenzene | 94.5 | 66.1-129 | | %REC | 238828 | 1 | 03/01/2017 06:44 | NP |
| Surr: Dibromofluoromethane | 95.8 | 83.6-123 | | %REC | 238828 | 1 | 03/01/2017 06:44 | NP |
| Surr: Toluene-d8 | 93.9 | 81.8-118 | | %REC | 238828 | 1 | 03/01/2017 06:44 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 22:25 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238651 | 1 | 02/28/2017 22:25 | YH |
| Acenaphthene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 22:25 | YH |
| Fluorene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 22:25 | YH |
| Phenanthrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 22:25 | YH |
| Anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 22:25 | YH |
| Fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 22:25 | YH |
| Pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 22:25 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 22:25 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 22:25 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 22:25 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 22:25 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 22:25 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 22:25 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 22:25 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 22:25 | YH |
| Surr: 4-Terphenyl-d14 | 88.3 | 58.5-125 | | %REC | 238651 | 1 | 02/28/2017 22:25 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 23:37 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 23:37 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 23:37 | YH |
| Phenol | BRL | 10 | | ug/L | 238646 | 1 | 02/27/2017 23:37 | YH |
| Surr: 2,4,6-Tribromophenol | 110 | 50-142 | | %REC | 238646 | 1 | 02/27/2017 23:37 | YH |
| Surr: 2-Fluorobiphenyl | 85 | 46-124 | | %REC | 238646 | 1 | 02/27/2017 23:37 | YH |
| Surr: 2-Fluorophenol | 62.7 | 25.3-120 | | %REC | 238646 | 1 | 02/27/2017 23:37 | YH |
| Surr: 4-Terphenyl-d14 | 113 | 45.1-133 | | %REC | 238646 | 1 | 02/27/2017 23:37 | YH |
| Surr: Nitrobenzene-d5 | 83.8 | 40.1-121 | | %REC | 238646 | 1 | 02/27/2017 23:37 | YH |
| Surr: Phenol-d5 | 43.1 | 16.3-120 | | %REC | 238646 | 1 | 02/27/2017 23:37 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-26D-20170222-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/22/2017 3:05:00 PM |
| **Lab ID:** | 1702K47-019 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 07:10 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 07:10 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 07:10 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 07:10 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 07:10 | NP |
| Surr: 4-Bromofluorobenzene | 93.6 | 66.1-129 | | %REC | 238828 | 1 | 03/01/2017 07:10 | NP |
| Surr: Dibromofluoromethane | 97 | 83.6-123 | | %REC | 238828 | 1 | 03/01/2017 07:10 | NP |
| Surr: Toluene-d8 | 94.3 | 81.8-118 | | %REC | 238828 | 1 | 03/01/2017 07:10 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 22:50 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238651 | 1 | 02/28/2017 22:50 | YH |
| Acenaphthene | BRL | 0.50 | | ug/L | 238651 | 1 | 02/28/2017 22:50 | YH |
| Fluorene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 22:50 | YH |
| Phenanthrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 22:50 | YH |
| Anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 22:50 | YH |
| Fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 22:50 | YH |
| Pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 22:50 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 22:50 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 22:50 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 22:50 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 22:50 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 22:50 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 02/28/2017 22:50 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 22:50 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238651 | 1 | 02/28/2017 22:50 | YH |
| Surr: 4-Terphenyl-d14 | 84.1 | 58.5-125 | | %REC | 238651 | 1 | 02/28/2017 22:50 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/28/2017 00:03 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/28/2017 00:03 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/28/2017 00:03 | YH |
| Phenol | BRL | 10 | | ug/L | 238646 | 1 | 02/28/2017 00:03 | YH |
| Surr: 2,4,6-Tribromophenol | 102 | 50-142 | | %REC | 238646 | 1 | 02/28/2017 00:03 | YH |
| Surr: 2-Fluorobiphenyl | 81.9 | 46-124 | | %REC | 238646 | 1 | 02/28/2017 00:03 | YH |
| Surr: 2-Fluorophenol | 66.4 | 25.3-120 | | %REC | 238646 | 1 | 02/28/2017 00:03 | YH |
| Surr: 4-Terphenyl-d14 | 101 | 45.1-133 | | %REC | 238646 | 1 | 02/28/2017 00:03 | YH |
| Surr: Nitrobenzene-d5 | 82.4 | 40.1-121 | | %REC | 238646 | 1 | 02/28/2017 00:03 | YH |
| Surr: Phenol-d5 | 46.2 | 16.3-120 | | %REC | 238646 | 1 | 02/28/2017 00:03 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-307D-20170222-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/22/2017 4:20:00 PM |
| **Lab ID:** | 1702K47-020 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 07:36 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 07:36 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 07:36 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 07:36 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238828 | 1 | 03/01/2017 07:36 | NP |
| Surr: 4-Bromofluorobenzene | 95.5 | 66.1-129 | | %REC | 238828 | 1 | 03/01/2017 07:36 | NP |
| Surr: Dibromofluoromethane | 94.9 | 83.6-123 | | %REC | 238828 | 1 | 03/01/2017 07:36 | NP |
| Surr: Toluene-d8 | 94.3 | 81.8-118 | | %REC | 238828 | 1 | 03/01/2017 07:36 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | 1.7 | 0.50 | | ug/L | 238651 | 1 | 03/01/2017 17:32 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238651 | 1 | 03/01/2017 17:32 | YH |
| Acenaphthene | 1.3 | 0.50 | | ug/L | 238651 | 1 | 03/01/2017 17:32 | YH |
| Fluorene | 0.42 | 0.10 | | ug/L | 238651 | 1 | 03/01/2017 17:32 | YH |
| Phenanthrene | 2.6 | 0.050 | | ug/L | 238651 | 1 | 03/01/2017 17:32 | YH |
| Anthracene | 0.29 | 0.050 | | ug/L | 238651 | 1 | 03/01/2017 17:32 | YH |
| Fluoranthene | 0.27 | 0.10 | | ug/L | 238651 | 1 | 03/01/2017 17:32 | YH |
| Pyrene | 0.30 | 0.050 | | ug/L | 238651 | 1 | 03/01/2017 17:32 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238651 | 1 | 03/01/2017 17:32 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238651 | 1 | 03/01/2017 17:32 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238651 | 1 | 03/01/2017 17:32 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238651 | 1 | 03/01/2017 17:32 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 03/01/2017 17:32 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238651 | 1 | 03/01/2017 17:32 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238651 | 1 | 03/01/2017 17:32 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238651 | 1 | 03/01/2017 17:32 | YH |
| Surr: 4-Terphenyl-d14 | 87.2 | 58.5-125 | | %REC | 238651 | 1 | 03/01/2017 17:32 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/28/2017 12:47 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/28/2017 12:47 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/28/2017 12:47 | YH |
| Phenol | BRL | 10 | | ug/L | 238646 | 1 | 02/28/2017 12:47 | YH |
| Surr: 2,4,6-Tribromophenol | 124 | 50-142 | | %REC | 238646 | 1 | 02/28/2017 12:47 | YH |
| Surr: 2-Fluorobiphenyl | 91.4 | 46-124 | | %REC | 238646 | 1 | 02/28/2017 12:47 | YH |
| Surr: 2-Fluorophenol | 63.5 | 25.3-120 | | %REC | 238646 | 1 | 02/28/2017 12:47 | YH |
| Surr: 4-Terphenyl-d14 | 99.8 | 45.1-133 | | %REC | 238646 | 1 | 02/28/2017 12:47 | YH |
| Surr: Nitrobenzene-d5 | 90.4 | 40.1-121 | | %REC | 238646 | 1 | 02/28/2017 12:47 | YH |
| Surr: Phenol-d5 | 48 | 16.3-120 | | %REC | 238646 | 1 | 02/28/2017 12:47 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-300D-20170222-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/22/2017 5:55:00 PM |
| **Lab ID:** | 1702K47-021 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 22:02 | JE |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 22:02 | JE |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 22:02 | JE |
| Toluene | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 22:02 | JE |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 22:02 | JE |
| Surr: 4-Bromofluorobenzene | 99.8 | 66.1-129 | | %REC | 238687 | 1 | 02/25/2017 22:02 | JE |
| Surr: Dibromofluoromethane | 95.1 | 83.6-123 | | %REC | 238687 | 1 | 02/25/2017 22:02 | JE |
| Surr: Toluene-d8 | 99.8 | 81.8-118 | | %REC | 238687 | 1 | 02/25/2017 22:02 | JE |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 15:32 | RF |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238785 | 1 | 03/01/2017 15:32 | RF |
| Acenaphthene | BRL | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 15:32 | RF |
| Fluorene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 15:32 | RF |
| Phenanthrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 15:32 | RF |
| Anthracene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 15:32 | RF |
| Fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 15:32 | RF |
| Pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 15:32 | RF |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 15:32 | RF |
| Chrysene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 15:32 | RF |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 15:32 | RF |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 15:32 | RF |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 15:32 | RF |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 15:32 | RF |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 15:32 | RF |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 15:32 | RF |
| Surr: 4-Terphenyl-d14 | 74.1 | 58.5-125 | | %REC | 238785 | 1 | 03/01/2017 15:32 | RF |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/28/2017 16:53 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/28/2017 16:53 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238646 | 1 | 02/28/2017 16:53 | YH |
| Phenol | BRL | 10 | | ug/L | 238646 | 1 | 02/28/2017 16:53 | YH |
| Surr: 2,4,6-Tribromophenol | 100 | 50-142 | | %REC | 238646 | 1 | 02/28/2017 16:53 | YH |
| Surr: 2-Fluorobiphenyl | 83.3 | 46-124 | | %REC | 238646 | 1 | 02/28/2017 16:53 | YH |
| Surr: 2-Fluorophenol | 55.9 | 25.3-120 | | %REC | 238646 | 1 | 02/28/2017 16:53 | YH |
| Surr: 4-Terphenyl-d14 | 97.9 | 45.1-133 | | %REC | 238646 | 1 | 02/28/2017 16:53 | YH |
| Surr: Nitrobenzene-d5 | 86.4 | 40.1-121 | | %REC | 238646 | 1 | 02/28/2017 16:53 | YH |
| Surr: Phenol-d5 | 41.7 | 16.3-120 | | %REC | 238646 | 1 | 02/28/2017 16:53 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | TB-01-20170223-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/23/2017 |
| **Lab ID:** | 1702K47-022 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 13:53 | JE |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 13:53 | JE |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 13:53 | JE |
| Toluene | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 13:53 | JE |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 13:53 | JE |
| Surr: 4-Bromofluorobenzene | 99.9 | 66.1-129 | | %REC | 238687 | 1 | 02/25/2017 13:53 | JE |
| Surr: Dibromofluoromethane | 100 | 83.6-123 | | %REC | 238687 | 1 | 02/25/2017 13:53 | JE |
| Surr: Toluene-d8 | 100 | 81.8-118 | | %REC | 238687 | 1 | 02/25/2017 13:53 | JE |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | TB-02-20170223-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/23/2017 |
| **Lab ID:** | 1702K47-023 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 14:19 | JE |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 14:19 | JE |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 14:19 | JE |
| Toluene | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 14:19 | JE |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 14:19 | JE |
| Surr: 4-Bromofluorobenzene | 97.8 | 66.1-129 | | %REC | 238687 | 1 | 02/25/2017 14:19 | JE |
| Surr: Dibromofluoromethane | 96.8 | 83.6-123 | | %REC | 238687 | 1 | 02/25/2017 14:19 | JE |
| Surr: Toluene-d8 | 101 | 81.8-118 | | %REC | 238687 | 1 | 02/25/2017 14:19 | JE |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | TB-03-20170223-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/23/2017 |
| **Lab ID:** | 1702K47-024 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 14:44 | JE |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 14:44 | JE |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 14:44 | JE |
| Toluene | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 14:44 | JE |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 14:44 | JE |
| Surr: 4-Bromofluorobenzene | 98.7 | 66.1-129 | | %REC | 238687 | 1 | 02/25/2017 14:44 | JE |
| Surr: Dibromofluoromethane | 99 | 83.6-123 | | %REC | 238687 | 1 | 02/25/2017 14:44 | JE |
| Surr: Toluene-d8 | 100 | 81.8-118 | | %REC | 238687 | 1 | 02/25/2017 14:44 | JE |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | TB-04-20170223-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/23/2017 |
| **Lab ID:** | 1702K47-025 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 15:10 | JE |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 15:10 | JE |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 15:10 | JE |
| Toluene | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 15:10 | JE |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 15:10 | JE |
| Surr: 4-Bromofluorobenzene | 99.7 | 66.1-129 | | %REC | 238687 | 1 | 02/25/2017 15:10 | JE |
| Surr: Dibromofluoromethane | 98 | 83.6-123 | | %REC | 238687 | 1 | 02/25/2017 15:10 | JE |
| Surr: Toluene-d8 | 98.7 | 81.8-118 | | %REC | 238687 | 1 | 02/25/2017 15:10 | JE |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | TB-05-20170223-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/23/2017 |
| **Lab ID:** | 1702K47-026 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 15:36 | JE |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 15:36 | JE |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 15:36 | JE |
| Toluene | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 15:36 | JE |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 15:36 | JE |
| Surr: 4-Bromofluorobenzene | 98 | 66.1-129 | | %REC | 238687 | 1 | 02/25/2017 15:36 | JE |
| Surr: Dibromofluoromethane | 95.6 | 83.6-123 | | %REC | 238687 | 1 | 02/25/2017 15:36 | JE |
| Surr: Toluene-d8 | 100 | 81.8-118 | | %REC | 238687 | 1 | 02/25/2017 15:36 | JE |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 3-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | TB-06-20170223-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/23/2017 |
| **Lab ID:** | 1702K47-027 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 16:02 | JE |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 16:02 | JE |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 16:02 | JE |
| Toluene | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 16:02 | JE |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238687 | 1 | 02/25/2017 16:02 | JE |
| Surr: 4-Bromofluorobenzene | 98.5 | 66.1-129 | | %REC | 238687 | 1 | 02/25/2017 16:02 | JE |
| Surr: Dibromofluoromethane | 97.2 | 83.6-123 | | %REC | 238687 | 1 | 02/25/2017 16:02 | JE |
| Surr: Toluene-d8 | 99.7 | 81.8-118 | | %REC | 238687 | 1 | 02/25/2017 16:02 | JE |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

Clear | Save as

AES ANALYTICAL ENVIRONMENTAL SERVICES, INC.

# SAMPLE/COOLER RECEIPT CHECKLIST

1. Client Name: ERM-Southeast  AES Work Order Number: 1702K47

2. Carrier: FedEx ☐ UPS ☐ USPS ☐ Client ☐ Courier ■ Other _____

| | | Yes | No | N/A | Details | Comments |
|---|---|---|---|---|---|---|
| 3. | Shipping container/cooler received in good condition? | ○ | ○ | ○ | damaged ☐ leaking ☐ other ☐ | |
| 4. | Custody seals present on shipping container? | ○ | ○ | ○ | | |
| 5. | Custody seals intact on shipping container? | ○ | ○ | ○ | | |
| 6. | Temperature blanks present? | ○ | ○ | ○ | | |
| 7. | Cooler temperature(s) within limits of 0-6°C? [See item 13 and 14 for temperature recordings.] | ○ | ○ | ○ | Cooling initiated for recently collected samples / ice present ☐ | |
| 8. | Chain of Custody (COC) present? | ○ | ○ | ○ | | |
| 9. | Chain of Custody signed, dated, and timed when relinquished and received? | ○ | ○ | ○ | | |
| 10. | Sampler name and/or signature on COC? | ○ | ○ | ○ | | |
| 11. | Were all samples received within holding time? | ○ | ○ | ○ | | |
| 12. | TAT marked on the COC? | ○ | ○ | ○ | If no TAT indicated, proceeded with standard TAT per Terms & Conditions. ☐ | |

13. Cooler 1 Temperature 1.3 °C  Cooler 2 Temperature 1.5 °C  Cooler 3 Temperature 1.9 °C  Cooler 4 Temperature 2.6 °C

14. Cooler 5 Temperature 2.3 °C  Cooler 6 Temperature 1.7 °C  Cooler 7 Temperature _____ °C  Cooler 8 Temperature _____ °C

15. Comments: _____

**I certify that I have completed sections 1-15 (dated initials).** MJ 2/23/17

| | | Yes | No | N/A | Details | Comments |
|---|---|---|---|---|---|---|
| 16. | Were sample containers intact upon receipt? | ○ | ○ | ○ | | |
| 17. | Custody seals present on sample containers? | ○ | ○ | ○ | | |
| 18. | Custody seals intact on sample containers? | ○ | ○ | ○ | | |
| 19. | Do sample container labels match the COC? | ○ | ○ | ○ | incomplete info ☐ illegible ☐ no label ☐ other ☐ | |
| 20. | Are analyses requested indicated on the COC? | ○ | ○ | ○ | | |
| 21. | Were all of the samples listed on the COC received? | ○ | ○ | ○ | samples received but not listed on COC ☐ samples listed on COC not received ☐ | |
| 22. | Was the sample collection date/time noted? | ○ | ○ | ○ | | |
| 23. | Did we receive sufficient sample volume for indicated analyses? | ○ | ○ | ○ | | |
| 24. | Were samples received in appropriate containers? | ○ | ○ | ○ | | |
| 25. | Were VOA samples received without headspace (< 1/4" bubble)? | ○ | ○ | ○ | | |
| 26. | Were trip blanks submitted? | ○ | ○ | ○ | listed on COC ■ not listed on COC ☐ | |

27. Comments: _____

**I certify that I have completed sections 16-27 (dated initials).** MJ 2/23/17

| | | Yes | No | N/A | Details | Comments |
|---|---|---|---|---|---|---|
| 28. | Have containers needing chemical preservation been checked? | ○ | ○ | ○ | | check at analyses |
| 29. | Containers meet preservation guidelines? | ○ | ○ | ○ | | check at analyses |
| 30. | Was pH adjusted? | ○ | ○ | ○ | | |

**I certify that I have completed sections 28-30 (dated initials).** MJ 2/23/17

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702K47

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238499

Sample ID: **MB-238499** Client ID: Units: **ug/L** Prep Date: **02/23/2017** Run No: **337132**
SampleType: **MBLK** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238499** Analysis Date: **02/23/2017** Seq No: **7363956**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,4-Dimethylphenol | BRL | 10 | | | | | | | | | |
| 2-Methylphenol | BRL | 10 | | | | | | | | | |
| 3,4-Methylphenol | BRL | 10 | | | | | | | | | |
| Phenol | BRL | 10 | | | | | | | | | |
| Surr: 2,4,6-Tribromophenol | 86.45 | 0 | 100.0 | | 86.4 | 50 | 142 | | | | |
| Surr: 2-Fluorobiphenyl | 32.54 | 0 | 50.00 | | 65.1 | 46 | 124 | | | | |
| Surr: 2-Fluorophenol | 39.68 | 0 | 100.0 | | 39.7 | 25.3 | 120 | | | | |
| Surr: 4-Terphenyl-d14 | 43.03 | 0 | 50.00 | | 86.1 | 45.1 | 133 | | | | |
| Surr: Nitrobenzene-d5 | 36.54 | 0 | 50.00 | | 73.1 | 40.1 | 121 | | | | |
| Surr: Phenol-d5 | 22.89 | 0 | 100.0 | | 22.9 | 16.3 | 120 | | | | |

Sample ID: **LCS-238499** Client ID: Units: **ug/L** Prep Date: **02/23/2017** Run No: **337132**
SampleType: **LCS** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238499** Analysis Date: **02/23/2017** Seq No: **7363958**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | 30.38 | 10 | 100.0 | | 30.4 | 25 | 120 | | | | |
| Surr: 2,4,6-Tribromophenol | 103.2 | 0 | 100.0 | | 103 | 50 | 142 | | | | |
| Surr: 2-Fluorobiphenyl | 40.36 | 0 | 50.00 | | 80.7 | 46 | 124 | | | | |
| Surr: 2-Fluorophenol | 53.49 | 0 | 100.0 | | 53.5 | 25.3 | 120 | | | | |
| Surr: 4-Terphenyl-d14 | 53.61 | 0 | 50.00 | | 107 | 45.1 | 133 | | | | |
| Surr: Nitrobenzene-d5 | 43.32 | 0 | 50.00 | | 86.6 | 40.1 | 121 | | | | |
| Surr: Phenol-d5 | 33.83 | 0 | 100.0 | | 33.8 | 16.3 | 120 | | | | |

Sample ID: **1702J67-001CMS** Client ID: Units: **ug/L** Prep Date: **02/23/2017** Run No: **337132**
SampleType: **MS** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238499** Analysis Date: **02/23/2017** Seq No: **7366468**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | 34.62 | 10 | 100.0 | | 34.6 | 31.5 | 120 | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702K47

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238499

Sample ID: **1702J67-001CMS** Client ID: Units: **ug/L** Prep Date: **02/23/2017** Run No: **337132**
SampleType: **MS** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238499** Analysis Date: **02/23/2017** Seq No: **7366468**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Surr: 2,4,6-Tribromophenol | 98.55 | 0 | 100.0 | | 98.6 | 50 | 142 | | | | |
| Surr: 2-Fluorobiphenyl | 36.56 | 0 | 50.00 | | 73.1 | 46 | 124 | | | | |
| Surr: 2-Fluorophenol | 53.63 | 0 | 100.0 | | 53.6 | 25.3 | 120 | | | | |
| Surr: 4-Terphenyl-d14 | 48.91 | 0 | 50.00 | | 97.8 | 45.1 | 133 | | | | |
| Surr: Nitrobenzene-d5 | 39.96 | 0 | 50.00 | | 79.9 | 40.1 | 121 | | | | |
| Surr: Phenol-d5 | 37.03 | 0 | 100.0 | | 37.0 | 16.3 | 120 | | | | |

Sample ID: **1702J67-001CMSD** Client ID: Units: **ug/L** Prep Date: **02/23/2017** Run No: **337132**
SampleType: **MSD** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238499** Analysis Date: **02/23/2017** Seq No: **7366469**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | 37.17 | 10 | 100.0 | | 37.2 | 31.5 | 120 | 34.62 | 7.10 | 28.5 | |
| Surr: 2,4,6-Tribromophenol | 92.98 | 0 | 100.0 | | 93.0 | 50 | 142 | 98.55 | 0 | 0 | |
| Surr: 2-Fluorobiphenyl | 36.11 | 0 | 50.00 | | 72.2 | 46 | 124 | 36.56 | 0 | 0 | |
| Surr: 2-Fluorophenol | 56.99 | 0 | 100.0 | | 57.0 | 25.3 | 120 | 53.63 | 0 | 0 | |
| Surr: 4-Terphenyl-d14 | 46.17 | 0 | 50.00 | | 92.3 | 45.1 | 133 | 48.91 | 0 | 0 | |
| Surr: Nitrobenzene-d5 | 39.01 | 0 | 50.00 | | 78.0 | 40.1 | 121 | 39.96 | 0 | 0 | |
| Surr: Phenol-d5 | 39.99 | 0 | 100.0 | | 40.0 | 16.3 | 120 | 37.03 | 0 | 0 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702K47

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238646

Sample ID: **MB-238646** Client ID: Units: **ug/L** Prep Date: **02/27/2017** Run No: **337320**
SampleType: **MBLK** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238646** Analysis Date: **02/27/2017** Seq No: **7368780**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,4-Dimethylphenol | BRL | 10 | | | | | | | | | |
| 2-Methylphenol | BRL | 10 | | | | | | | | | |
| 3,4-Methylphenol | BRL | 10 | | | | | | | | | |
| Phenol | BRL | 10 | | | | | | | | | |
| Surr: 2,4,6-Tribromophenol | 99.58 | 0 | 100.0 | | 99.6 | 50 | 142 | | | | |
| Surr: 2-Fluorobiphenyl | 41.43 | 0 | 50.00 | | 82.9 | 46 | 124 | | | | |
| Surr: 2-Fluorophenol | 43.38 | 0 | 100.0 | | 43.4 | 25.3 | 120 | | | | |
| Surr: 4-Terphenyl-d14 | 44.59 | 0 | 50.00 | | 89.2 | 45.1 | 133 | | | | |
| Surr: Nitrobenzene-d5 | 43.48 | 0 | 50.00 | | 87.0 | 40.1 | 121 | | | | |
| Surr: Phenol-d5 | 25.19 | 0 | 100.0 | | 25.2 | 16.3 | 120 | | | | |

Sample ID: **LCS-238646** Client ID: Units: **ug/L** Prep Date: **02/27/2017** Run No: **337316**
SampleType: **LCS** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238646** Analysis Date: **02/27/2017** Seq No: **7368856**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | 25.68 | 10 | 100.0 | | 25.7 | 25 | 120 | | | | |
| Surr: 2,4,6-Tribromophenol | 89.19 | 0 | 100.0 | | 89.2 | 50 | 142 | | | | |
| Surr: 2-Fluorobiphenyl | 35.17 | 0 | 50.00 | | 70.3 | 46 | 124 | | | | |
| Surr: 2-Fluorophenol | 45.39 | 0 | 100.0 | | 45.4 | 25.3 | 120 | | | | |
| Surr: 4-Terphenyl-d14 | 45.00 | 0 | 50.00 | | 90.0 | 45.1 | 133 | | | | |
| Surr: Nitrobenzene-d5 | 37.78 | 0 | 50.00 | | 75.6 | 40.1 | 121 | | | | |
| Surr: Phenol-d5 | 28.48 | 0 | 100.0 | | 28.5 | 16.3 | 120 | | | | |

Sample ID: **1702K47-006BMS** Client ID: **MW-22D-20170221-01** Units: **ug/L** Prep Date: **02/27/2017** Run No: **337320**
SampleType: **MS** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238646** Analysis Date: **02/27/2017** Seq No: **7370526**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | 34.37 | 10 | 100.0 | | 34.4 | 31.5 | 120 | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702K47

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238646

Sample ID: **1702K47-006BMS** Client ID: **MW-22D-20170221-01** Units: **ug/L** Prep Date: **02/27/2017** Run No: **337320**
SampleType: **MS** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238646** Analysis Date: **02/27/2017** Seq No: **7370526**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Surr: 2,4,6-Tribromophenol | 97.96 | 0 | 100.0 | | 98.0 | 50 | 142 | | | | |
| Surr: 2-Fluorobiphenyl | 38.16 | 0 | 50.00 | | 76.3 | 46 | 124 | | | | |
| Surr: 2-Fluorophenol | 51.26 | 0 | 100.0 | | 51.3 | 25.3 | 120 | | | | |
| Surr: 4-Terphenyl-d14 | 41.70 | 0 | 50.00 | | 83.4 | 45.1 | 133 | | | | |
| Surr: Nitrobenzene-d5 | 38.86 | 0 | 50.00 | | 77.7 | 40.1 | 121 | | | | |
| Surr: Phenol-d5 | 37.08 | 0 | 100.0 | | 37.1 | 16.3 | 120 | | | | |

Sample ID: **1702K47-006BMSD** Client ID: **MW-22D-20170221-01** Units: **ug/L** Prep Date: **02/27/2017** Run No: **337320**
SampleType: **MSD** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238646** Analysis Date: **02/27/2017** Seq No: **7370527**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | 30.41 | 10 | 100.0 | | 30.4 | 31.5 | 120 | 34.37 | 12.2 | 28.5 | S |
| Surr: 2,4,6-Tribromophenol | 93.29 | 0 | 100.0 | | 93.3 | 50 | 142 | 97.96 | 0 | 0 | |
| Surr: 2-Fluorobiphenyl | 36.75 | 0 | 50.00 | | 73.5 | 46 | 124 | 38.16 | 0 | 0 | |
| Surr: 2-Fluorophenol | 46.71 | 0 | 100.0 | | 46.7 | 25.3 | 120 | 51.26 | 0 | 0 | |
| Surr: 4-Terphenyl-d14 | 42.53 | 0 | 50.00 | | 85.1 | 45.1 | 133 | 41.70 | 0 | 0 | |
| Surr: Nitrobenzene-d5 | 38.23 | 0 | 50.00 | | 76.5 | 40.1 | 121 | 38.86 | 0 | 0 | |
| Surr: Phenol-d5 | 32.51 | 0 | 100.0 | | 32.5 | 16.3 | 120 | 37.08 | 0 | 0 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702K47

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238651

Sample ID: **MB-238651** Client ID: Units: **ug/L** Prep Date: **02/27/2017** Run No: **337317**
SampleType: **MBLK** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238651** Analysis Date: **02/28/2017** Seq No: **7371201**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | BRL | 0.50 | | | | | | | | | |
| Acenaphthylene | BRL | 1.0 | | | | | | | | | |
| Anthracene | BRL | 0.050 | | | | | | | | | |
| Benz(a)anthracene | BRL | 0.050 | | | | | | | | | |
| Benzo(a)pyrene | BRL | 0.050 | | | | | | | | | |
| Benzo(b)fluoranthene | BRL | 0.10 | | | | | | | | | |
| Benzo(g,h,i)perylene | BRL | 0.10 | | | | | | | | | |
| Benzo(k)fluoranthene | BRL | 0.050 | | | | | | | | | |
| Chrysene | BRL | 0.050 | | | | | | | | | |
| Dibenz(a,h)anthracene | BRL | 0.10 | | | | | | | | | |
| Fluoranthene | BRL | 0.10 | | | | | | | | | |
| Fluorene | BRL | 0.10 | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | | | | | | | | |
| Naphthalene | BRL | 0.50 | | | | | | | | | |
| Phenanthrene | BRL | 0.050 | | | | | | | | | |
| Pyrene | BRL | 0.050 | | | | | | | | | |
| Surr: 4-Terphenyl-d14 | 1.957 | 0 | 2.000 | | 97.9 | 58.5 | 125 | | | | |

Sample ID: **LCS-238651** Client ID: Units: **ug/L** Prep Date: **02/27/2017** Run No: **337317**
SampleType: **LCS** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238651** Analysis Date: **02/28/2017** Seq No: **7371202**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 1.977 | 0.50 | 2.000 | | 98.9 | 69.1 | 117 | | | | |
| Acenaphthylene | 1.915 | 1.0 | 2.000 | | 95.7 | 59.7 | 118 | | | | |
| Anthracene | 2.255 | 0.050 | 2.000 | | 113 | 64.7 | 121 | | | | |
| Benz(a)anthracene | 2.453 | 0.050 | 2.000 | | 123 | 61.7 | 139 | | | | |
| Benzo(a)pyrene | 2.144 | 0.050 | 2.000 | | 107 | 65.1 | 124 | | | | |
| Benzo(b)fluoranthene | 1.910 | 0.10 | 2.000 | | 95.5 | 60.8 | 129 | | | | |

**Qualifiers:**
> Greater than Result value
< Less than Result value
B Analyte detected in the associated method blank
BRL Below reporting limit
E Estimated (value above quantitation range)
H Holding times for preparation or analysis exceeded
J Estimated value detected below Reporting Limit
N Analyte not NELAC certified
R RPD outside limits due to matrix
Rpt Lim Reporting Limit
S Spike Recovery outside limits due to matrix

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702K47

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238651

Sample ID: **LCS-238651** Client ID: Units: **ug/L** Prep Date: **02/27/2017** Run No: **337317**
SampleType: **LCS** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238651** Analysis Date: **02/28/2017** Seq No: **7371202**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | 1.972 | 0.10 | 2.000 | | 98.6 | 60.1 | 129 | | | | |
| Benzo(k)fluoranthene | 2.042 | 0.050 | 2.000 | | 102 | 69.6 | 130 | | | | |
| Chrysene | 2.292 | 0.050 | 2.000 | | 115 | 76.5 | 127 | | | | |
| Dibenz(a,h)anthracene | 1.765 | 0.10 | 2.000 | | 88.2 | 55.2 | 126 | | | | |
| Fluoranthene | 2.317 | 0.10 | 2.000 | | 116 | 66.5 | 133 | | | | |
| Fluorene | 2.016 | 0.10 | 2.000 | | 101 | 66.1 | 122 | | | | |
| Indeno(1,2,3-cd)pyrene | 2.059 | 0.050 | 2.000 | | 103 | 58.8 | 132 | | | | |
| Naphthalene | 1.959 | 0.50 | 2.000 | | 97.9 | 60.6 | 120 | | | | |
| Phenanthrene | 2.027 | 0.050 | 2.000 | | 101 | 65.9 | 118 | | | | |
| Pyrene | 2.208 | 0.050 | 2.000 | | 110 | 70.2 | 129 | | | | |
| Surr: 4-Terphenyl-d14 | 2.184 | 0 | 2.000 | | 109 | 58.5 | 125 | | | | |

Sample ID: **1702K47-006BMS** Client ID: **MW-22D-20170221-01** Units: **ug/L** Prep Date: **02/27/2017** Run No: **337317**
SampleType: **MS** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238651** Analysis Date: **02/28/2017** Seq No: **7372719**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 1.617 | 0.50 | 2.000 | | 80.8 | 49.7 | 118 | | | | |
| Acenaphthylene | 1.598 | 1.0 | 2.000 | | 79.9 | 56.7 | 120 | | | | |
| Anthracene | 1.843 | 0.050 | 2.000 | | 92.1 | 54.4 | 117 | | | | |
| Benz(a)anthracene | 2.290 | 0.050 | 2.000 | | 115 | 52.4 | 135 | | | | |
| Benzo(a)pyrene | 1.839 | 0.050 | 2.000 | | 92.0 | 51.5 | 117 | | | | |
| Benzo(b)fluoranthene | 1.714 | 0.10 | 2.000 | | 85.7 | 45.6 | 124 | | | | |
| Benzo(g,h,i)perylene | 1.581 | 0.10 | 2.000 | 0.06434 | 75.8 | 45.9 | 120 | | | | |
| Benzo(k)fluoranthene | 1.647 | 0.050 | 2.000 | | 82.4 | 51.8 | 122 | | | | |
| Chrysene | 1.923 | 0.050 | 2.000 | | 96.1 | 59.9 | 120 | | | | |
| Dibenz(a,h)anthracene | 1.569 | 0.10 | 2.000 | 0.06345 | 75.3 | 41.6 | 120 | | | | |
| Fluoranthene | 1.952 | 0.10 | 2.000 | | 97.6 | 59.7 | 122 | | | | |
| Fluorene | 1.687 | 0.10 | 2.000 | | 84.3 | 57.9 | 117 | | | | |

**Qualifiers:**
- > Greater than Result value
- BRL Below reporting limit
- J Estimated value detected below Reporting Limit
- Rpt Lim Reporting Limit
- < Less than Result value
- E Estimated (value above quantitation range)
- N Analyte not NELAC certified
- S Spike Recovery outside limits due to matrix
- B Analyte detected in the associated method blank
- H Holding times for preparation or analysis exceeded
- R RPD outside limits due to matrix

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702K47

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238651

Sample ID: **1702K47-006BMS** Client ID: **MW-22D-20170221-01** Units: **ug/L** Prep Date: **02/27/2017** Run No: **337317**
SampleType: **MS** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238651** Analysis Date: **02/28/2017** Seq No: **7372719**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Indeno(1,2,3-cd)pyrene | 1.721 | 0.050 | 2.000 | 0.05590 | 83.3 | 45.5 | 120 | | | | |
| Naphthalene | 1.648 | 0.50 | 2.000 | 0.02203 | 81.3 | 53.9 | 120 | | | | |
| Phenanthrene | 1.669 | 0.050 | 2.000 | | 83.5 | 58.1 | 120 | | | | |
| Pyrene | 1.903 | 0.050 | 2.000 | | 95.2 | 61.6 | 120 | | | | |
| Surr: 4-Terphenyl-d14 | 2.086 | 0 | 2.000 | | 104 | 58.5 | 125 | | | | |

Sample ID: **1702K47-006BMS** Client ID: **MW-22D-20170221-01** Units: **ug/L** Prep Date: **02/27/2017** Run No: **337414**
SampleType: **MS** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238651** Analysis Date: **03/01/2017** Seq No: **7375211**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 1.588 | 0.50 | 2.000 | | 79.4 | 49.7 | 118 | | | | |
| Acenaphthylene | 1.570 | 1.0 | 2.000 | | 78.5 | 56.7 | 120 | | | | |
| Anthracene | 1.790 | 0.050 | 2.000 | | 89.5 | 54.4 | 117 | | | | |
| Benz(a)anthracene | 2.146 | 0.050 | 2.000 | | 107 | 52.4 | 135 | | | | |
| Benzo(a)pyrene | 1.778 | 0.050 | 2.000 | | 88.9 | 51.5 | 117 | | | | |
| Benzo(b)fluoranthene | 1.697 | 0.10 | 2.000 | | 84.9 | 45.6 | 124 | | | | |
| Benzo(g,h,i)perylene | 1.498 | 0.10 | 2.000 | 0.06434 | 71.7 | 45.9 | 120 | | | | |
| Benzo(k)fluoranthene | 1.666 | 0.050 | 2.000 | | 83.3 | 51.8 | 122 | | | | |
| Chrysene | 1.800 | 0.050 | 2.000 | | 90.0 | 59.9 | 120 | | | | |
| Dibenz(a,h)anthracene | 1.459 | 0.10 | 2.000 | 0.06345 | 69.8 | 41.6 | 120 | | | | |
| Fluoranthene | 1.936 | 0.10 | 2.000 | | 96.8 | 59.7 | 122 | | | | |
| Fluorene | 1.638 | 0.10 | 2.000 | | 81.9 | 57.9 | 117 | | | | |
| Indeno(1,2,3-cd)pyrene | 1.684 | 0.050 | 2.000 | 0.05590 | 81.4 | 45.5 | 120 | | | | |
| Naphthalene | 1.620 | 0.50 | 2.000 | 0.02203 | 79.9 | 53.9 | 120 | | | | |
| Phenanthrene | 1.634 | 0.050 | 2.000 | | 81.7 | 58.1 | 120 | | | | |
| Pyrene | 1.795 | 0.050 | 2.000 | | 89.8 | 61.6 | 120 | | | | |
| Surr: 4-Terphenyl-d14 | 1.984 | 0 | 2.000 | | 99.2 | 58.5 | 125 | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702K47

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238651

Sample ID: **1702K47-006BMSD** Client ID: **MW-22D-20170221-01** Units: **ug/L** Prep Date: **02/27/2017** Run No: **337317**
SampleType: **MSD** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238651** Analysis Date: **03/01/2017** Seq No: **7372720**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 1.691 | 0.50 | 2.000 | | 84.6 | 49.7 | 118 | 1.617 | 4.50 | 17.4 | |
| Acenaphthylene | 1.657 | 1.0 | 2.000 | | 82.9 | 56.7 | 120 | 1.598 | 3.64 | 19.5 | |
| Anthracene | 1.835 | 0.050 | 2.000 | | 91.7 | 54.4 | 117 | 1.843 | 0.437 | 24.5 | |
| Benz(a)anthracene | 2.262 | 0.050 | 2.000 | | 113 | 52.4 | 135 | 2.290 | 1.23 | 30.2 | |
| Benzo(a)pyrene | 1.768 | 0.050 | 2.000 | | 88.4 | 51.5 | 117 | 1.839 | 3.92 | 25.6 | |
| Benzo(b)fluoranthene | 1.700 | 0.10 | 2.000 | | 85.0 | 45.6 | 124 | 1.714 | 0.871 | 20.9 | |
| Benzo(g,h,i)perylene | 1.318 | 0.10 | 2.000 | 0.06434 | 62.7 | 45.9 | 120 | 1.581 | 18.2 | 28.6 | |
| Benzo(k)fluoranthene | 1.591 | 0.050 | 2.000 | | 79.6 | 51.8 | 122 | 1.647 | 3.44 | 28.6 | |
| Chrysene | 1.917 | 0.050 | 2.000 | | 95.8 | 59.9 | 120 | 1.923 | 0.307 | 26.4 | |
| Dibenz(a,h)anthracene | 1.250 | 0.10 | 2.000 | 0.06345 | 59.3 | 41.6 | 120 | 1.569 | 22.6 | 17.8 | R |
| Fluoranthene | 1.956 | 0.10 | 2.000 | | 97.8 | 59.7 | 122 | 1.952 | 0.233 | 22.1 | |
| Fluorene | 1.736 | 0.10 | 2.000 | | 86.8 | 57.9 | 117 | 1.687 | 2.88 | 20.8 | |
| Indeno(1,2,3-cd)pyrene | 1.545 | 0.050 | 2.000 | 0.05590 | 74.5 | 45.5 | 120 | 1.721 | 10.8 | 19.3 | |
| Naphthalene | 1.680 | 0.50 | 2.000 | 0.02203 | 82.9 | 53.9 | 120 | 1.648 | 1.95 | 20.6 | |
| Phenanthrene | 1.697 | 0.050 | 2.000 | | 84.8 | 58.1 | 120 | 1.669 | 1.65 | 19.4 | |
| Pyrene | 1.884 | 0.050 | 2.000 | | 94.2 | 61.6 | 120 | 1.903 | 1.04 | 21.2 | |
| Surr: 4-Terphenyl-d14 | 1.779 | 0 | 2.000 | | 89.0 | 58.5 | 125 | 2.086 | 0 | 0 | |

Sample ID: **1702K47-006BMSD** Client ID: **MW-22D-20170221-01** Units: **ug/L** Prep Date: **02/27/2017** Run No: **337414**
SampleType: **MSD** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238651** Analysis Date: **03/01/2017** Seq No: **7375212**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 1.679 | 0.50 | 2.000 | | 83.9 | 49.7 | 118 | 1.617 | 3.74 | 17.4 | |
| Acenaphthylene | 1.637 | 1.0 | 2.000 | | 81.9 | 56.7 | 120 | 1.598 | 2.45 | 19.5 | |
| Anthracene | 1.808 | 0.050 | 2.000 | | 90.4 | 54.4 | 117 | 1.843 | 1.88 | 24.5 | |
| Benz(a)anthracene | 2.118 | 0.050 | 2.000 | | 106 | 52.4 | 135 | 2.290 | 7.83 | 30.2 | |
| Benzo(a)pyrene | 1.680 | 0.050 | 2.000 | | 84.0 | 51.5 | 117 | 1.839 | 9.08 | 25.6 | |
| Benzo(b)fluoranthene | 1.642 | 0.10 | 2.000 | | 82.1 | 45.6 | 124 | 1.714 | 4.29 | 20.9 | |

**Qualifiers:**
- > Greater than Result value
- BRL Below reporting limit
- J Estimated value detected below Reporting Limit
- Rpt Lim Reporting Limit
- < Less than Result value
- E Estimated (value above quantitation range)
- N Analyte not NELAC certified
- S Spike Recovery outside limits due to matrix
- B Analyte detected in the associated method blank
- H Holding times for preparation or analysis exceeded
- R RPD outside limits due to matrix

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702K47

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238651

Sample ID: **1702K47-006BMSD** Client ID: **MW-22D-20170221-01** Units: **ug/L** Prep Date: **02/27/2017** Run No: **337414**
SampleType: **MSD** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238651** Analysis Date: **03/01/2017** Seq No: **7375212**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | 1.285 | 0.10 | 2.000 | 0.06434 | 61.0 | 45.9 | 120 | 1.581 | 20.7 | 28.6 | |
| Benzo(k)fluoranthene | 1.583 | 0.050 | 2.000 | | 79.2 | 51.8 | 122 | 1.647 | 3.96 | 28.6 | |
| Chrysene | 1.817 | 0.050 | 2.000 | | 90.9 | 59.9 | 120 | 1.923 | 5.64 | 26.4 | |
| Dibenz(a,h)anthracene | 1.211 | 0.10 | 2.000 | 0.06345 | 57.4 | 41.6 | 120 | 1.569 | 25.7 | 17.8 | R |
| Fluoranthene | 1.923 | 0.10 | 2.000 | | 96.2 | 59.7 | 122 | 1.952 | 1.47 | 22.1 | |
| Fluorene | 1.709 | 0.10 | 2.000 | | 85.4 | 57.9 | 117 | 1.687 | 1.31 | 20.8 | |
| Indeno(1,2,3-cd)pyrene | 1.467 | 0.050 | 2.000 | 0.05590 | 70.5 | 45.5 | 120 | 1.721 | 16.0 | 19.3 | |
| Naphthalene | 1.668 | 0.50 | 2.000 | 0.02203 | 82.3 | 53.9 | 120 | 1.648 | 1.24 | 20.6 | |
| Phenanthrene | 1.665 | 0.050 | 2.000 | | 83.3 | 58.1 | 120 | 1.669 | 0.214 | 19.4 | |
| Pyrene | 1.788 | 0.050 | 2.000 | | 89.4 | 61.6 | 120 | 1.903 | 6.27 | 21.2 | |
| Surr: 4-Terphenyl-d14 | 1.701 | 0 | 2.000 | | 85.1 | 58.5 | 125 | 2.086 | 0 | 0 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702K47

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238687

Sample ID: **MB-238687** Client ID: Units: **ug/L** Prep Date: **02/24/2017** Run No: **337225**
SampleType: **MBLK** TestCode: **Volatile Organic Compounds by GC/MS SW8260B** BatchID: **238687** Analysis Date: **02/24/2017** Seq No: **7370478**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | BRL | 5.0 | | | | | | | | | |
| Carbon disulfide | BRL | 5.0 | | | | | | | | | |
| Ethylbenzene | BRL | 5.0 | | | | | | | | | |
| Toluene | BRL | 5.0 | | | | | | | | | |
| Xylenes, Total | BRL | 5.0 | | | | | | | | | |
| Surr: 4-Bromofluorobenzene | 48.56 | 0 | 50.00 | | 97.1 | 66.1 | 129 | | | | |
| Surr: Dibromofluoromethane | 47.37 | 0 | 50.00 | | 94.7 | 83.6 | 123 | | | | |
| Surr: Toluene-d8 | 49.44 | 0 | 50.00 | | 98.9 | 81.8 | 118 | | | | |

Sample ID: **LCS-238687** Client ID: Units: **ug/L** Prep Date: **02/24/2017** Run No: **337225**
SampleType: **LCS** TestCode: **Volatile Organic Compounds by GC/MS SW8260B** BatchID: **238687** Analysis Date: **02/24/2017** Seq No: **7370479**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 50.37 | 5.0 | 50.00 | | 101 | 74 | 125 | | | | |
| Toluene | 51.16 | 5.0 | 50.00 | | 102 | 75.9 | 126 | | | | |
| Surr: 4-Bromofluorobenzene | 49.20 | 0 | 50.00 | | 98.4 | 66.1 | 129 | | | | |
| Surr: Dibromofluoromethane | 48.10 | 0 | 50.00 | | 96.2 | 83.6 | 123 | | | | |
| Surr: Toluene-d8 | 49.20 | 0 | 50.00 | | 98.4 | 81.8 | 118 | | | | |

Sample ID: **1702K29-005AMS** Client ID: Units: **ug/L** Prep Date: **02/24/2017** Run No: **337225**
SampleType: **MS** TestCode: **Volatile Organic Compounds by GC/MS SW8260B** BatchID: **238687** Analysis Date: **02/24/2017** Seq No: **7370481**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 27510 | 2500 | 25000 | 2515 | 100.0 | 71.6 | 132 | | | | |
| Toluene | 25790 | 2500 | 25000 | 660.0 | 101 | 72.5 | 135 | | | | |
| Surr: 4-Bromofluorobenzene | 24620 | 0 | 25000 | | 98.5 | 66.1 | 129 | | | | |
| Surr: Dibromofluoromethane | 24050 | 0 | 25000 | | 96.2 | 83.6 | 123 | | | | |
| Surr: Toluene-d8 | 25070 | 0 | 25000 | | 100 | 81.8 | 118 | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

**Analytical Environmental Services, Inc**

**Date:** 3-Mar-17

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702K47

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238687

Sample ID: **1702K29-005AMSD** Client ID: Units: **ug/L** Prep Date: **02/24/2017** Run No: **337225**
SampleType: **MSD** TestCode: **Volatile Organic Compounds by GC/MS SW8260B** BatchID: **238687** Analysis Date: **02/24/2017** Seq No: **7370482**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 27080 | 2500 | 25000 | 2515 | 98.3 | 71.6 | 132 | 27510 | 1.58 | 20.7 | |
| Toluene | 25140 | 2500 | 25000 | 660.0 | 97.9 | 72.5 | 135 | 25790 | 2.55 | 23.2 | |
| Surr: 4-Bromofluorobenzene | 24690 | 0 | 25000 | | 98.8 | 66.1 | 129 | 24620 | 0 | 0 | |
| Surr: Dibromofluoromethane | 23810 | 0 | 25000 | | 95.2 | 83.6 | 123 | 24050 | 0 | 0 | |
| Surr: Toluene-d8 | 24400 | 0 | 25000 | | 97.6 | 81.8 | 118 | 25070 | 0 | 0 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702K47

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238785

Sample ID: **MB-238785** Client ID: Units: **ug/L** Prep Date: **03/01/2017** Run No: **337521**
SampleType: **MBLK** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238785** Analysis Date: **03/01/2017** Seq No: **7373956**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | BRL | 0.50 | | | | | | | | | |
| Acenaphthylene | BRL | 1.0 | | | | | | | | | |
| Anthracene | BRL | 0.050 | | | | | | | | | |
| Benz(a)anthracene | BRL | 0.050 | | | | | | | | | |
| Benzo(a)pyrene | BRL | 0.050 | | | | | | | | | |
| Benzo(b)fluoranthene | BRL | 0.10 | | | | | | | | | |
| Benzo(g,h,i)perylene | BRL | 0.10 | | | | | | | | | |
| Benzo(k)fluoranthene | BRL | 0.050 | | | | | | | | | |
| Chrysene | BRL | 0.050 | | | | | | | | | |
| Dibenz(a,h)anthracene | BRL | 0.10 | | | | | | | | | |
| Fluoranthene | BRL | 0.10 | | | | | | | | | |
| Fluorene | BRL | 0.10 | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | | | | | | | | |
| Naphthalene | BRL | 0.50 | | | | | | | | | |
| Phenanthrene | BRL | 0.050 | | | | | | | | | |
| Pyrene | BRL | 0.050 | | | | | | | | | |
| Surr: 4-Terphenyl-d14 | 1.780 | 0 | 2.000 | | 89.0 | 58.5 | 125 | | | | |

Sample ID: **LCS-238785** Client ID: Units: **ug/L** Prep Date: **03/01/2017** Run No: **337521**
SampleType: **LCS** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238785** Analysis Date: **03/01/2017** Seq No: **7374026**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 1.532 | 0.50 | 2.000 | | 76.6 | 69.1 | 117 | | | | |
| Acenaphthylene | 1.491 | 1.0 | 2.000 | | 74.5 | 59.7 | 118 | | | | |
| Anthracene | 1.566 | 0.050 | 2.000 | | 78.3 | 64.7 | 121 | | | | |
| Benz(a)anthracene | 1.595 | 0.050 | 2.000 | 0.01968 | 78.8 | 61.7 | 139 | | | | |
| Benzo(a)pyrene | 1.644 | 0.050 | 2.000 | | 82.2 | 65.1 | 124 | | | | |
| Benzo(b)fluoranthene | 1.771 | 0.10 | 2.000 | 0.02664 | 87.2 | 60.8 | 129 | | | | |

**Qualifiers:**
> Greater than Result value
< Less than Result value
B Analyte detected in the associated method blank
BRL Below reporting limit
E Estimated (value above quantitation range)
H Holding times for preparation or analysis exceeded
J Estimated value detected below Reporting Limit
N Analyte not NELAC certified
R RPD outside limits due to matrix
Rpt Lim Reporting Limit
S Spike Recovery outside limits due to matrix

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702K47

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238785

Sample ID: **LCS-238785** Client ID: Units: **ug/L** Prep Date: **03/01/2017** Run No: **337521**
SampleType: **LCS** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238785** Analysis Date: **03/01/2017** Seq No: **7374026**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | 1.781 | 0.10 | 2.000 | | 89.0 | 60.1 | 129 | | | | |
| Benzo(k)fluoranthene | 1.797 | 0.050 | 2.000 | 0.03083 | 88.3 | 69.6 | 130 | | | | |
| Chrysene | 1.623 | 0.050 | 2.000 | 0.01833 | 80.3 | 76.5 | 127 | | | | |
| Dibenz(a,h)anthracene | 1.638 | 0.10 | 2.000 | | 81.9 | 55.2 | 126 | | | | |
| Fluoranthene | 1.662 | 0.10 | 2.000 | 0.02468 | 81.9 | 66.5 | 133 | | | | |
| Fluorene | 1.571 | 0.10 | 2.000 | | 78.6 | 66.1 | 122 | | | | |
| Indeno(1,2,3-cd)pyrene | 1.635 | 0.050 | 2.000 | 0.01925 | 80.8 | 58.8 | 132 | | | | |
| Naphthalene | 1.429 | 0.50 | 2.000 | | 71.4 | 60.6 | 120 | | | | |
| Phenanthrene | 1.571 | 0.050 | 2.000 | | 78.6 | 65.9 | 118 | | | | |
| Pyrene | 1.494 | 0.050 | 2.000 | 0.02836 | 73.3 | 70.2 | 129 | | | | |
| Surr: 4-Terphenyl-d14 | 1.549 | 0 | 2.000 | | 77.4 | 58.5 | 125 | | | | |

Sample ID: **1702O89-003BMS** Client ID: Units: **ug/L** Prep Date: **03/01/2017** Run No: **337521**
SampleType: **MS** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238785** Analysis Date: **03/01/2017** Seq No: **7375399**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 1.728 | 0.50 | 2.000 | | 86.4 | 49.7 | 118 | | | | |
| Acenaphthylene | 1.625 | 1.0 | 2.000 | | 81.3 | 56.7 | 120 | | | | |
| Anthracene | 1.702 | 0.050 | 2.000 | | 85.1 | 54.4 | 117 | | | | |
| Benz(a)anthracene | 1.835 | 0.050 | 2.000 | | 91.8 | 52.4 | 135 | | | | |
| Benzo(a)pyrene | 1.741 | 0.050 | 2.000 | | 87.0 | 51.5 | 117 | | | | |
| Benzo(b)fluoranthene | 1.970 | 0.10 | 2.000 | | 98.5 | 45.6 | 124 | | | | |
| Benzo(g,h,i)perylene | 1.721 | 0.10 | 2.000 | | 86.1 | 45.9 | 120 | | | | |
| Benzo(k)fluoranthene | 1.707 | 0.050 | 2.000 | | 85.4 | 51.8 | 122 | | | | |
| Chrysene | 1.737 | 0.050 | 2.000 | | 86.8 | 59.9 | 120 | | | | |
| Dibenz(a,h)anthracene | 1.661 | 0.10 | 2.000 | | 83.1 | 41.6 | 120 | | | | |
| Fluoranthene | 1.815 | 0.10 | 2.000 | | 90.8 | 59.7 | 122 | | | | |
| Fluorene | 1.721 | 0.10 | 2.000 | | 86.0 | 57.9 | 117 | | | | |

**Qualifiers:**
> Greater than Result value
< Less than Result value
B Analyte detected in the associated method blank
BRL Below reporting limit
E Estimated (value above quantitation range)
H Holding times for preparation or analysis exceeded
J Estimated value detected below Reporting Limit
N Analyte not NELAC certified
R RPD outside limits due to matrix
Rpt Lim Reporting Limit
S Spike Recovery outside limits due to matrix

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702K47

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238785

Sample ID: **1702O89-003BMS** Client ID: Units: **ug/L** Prep Date: **03/01/2017** Run No: **337521**
SampleType: **MS** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238785** Analysis Date: **03/01/2017** Seq No: **7375399**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Indeno(1,2,3-cd)pyrene | 1.641 | 0.050 | 2.000 | | 82.0 | 45.5 | 120 | | | | |
| Naphthalene | 1.600 | 0.50 | 2.000 | | 80.0 | 53.9 | 120 | | | | |
| Phenanthrene | 1.716 | 0.050 | 2.000 | | 85.8 | 58.1 | 120 | | | | |
| Pyrene | 1.818 | 0.050 | 2.000 | | 90.9 | 61.6 | 120 | | | | |
| Surr: 4-Terphenyl-d14 | 1.639 | 0 | 2.000 | | 81.9 | 58.5 | 125 | | | | |

Sample ID: **1702O89-003BMSD** Client ID: Units: **ug/L** Prep Date: **03/01/2017** Run No: **337521**
SampleType: **MSD** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238785** Analysis Date: **03/01/2017** Seq No: **7375400**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 1.666 | 0.50 | 2.000 | | 83.3 | 49.7 | 118 | 1.728 | 3.65 | 17.4 | |
| Acenaphthylene | 1.589 | 1.0 | 2.000 | | 79.5 | 56.7 | 120 | 1.625 | 2.26 | 19.5 | |
| Anthracene | 1.627 | 0.050 | 2.000 | | 81.3 | 54.4 | 117 | 1.702 | 4.51 | 24.5 | |
| Benz(a)anthracene | 1.743 | 0.050 | 2.000 | | 87.1 | 52.4 | 135 | 1.835 | 5.17 | 30.2 | |
| Benzo(a)pyrene | 1.620 | 0.050 | 2.000 | | 81.0 | 51.5 | 117 | 1.741 | 7.20 | 25.6 | |
| Benzo(b)fluoranthene | 1.838 | 0.10 | 2.000 | | 91.9 | 45.6 | 124 | 1.970 | 6.93 | 20.9 | |
| Benzo(g,h,i)perylene | 1.647 | 0.10 | 2.000 | | 82.3 | 45.9 | 120 | 1.721 | 4.42 | 28.6 | |
| Benzo(k)fluoranthene | 1.797 | 0.050 | 2.000 | | 89.8 | 51.8 | 122 | 1.707 | 5.09 | 28.6 | |
| Chrysene | 1.703 | 0.050 | 2.000 | | 85.2 | 59.9 | 120 | 1.737 | 1.92 | 26.4 | |
| Dibenz(a,h)anthracene | 1.586 | 0.10 | 2.000 | | 79.3 | 41.6 | 120 | 1.661 | 4.59 | 17.8 | |
| Fluoranthene | 1.755 | 0.10 | 2.000 | | 87.8 | 59.7 | 122 | 1.815 | 3.37 | 22.1 | |
| Fluorene | 1.741 | 0.10 | 2.000 | | 87.0 | 57.9 | 117 | 1.721 | 1.16 | 20.8 | |
| Indeno(1,2,3-cd)pyrene | 1.576 | 0.050 | 2.000 | | 78.8 | 45.5 | 120 | 1.641 | 4.04 | 19.3 | |
| Naphthalene | 1.531 | 0.50 | 2.000 | | 76.5 | 53.9 | 120 | 1.600 | 4.40 | 20.6 | |
| Phenanthrene | 1.662 | 0.050 | 2.000 | | 83.1 | 58.1 | 120 | 1.716 | 3.17 | 19.4 | |
| Pyrene | 1.555 | 0.050 | 2.000 | | 77.7 | 61.6 | 120 | 1.818 | 15.6 | 21.2 | |
| Surr: 4-Terphenyl-d14 | 1.635 | 0 | 2.000 | | 81.8 | 58.5 | 125 | 1.639 | 0 | 0 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702K47

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238828

Sample ID: **MB-238828** Client ID: Units: **ug/L** Prep Date: **02/28/2017** Run No: **337496**
SampleType: **MBLK** TestCode: **Volatile Organic Compounds by GC/MS SW8260B** BatchID: **238828** Analysis Date: **02/28/2017** Seq No: **7373175**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | BRL | 5.0 | | | | | | | | | |
| Carbon disulfide | BRL | 5.0 | | | | | | | | | |
| Ethylbenzene | BRL | 5.0 | | | | | | | | | |
| Toluene | BRL | 5.0 | | | | | | | | | |
| Xylenes, Total | BRL | 5.0 | | | | | | | | | |
| Surr: 4-Bromofluorobenzene | 47.38 | 0 | 50.00 | | 94.8 | 66.1 | 129 | | | | |
| Surr: Dibromofluoromethane | 48.17 | 0 | 50.00 | | 96.3 | 83.6 | 123 | | | | |
| Surr: Toluene-d8 | 46.95 | 0 | 50.00 | | 93.9 | 81.8 | 118 | | | | |

Sample ID: **LCS-238828** Client ID: Units: **ug/L** Prep Date: **02/28/2017** Run No: **337496**
SampleType: **LCS** TestCode: **Volatile Organic Compounds by GC/MS SW8260B** BatchID: **238828** Analysis Date: **02/28/2017** Seq No: **7373171**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 48.25 | 5.0 | 50.00 | | 96.5 | 74 | 125 | | | | |
| Toluene | 49.16 | 5.0 | 50.00 | | 98.3 | 75.9 | 126 | | | | |
| Surr: 4-Bromofluorobenzene | 48.46 | 0 | 50.00 | | 96.9 | 66.1 | 129 | | | | |
| Surr: Dibromofluoromethane | 48.33 | 0 | 50.00 | | 96.7 | 83.6 | 123 | | | | |
| Surr: Toluene-d8 | 46.86 | 0 | 50.00 | | 93.7 | 81.8 | 118 | | | | |

Sample ID: **1702K47-006AMS** Client ID: **MW-22D-20170221-01** Units: **ug/L** Prep Date: **02/28/2017** Run No: **337496**
SampleType: **MS** TestCode: **Volatile Organic Compounds by GC/MS SW8260B** BatchID: **238828** Analysis Date: **02/28/2017** Seq No: **7373177**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 50.70 | 5.0 | 50.00 | | 101 | 71.6 | 132 | | | | |
| Toluene | 51.81 | 5.0 | 50.00 | | 104 | 72.5 | 135 | | | | |
| Surr: 4-Bromofluorobenzene | 48.11 | 0 | 50.00 | | 96.2 | 66.1 | 129 | | | | |
| Surr: Dibromofluoromethane | 48.28 | 0 | 50.00 | | 96.6 | 83.6 | 123 | | | | |
| Surr: Toluene-d8 | 47.01 | 0 | 50.00 | | 94.0 | 81.8 | 118 | | | | |

**Qualifiers:**
- > Greater than Result value
- BRL Below reporting limit
- J Estimated value detected below Reporting Limit
- Rpt Lim Reporting Limit
- < Less than Result value
- E Estimated (value above quantitation range)
- N Analyte not NELAC certified
- S Spike Recovery outside limits due to matrix
- B Analyte detected in the associated method blank
- H Holding times for preparation or analysis exceeded
- R RPD outside limits due to matrix

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702K47

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238828

Sample ID: **1702K47-006AMSD** Client ID: **MW-22D-20170221-01** Units: **ug/L** Prep Date: **02/28/2017** Run No: **337496**
SampleType: **MSD** TestCode: **Volatile Organic Compounds by GC/MS SW8260B** BatchID: **238828** Analysis Date: **02/28/2017** Seq No: **7373178**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 49.01 | 5.0 | 50.00 | | 98.0 | 71.6 | 132 | 50.70 | 3.39 | 20.7 | |
| Toluene | 49.78 | 5.0 | 50.00 | | 99.6 | 72.5 | 135 | 51.81 | 4.00 | 23.2 | |
| Surr: 4-Bromofluorobenzene | 47.38 | 0 | 50.00 | | 94.8 | 66.1 | 129 | 48.11 | 0 | 0 | |
| Surr: Dibromofluoromethane | 48.27 | 0 | 50.00 | | 96.5 | 83.6 | 123 | 48.28 | 0 | 0 | |
| Surr: Toluene-d8 | 46.24 | 0 | 50.00 | | 92.5 | 81.8 | 118 | 47.01 | 0 | 0 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

AES

March 09, 2017

Adria Reimer
ERM-Southeast
3200 Windy Hill Rd
Atlanta GA 30339

TEL: (678) 486-2700
FAX: (404) 745-0103

RE: AGLC Macon

Dear Adria Reimer: Order No: 1702M96

Analytical Environmental Services, Inc. received 35 samples on 2/25/2017 10:40:00 AM for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES's accreditations are as follows:
-NELAC/Florida State Laboratory ID E87582 for analysis of Non-Potable Water, Solid & Chemical Materials, and Drinking Water Microbiology, effective 07/01/16-06/30/17.
-NELAC/Louisiana Agency Interest No. 100818 for or analysis of Non-Potable Water and Solid & Chemical Materials, effective 07/01/16-06/30/17.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Metals, PCM Asbestos, Gravimetric), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) Direct Examination, effective until 09/01/17.

These results relate only to the items tested. This report may only be reproduced in full.

Mirzeta Kararic

Mirzeta Kararic
Project Manager

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3080 Presidential Drive, Atlanta GA 30340-3704
TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

AES

# CHAIN OF CUSTODY

Work Order: 1702496

Date: 2/25/17 Page 1 of 3

COMPANY: ERM

ADDRESS: 3200 Windy Hill ATL GA 30339

PHONE:

FAX:

SAMPLED BY: KS, MB, MT, MR

SIGNATURE:

ANALYSIS REQUESTED: 8260B, 8270C

PRESERVATION (See codes): H+I, I

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

| # | SAMPLE ID | SAMPLED DATE | SAMPLED TIME | Grab | Composite | Matrix (See codes) | 8260B (H+I) | 8270C (I) | REMARKS | No # of Containers |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-207D-20170223-01 | 2/23/17 | 1205 | X | | | 2 | 2 | | 4 |
| 2 | MW-302DD-20170223-01 | | 1141 | X | | | 2 | 2 | | 4 |
| 3 | MW-101-20170223-01 | | 1205 | X | | | 2 | 2 | | 4 |
| 4 | AMW-15-20170223-01 | | 1155 | X | | | 2 | 2 | | 4 |
| 5 | MW-15-20170223-01 | | 1050 | X | | | 2 | 2 | | 4 |
| 6 | MW-400-20170223-01 | | 1545 | X | | | 2 | 2 | | 4 |
| 7 | MW-304D-20170223-01 | | 1610 | X | | | 2 | 2 | | 4 |
| 8 | DUP-01-20170223-01 | | — | X | | | 2 | 2 | | 4 |
| 9 | DUP-02-20170223-01 | | — | X | | | 2 | 2 | | 4 |
| 10 | DUP-03-20170223 | | — | X | | | 2 | 2 | | 4 |
| 11 | MW-120D-20170223-01 | | 1405 | X | | | 2 | 2 | | 4 |
| 12 | MW-110D-20170223-01 | | 1620 | X | | | 2 | 2 | | 4 |
| 13 | DUP-04-20170223-01 | | — | X | | | 2 | 2 | | 4 |
| 14 | MW-14I-20170223-01 | | 1645 | X | | | 2 | 2 | | 4 |

| RELINQUISHED BY | DATE/TIME | RECEIVED BY | DATE/TIME |
|---|---|---|---|
| 1: | 2/25/17 | 1: | 2/25/17 10:40AM |
| 2: | 1040 | 2: | |
| 3: | | 3: | |

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER

PROJECT INFORMATION
PROJECT NAME: AGL Macon
PROJECT #:
SITE ADDRESS: Walnut St.
SEND REPORT TO: adria.reimer@erm.com
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#: 0366660

RECEIPT
Total # of Containers

Turnaround Time Request
- X Standard 5 Business Days
- O 2 Business Day Rush
- O Next Business Day Rush
- O Same Day Rush (auth req.)
- O Other

STATE PROGRAM (if any):
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3080 Presidential Drive, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

# CHAIN OF CUSTODY

Work Order: 170224194

Date: 2/25/17 Page 2 of 3

COMPANY: ERM

ADDRESS: 3200 Windy Hill ATL GA 30339

PHONE: 678-486-2700

FAX:

SAMPLED BY: KS, AS, MB, MT, MR, CH, TP

SIGNATURE:

ANALYSIS REQUESTED: 8260B, 8270C

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

| # | SAMPLE ID | SAMPLED DATE | SAMPLED TIME | Grab | Composite | Matrix (See codes) | 8260B (PRESERVATION: H+I) | 8270C (PRESERVATION: I) | REMARKS | No # of Containers |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-12DRR-20170224-01 | 2/24/17 | 1005 | X | | GW | 2 | 2 | | 4 |
| 2 | MW-200DR-20170224-01 | | 1006 | X | | | 2 | 2 | | 4 |
| 3 | MW-204D-20170224-01 | | 1055 | X | | | 2 | 2 | | 4 |
| 4 | MW-205D-20170224-01 | | ~~1245~~ | X | | | 2 | 2 | Sample time 1130 | 4 |
| 5 | MW-205DD-20170224-01 | | 1245 | X | | | 2 | 2 | | 4 |
| 6 | MW-302D-20170224-01 | | 1135 | X | | | 2 | 2 | | 4 |
| 7 | MW-306D-20170224-01 | | 1300 | X | | | 2 | 2 | | 4 |
| 8 | MW-401-20170224-01 | | 1110 | X | | | 2 | 2 | | 4 |
| 9 | MW-103-20170224-01 | | 1220 | X | | | 2 | 2 | | 4 |
| 10 | MW-14-20170224-01 | | 1150 | X | | | 2 | 2 | | 4 |
| 11 | MW-12IR-20170224-01 | | 1000 | X | | | 2 | 2 | | 4 |
| 12 | MW-12R-20170224-01 | | 1105 | X | | | 2 | 2 | | 4 |
| 13 | DUP-05-20170224-01 | | — | X | | | 2 | 2 | | 4 |
| 14 | MW-104-20170224-01 | | | X | | GW | 2 | 2 | | 4 |

| RELINQUISHED BY | DATE/TIME | RECEIVED BY | DATE/TIME |
|---|---|---|---|
| 1: | 2/25/17 1040 | 1: | 2/25/17 10:40AM |
| 2: | | 2: | |
| 3: | | 3: | |

PROJECT INFORMATION

PROJECT NAME: AGL Macon

PROJECT #:

SITE ADDRESS: Walnut St.

SEND REPORT TO: adria.reimer@erm.com

INVOICE TO: (IF DIFFERENT FROM ABOVE)

QUOTE #: PO#: 036660

RECEIPT

Total # of Containers

Turnaround Time Request
- X Standard 5 Business Days
- O 2 Business Day Rush
- O Next Business Day Rush
- O Same Day Rush (auth req.)
- O Other

STATE PROGRAM (if any):

E-mail? Y / N; Fax? Y / N

DATA PACKAGE: I II III IV

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD

OUT / / VIA:

IN / / VIA:

CLIENT FedEx UPS MAIL COURIER GREYHOUND OTHER

**SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.**

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water

PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3080 Presidential Drive, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

# CHAIN OF CUSTODY

Work Order: 1703H96

Date: 2/25/17 Page 3 of 3

COMPANY: ERM

ADDRESS: 3200 Windy Hill Rd ATL GA 30339

PHONE: 678-486-2700

FAX:

SAMPLED BY:

SIGNATURE:

ANALYSIS REQUESTED: 8260B

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

| # | SAMPLE ID | SAMPLED DATE | SAMPLED TIME | Grab | Composite | Matrix (See codes) | PRESERVATION (See codes) H+I | 8260B | REMARKS | No # of Containers |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | TB-01-20170224-01 | 2/24/17 | — | | | W | | 2 | | 2 |
| 2 | TB-02-20170224-01 | | — | | | W | | 2 | | 2 |
| 3 | TB-03-20170224-01 | | — | | | W | | 2 | | 2 |
| 4 | TB-04-20170224-01 | | — | | | W | | 2 | | 2 |
| 5 | TB-05-20170224-01 | | — | | | W | | 2 | | 2 |
| 6 | TB-06-20170224-01 | | — | | | W | | 2 | | 2 |
| 7 | TB-07-20170224-01 | | — | | | W | | 2 | | 2 |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |

| RELINQUISHED BY | DATE/TIME | RECEIVED BY | DATE/TIME |
|---|---|---|---|
| 1: | 2/25/17 | 1: | 2/25/17 10:40AM |
| 2: | 1040 | 2: | |
| 3: | | 3: | |

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT FedEx UPS MAIL COURIER
GREYHOUND OTHER_____

PROJECT INFORMATION
PROJECT NAME: ABL Macon
PROJECT #:
SITE ADDRESS: Walnut St.
SEND REPORT TO: adria.reiner@erm.com
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #:_____ PO#: 0366660

RECEIPT
Total # of Containers

Turnaround Time Request
- Standard 5 Business Days
- 2 Business Day Rush
- Next Business Day Rush
- Same Day Rush (auth req.)
- Other _____

STATE PROGRAM (if any): _____
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

# Analytical Environmental Services, Inc

**Date:** 9-Mar-17

**Client:** ERM-Southeast
**Project:** AGLC Macon
**Lab ID:** 1702M96

## Case Narrative

Sample Receiving Nonconformance:

Collection time was not listed on the Chain of Custody for sample 1702M96-028. Sample was logged in using the information present on the sample bottle labels.

PAH Analysis by Method 8270D SIM:

Due to sample matrix, sample1702M96-008B, 009B required dilution during preparation and/or analysis resulting in elevated reporting limits.

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-207D-20170223-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/23/2017 12:05:00 PM |
| **Lab ID:** | 1702M96-001 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 03:14 | BN |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 03:14 | BN |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 03:14 | BN |
| Toluene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 03:14 | BN |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 03:14 | BN |
| Surr: 4-Bromofluorobenzene | 83.8 | 66.1-129 | | %REC | 238968 | 1 | 03/03/2017 03:14 | BN |
| Surr: Dibromofluoromethane | 102 | 83.6-123 | | %REC | 238968 | 1 | 03/03/2017 03:14 | BN |
| Surr: Toluene-d8 | 97.4 | 81.8-118 | | %REC | 238968 | 1 | 03/03/2017 03:14 | BN |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238741 | 1 | 03/01/2017 23:02 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238741 | 1 | 03/01/2017 23:02 | YH |
| Acenaphthene | 1.4 | 0.50 | | ug/L | 238741 | 1 | 03/01/2017 23:02 | YH |
| Fluorene | 0.54 | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 23:02 | YH |
| Phenanthrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:02 | YH |
| Anthracene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:02 | YH |
| Fluoranthene | 1.1 | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 23:02 | YH |
| Pyrene | 2.0 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:02 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:02 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:02 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 23:02 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:02 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:02 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:02 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 23:02 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 23:02 | YH |
| Surr: 4-Terphenyl-d14 | 82.3 | 58.5-125 | | %REC | 238741 | 1 | 03/01/2017 23:02 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 12 | | ug/L | 238726 | 1 | 03/02/2017 15:03 | YH |
| 2-Methylphenol | BRL | 12 | | ug/L | 238726 | 1 | 03/02/2017 15:03 | YH |
| 3,4-Methylphenol | BRL | 12 | | ug/L | 238726 | 1 | 03/02/2017 15:03 | YH |
| Phenol | BRL | 12 | | ug/L | 238726 | 1 | 03/02/2017 15:03 | YH |
| Surr: 2,4,6-Tribromophenol | 82.7 | 50-142 | | %REC | 238726 | 1 | 03/02/2017 15:03 | YH |
| Surr: 2-Fluorobiphenyl | 62.9 | 46-124 | | %REC | 238726 | 1 | 03/02/2017 15:03 | YH |
| Surr: 2-Fluorophenol | 52.4 | 25.3-120 | | %REC | 238726 | 1 | 03/02/2017 15:03 | YH |
| Surr: 4-Terphenyl-d14 | 87.7 | 45.1-133 | | %REC | 238726 | 1 | 03/02/2017 15:03 | YH |
| Surr: Nitrobenzene-d5 | 59.6 | 40.1-121 | | %REC | 238726 | 1 | 03/02/2017 15:03 | YH |
| Surr: Phenol-d5 | 39.2 | 16.3-120 | | %REC | 238726 | 1 | 03/02/2017 15:03 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-302DD-20170223-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/23/2017 11:41:00 AM |
| **Lab ID:** | 1702M96-002 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | 6.4 | 5.0 | | ug/L | 238968 | 1 | 03/07/2017 15:45 | BN |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238968 | 1 | 03/07/2017 15:45 | BN |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/07/2017 15:45 | BN |
| Toluene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/07/2017 15:45 | BN |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238968 | 1 | 03/07/2017 15:45 | BN |
| Surr: 4-Bromofluorobenzene | 82.8 | 66.1-129 | | %REC | 238968 | 1 | 03/07/2017 15:45 | BN |
| Surr: Dibromofluoromethane | 93.7 | 83.6-123 | | %REC | 238968 | 1 | 03/07/2017 15:45 | BN |
| Surr: Toluene-d8 | 85.4 | 81.8-118 | | %REC | 238968 | 1 | 03/07/2017 15:45 | BN |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238741 | 1 | 03/01/2017 23:28 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238741 | 1 | 03/01/2017 23:28 | YH |
| Acenaphthene | BRL | 0.50 | | ug/L | 238741 | 1 | 03/01/2017 23:28 | YH |
| Fluorene | 0.24 | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 23:28 | YH |
| Phenanthrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:28 | YH |
| Anthracene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:28 | YH |
| Fluoranthene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 23:28 | YH |
| Pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:28 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:28 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:28 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 23:28 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:28 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:28 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:28 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 23:28 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 23:28 | YH |
| Surr: 4-Terphenyl-d14 | 78.7 | 58.5-125 | | %REC | 238741 | 1 | 03/01/2017 23:28 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 15:29 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 15:29 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 15:29 | YH |
| Phenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 15:29 | YH |
| Surr: 2,4,6-Tribromophenol | 101 | 50-142 | | %REC | 238726 | 1 | 03/02/2017 15:29 | YH |
| Surr: 2-Fluorobiphenyl | 77.4 | 46-124 | | %REC | 238726 | 1 | 03/02/2017 15:29 | YH |
| Surr: 2-Fluorophenol | 57.8 | 25.3-120 | | %REC | 238726 | 1 | 03/02/2017 15:29 | YH |
| Surr: 4-Terphenyl-d14 | 95.8 | 45.1-133 | | %REC | 238726 | 1 | 03/02/2017 15:29 | YH |
| Surr: Nitrobenzene-d5 | 72.6 | 40.1-121 | | %REC | 238726 | 1 | 03/02/2017 15:29 | YH |
| Surr: Phenol-d5 | 41.5 | 16.3-120 | | %REC | 238726 | 1 | 03/02/2017 15:29 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-101-20170223-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/23/2017 12:05:00 PM |
| **Lab ID:** | 1702M96-003 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 03:42 | BN |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 03:42 | BN |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 03:42 | BN |
| Toluene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 03:42 | BN |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 03:42 | BN |
| Surr: 4-Bromofluorobenzene | 85 | 66.1-129 | | %REC | 238968 | 1 | 03/03/2017 03:42 | BN |
| Surr: Dibromofluoromethane | 101 | 83.6-123 | | %REC | 238968 | 1 | 03/03/2017 03:42 | BN |
| Surr: Toluene-d8 | 94 | 81.8-118 | | %REC | 238968 | 1 | 03/03/2017 03:42 | BN |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | 43 | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 11:12 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238741 | 1 | 03/01/2017 23:54 | YH |
| Acenaphthene | 1.4 | 0.50 | | ug/L | 238741 | 1 | 03/01/2017 23:54 | YH |
| Fluorene | 1.7 | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 23:54 | YH |
| Phenanthrene | 1.0 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:54 | YH |
| Anthracene | 0.22 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:54 | YH |
| Fluoranthene | 0.12 | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 23:54 | YH |
| Pyrene | 0.084 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:54 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:54 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:54 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 23:54 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:54 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:54 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 23:54 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 23:54 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 23:54 | YH |
| Surr: 4-Terphenyl-d14 | 78.3 | 58.5-125 | | %REC | 238741 | 1 | 03/01/2017 23:54 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 15:56 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 15:56 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 15:56 | YH |
| Phenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 15:56 | YH |
| Surr: 2,4,6-Tribromophenol | 85.4 | 50-142 | | %REC | 238726 | 1 | 03/02/2017 15:56 | YH |
| Surr: 2-Fluorobiphenyl | 70 | 46-124 | | %REC | 238726 | 1 | 03/02/2017 15:56 | YH |
| Surr: 2-Fluorophenol | 53.6 | 25.3-120 | | %REC | 238726 | 1 | 03/02/2017 15:56 | YH |
| Surr: 4-Terphenyl-d14 | 89.4 | 45.1-133 | | %REC | 238726 | 1 | 03/02/2017 15:56 | YH |
| Surr: Nitrobenzene-d5 | 67.2 | 40.1-121 | | %REC | 238726 | 1 | 03/02/2017 15:56 | YH |
| Surr: Phenol-d5 | 38.5 | 16.3-120 | | %REC | 238726 | 1 | 03/02/2017 15:56 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | AMW-15-20170223-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/23/2017 11:55:00 AM |
| **Lab ID:** | 1702M96-004 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | 78 | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 21:26 | BN |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 21:26 | BN |
| Ethylbenzene | 14 | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 21:26 | BN |
| Toluene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 21:26 | BN |
| Xylenes, Total | 10 | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 21:26 | BN |
| Surr: 4-Bromofluorobenzene | 96.9 | 66.1-129 | | %REC | 238968 | 1 | 03/03/2017 21:26 | BN |
| Surr: Dibromofluoromethane | 92.5 | 83.6-123 | | %REC | 238968 | 1 | 03/03/2017 21:26 | BN |
| Surr: Toluene-d8 | 89.3 | 81.8-118 | | %REC | 238968 | 1 | 03/03/2017 21:26 | BN |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | 12 | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 11:38 | YH |
| Acenaphthylene | 1.9 | 1.0 | | ug/L | 238741 | 1 | 03/01/2017 20:08 | YH |
| Acenaphthene | 11 | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 11:38 | YH |
| Fluorene | 4.0 | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:08 | YH |
| Phenanthrene | 3.2 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:08 | YH |
| Anthracene | 0.49 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:08 | YH |
| Fluoranthene | 0.29 | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:08 | YH |
| Pyrene | 0.20 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:08 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:08 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:08 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:08 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:08 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:08 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:08 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:08 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:08 | YH |
| Surr: 4-Terphenyl-d14 | 83.5 | 58.5-125 | | %REC | 238741 | 1 | 03/01/2017 20:08 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 16:22 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 16:22 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 16:22 | YH |
| Phenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 16:22 | YH |
| Surr: 2,4,6-Tribromophenol | 98.3 | 50-142 | | %REC | 238726 | 1 | 03/02/2017 16:22 | YH |
| Surr: 2-Fluorobiphenyl | 78.6 | 46-124 | | %REC | 238726 | 1 | 03/02/2017 16:22 | YH |
| Surr: 2-Fluorophenol | 61.3 | 25.3-120 | | %REC | 238726 | 1 | 03/02/2017 16:22 | YH |
| Surr: 4-Terphenyl-d14 | 98.3 | 45.1-133 | | %REC | 238726 | 1 | 03/02/2017 16:22 | YH |
| Surr: Nitrobenzene-d5 | 76.6 | 40.1-121 | | %REC | 238726 | 1 | 03/02/2017 16:22 | YH |
| Surr: Phenol-d5 | 43.5 | 16.3-120 | | %REC | 238726 | 1 | 03/02/2017 16:22 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-15-20170223-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/23/2017 10:50:00 AM |
| **Lab ID:** | 1702M96-005 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 04:11 | BN |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 04:11 | BN |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 04:11 | BN |
| Toluene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 04:11 | BN |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 04:11 | BN |
| Surr: 4-Bromofluorobenzene | 79.5 | 66.1-129 | | %REC | 238968 | 1 | 03/03/2017 04:11 | BN |
| Surr: Dibromofluoromethane | 98.6 | 83.6-123 | | %REC | 238968 | 1 | 03/03/2017 04:11 | BN |
| Surr: Toluene-d8 | 91.2 | 81.8-118 | | %REC | 238968 | 1 | 03/03/2017 04:11 | BN |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238741 | 1 | 03/01/2017 20:34 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238741 | 1 | 03/01/2017 20:34 | YH |
| Acenaphthene | BRL | 0.50 | | ug/L | 238741 | 1 | 03/01/2017 20:34 | YH |
| Fluorene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:34 | YH |
| Phenanthrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:34 | YH |
| Anthracene | 0.074 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:34 | YH |
| Fluoranthene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:34 | YH |
| Pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:34 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:34 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:34 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:34 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:34 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:34 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:34 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:34 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:34 | YH |
| Surr: 4-Terphenyl-d14 | 80.9 | 58.5-125 | | %REC | 238741 | 1 | 03/01/2017 20:34 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 16:48 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 16:48 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 16:48 | YH |
| Phenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 16:48 | YH |
| Surr: 2,4,6-Tribromophenol | 100 | 50-142 | | %REC | 238726 | 1 | 03/02/2017 16:48 | YH |
| Surr: 2-Fluorobiphenyl | 80.9 | 46-124 | | %REC | 238726 | 1 | 03/02/2017 16:48 | YH |
| Surr: 2-Fluorophenol | 65.6 | 25.3-120 | | %REC | 238726 | 1 | 03/02/2017 16:48 | YH |
| Surr: 4-Terphenyl-d14 | 95.7 | 45.1-133 | | %REC | 238726 | 1 | 03/02/2017 16:48 | YH |
| Surr: Nitrobenzene-d5 | 79.7 | 40.1-121 | | %REC | 238726 | 1 | 03/02/2017 16:48 | YH |
| Surr: Phenol-d5 | 46.1 | 16.3-120 | | %REC | 238726 | 1 | 03/02/2017 16:48 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-400-20170223-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/23/2017 3:45:00 PM |
| **Lab ID:** | 1702M96-006 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 04:40 | BN |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 04:40 | BN |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 04:40 | BN |
| Toluene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 04:40 | BN |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 04:40 | BN |
| Surr: 4-Bromofluorobenzene | 83.4 | 66.1-129 | | %REC | 238968 | 1 | 03/03/2017 04:40 | BN |
| Surr: Dibromofluoromethane | 104 | 83.6-123 | | %REC | 238968 | 1 | 03/03/2017 04:40 | BN |
| Surr: Toluene-d8 | 98.2 | 81.8-118 | | %REC | 238968 | 1 | 03/03/2017 04:40 | BN |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | 0.56 | 0.50 | | ug/L | 238741 | 1 | 03/01/2017 21:01 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238741 | 1 | 03/01/2017 21:01 | YH |
| Acenaphthene | BRL | 0.50 | | ug/L | 238741 | 1 | 03/01/2017 21:01 | YH |
| Fluorene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 21:01 | YH |
| Phenanthrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:01 | YH |
| Anthracene | 0.11 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:01 | YH |
| Fluoranthene | 0.10 | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 21:01 | YH |
| Pyrene | 0.14 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:01 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:01 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:01 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 21:01 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:01 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:01 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:01 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 21:01 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 21:01 | YH |
| Surr: 4-Terphenyl-d14 | 74.4 | 58.5-125 | | %REC | 238741 | 1 | 03/01/2017 21:01 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 17:25 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 17:25 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 17:25 | YH |
| Phenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 17:25 | YH |
| Surr: 2,4,6-Tribromophenol | 92.9 | 50-142 | | %REC | 238726 | 1 | 03/02/2017 17:25 | YH |
| Surr: 2-Fluorobiphenyl | 73.8 | 46-124 | | %REC | 238726 | 1 | 03/02/2017 17:25 | YH |
| Surr: 2-Fluorophenol | 62.8 | 25.3-120 | | %REC | 238726 | 1 | 03/02/2017 17:25 | YH |
| Surr: 4-Terphenyl-d14 | 90.9 | 45.1-133 | | %REC | 238726 | 1 | 03/02/2017 17:25 | YH |
| Surr: Nitrobenzene-d5 | 75.4 | 40.1-121 | | %REC | 238726 | 1 | 03/02/2017 17:25 | YH |
| Surr: Phenol-d5 | 44.4 | 16.3-120 | | %REC | 238726 | 1 | 03/02/2017 17:25 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-304D-20170223-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/23/2017 4:10:00 PM |
| **Lab ID:** | 1702M96-007 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 05:09 | BN |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 05:09 | BN |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 05:09 | BN |
| Toluene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 05:09 | BN |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 05:09 | BN |
| Surr: 4-Bromofluorobenzene | 77.6 | 66.1-129 | | %REC | 238968 | 1 | 03/03/2017 05:09 | BN |
| Surr: Dibromofluoromethane | 95 | 83.6-123 | | %REC | 238968 | 1 | 03/03/2017 05:09 | BN |
| Surr: Toluene-d8 | 94.4 | 81.8-118 | | %REC | 238968 | 1 | 03/03/2017 05:09 | BN |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238741 | 1 | 03/01/2017 21:28 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238741 | 1 | 03/01/2017 21:28 | YH |
| Acenaphthene | BRL | 0.50 | | ug/L | 238741 | 1 | 03/01/2017 21:28 | YH |
| Fluorene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 21:28 | YH |
| Phenanthrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:28 | YH |
| Anthracene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:28 | YH |
| Fluoranthene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 21:28 | YH |
| Pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:28 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:28 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:28 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 21:28 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:28 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:28 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:28 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 21:28 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 21:28 | YH |
| Surr: 4-Terphenyl-d14 | 79.4 | 58.5-125 | | %REC | 238741 | 1 | 03/01/2017 21:28 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 17:39 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 17:39 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 17:39 | YH |
| Phenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 17:39 | YH |
| Surr: 2,4,6-Tribromophenol | 95.9 | 50-142 | | %REC | 238726 | 1 | 03/02/2017 17:39 | YH |
| Surr: 2-Fluorobiphenyl | 74.5 | 46-124 | | %REC | 238726 | 1 | 03/02/2017 17:39 | YH |
| Surr: 2-Fluorophenol | 53.1 | 25.3-120 | | %REC | 238726 | 1 | 03/02/2017 17:39 | YH |
| Surr: 4-Terphenyl-d14 | 95.5 | 45.1-133 | | %REC | 238726 | 1 | 03/02/2017 17:39 | YH |
| Surr: Nitrobenzene-d5 | 72.9 | 40.1-121 | | %REC | 238726 | 1 | 03/02/2017 17:39 | YH |
| Surr: Phenol-d5 | 37 | 16.3-120 | | %REC | 238726 | 1 | 03/02/2017 17:39 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | DUP-01-20170223-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/23/2017 |
| **Lab ID:** | 1702M96-008 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 05:38 | BN |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 05:38 | BN |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 05:38 | BN |
| Toluene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 05:38 | BN |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 05:38 | BN |
| Surr: 4-Bromofluorobenzene | 86.4 | 66.1-129 | | %REC | 238968 | 1 | 03/03/2017 05:38 | BN |
| Surr: Dibromofluoromethane | 98.9 | 83.6-123 | | %REC | 238968 | 1 | 03/03/2017 05:38 | BN |
| Surr: Toluene-d8 | 96.7 | 81.8-118 | | %REC | 238968 | 1 | 03/03/2017 05:38 | BN |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | 21 | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 12:05 | YH |
| Acenaphthylene | BRL | 100 | | ug/L | 238741 | 100 | 03/03/2017 12:05 | YH |
| Acenaphthene | BRL | 50 | | ug/L | 238741 | 100 | 03/03/2017 12:05 | YH |
| Fluorene | BRL | 10 | | ug/L | 238741 | 100 | 03/03/2017 12:05 | YH |
| Phenanthrene | BRL | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 12:05 | YH |
| Anthracene | BRL | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 12:05 | YH |
| Fluoranthene | BRL | 10 | | ug/L | 238741 | 100 | 03/03/2017 12:05 | YH |
| Pyrene | BRL | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 12:05 | YH |
| Benz(a)anthracene | BRL | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 12:05 | YH |
| Chrysene | BRL | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 12:05 | YH |
| Benzo(b)fluoranthene | BRL | 10 | | ug/L | 238741 | 100 | 03/03/2017 12:05 | YH |
| Benzo(k)fluoranthene | BRL | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 12:05 | YH |
| Benzo(a)pyrene | BRL | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 12:05 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 12:05 | YH |
| Dibenz(a,h)anthracene | BRL | 10 | | ug/L | 238741 | 100 | 03/03/2017 12:05 | YH |
| Benzo(g,h,i)perylene | BRL | 10 | | ug/L | 238741 | 100 | 03/03/2017 12:05 | YH |
| Surr: 4-Terphenyl-d14 | 0 | 58.5-125 | S | %REC | 238741 | 100 | 03/03/2017 12:05 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 18:04 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 18:04 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 18:04 | YH |
| Phenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 18:04 | YH |
| Surr: 2,4,6-Tribromophenol | 97.5 | 50-142 | | %REC | 238726 | 1 | 03/02/2017 18:04 | YH |
| Surr: 2-Fluorobiphenyl | 76.2 | 46-124 | | %REC | 238726 | 1 | 03/02/2017 18:04 | YH |
| Surr: 2-Fluorophenol | 57.4 | 25.3-120 | | %REC | 238726 | 1 | 03/02/2017 18:04 | YH |
| Surr: 4-Terphenyl-d14 | 99.1 | 45.1-133 | | %REC | 238726 | 1 | 03/02/2017 18:04 | YH |
| Surr: Nitrobenzene-d5 | 74.2 | 40.1-121 | | %REC | 238726 | 1 | 03/02/2017 18:04 | YH |
| Surr: Phenol-d5 | 40.5 | 16.3-120 | | %REC | 238726 | 1 | 03/02/2017 18:04 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | DUP-02-20170223-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/23/2017 |
| **Lab ID:** | 1702M96-009 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | 80 | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 15:30 | BN |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 15:30 | BN |
| Ethylbenzene | 17 | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 15:30 | BN |
| Toluene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 15:30 | BN |
| Xylenes, Total | 12 | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 15:30 | BN |
| Surr: 4-Bromofluorobenzene | 97.3 | 66.1-129 | | %REC | 238968 | 1 | 03/03/2017 15:30 | BN |
| Surr: Dibromofluoromethane | 96 | 83.6-123 | | %REC | 238968 | 1 | 03/03/2017 15:30 | BN |
| Surr: Toluene-d8 | 90.8 | 81.8-118 | | %REC | 238968 | 1 | 03/03/2017 15:30 | BN |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | 11 | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 12:30 | YH |
| Acenaphthylene | BRL | 100 | | ug/L | 238741 | 100 | 03/03/2017 12:30 | YH |
| Acenaphthene | 10 | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 12:30 | YH |
| Fluorene | BRL | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 12:30 | YH |
| Phenanthrene | BRL | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 12:30 | YH |
| Anthracene | BRL | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 12:30 | YH |
| Fluoranthene | BRL | 10 | | ug/L | 238741 | 100 | 03/03/2017 12:30 | YH |
| Pyrene | BRL | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 12:30 | YH |
| Benz(a)anthracene | BRL | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 12:30 | YH |
| Chrysene | BRL | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 12:30 | YH |
| Benzo(b)fluoranthene | BRL | 10 | | ug/L | 238741 | 100 | 03/03/2017 12:30 | YH |
| Benzo(k)fluoranthene | BRL | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 12:30 | YH |
| Benzo(a)pyrene | BRL | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 12:30 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 12:30 | YH |
| Dibenz(a,h)anthracene | BRL | 10 | | ug/L | 238741 | 100 | 03/03/2017 12:30 | YH |
| Benzo(g,h,i)perylene | BRL | 10 | | ug/L | 238741 | 100 | 03/03/2017 12:30 | YH |
| Surr: 4-Terphenyl-d14 | 0 | 58.5-125 | S | %REC | 238741 | 100 | 03/03/2017 12:30 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 18:30 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 18:30 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 18:30 | YH |
| Phenol | BRL | 10 | | ug/L | 238726 | 1 | 03/02/2017 18:30 | YH |
| Surr: 2,4,6-Tribromophenol | 103 | 50-142 | | %REC | 238726 | 1 | 03/02/2017 18:30 | YH |
| Surr: 2-Fluorobiphenyl | 80.5 | 46-124 | | %REC | 238726 | 1 | 03/02/2017 18:30 | YH |
| Surr: 2-Fluorophenol | 60.1 | 25.3-120 | | %REC | 238726 | 1 | 03/02/2017 18:30 | YH |
| Surr: 4-Terphenyl-d14 | 104 | 45.1-133 | | %REC | 238726 | 1 | 03/02/2017 18:30 | YH |
| Surr: Nitrobenzene-d5 | 79.2 | 40.1-121 | | %REC | 238726 | 1 | 03/02/2017 18:30 | YH |
| Surr: Phenol-d5 | 41.6 | 16.3-120 | | %REC | 238726 | 1 | 03/02/2017 18:30 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | DUP-03-20170223 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/23/2017 |
| **Lab ID:** | 1702M96-010 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 15:59 | BN |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 15:59 | BN |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 15:59 | BN |
| Toluene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 15:59 | BN |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 15:59 | BN |
| Surr: 4-Bromofluorobenzene | 84.1 | 66.1-129 | | %REC | 238968 | 1 | 03/03/2017 15:59 | BN |
| Surr: Dibromofluoromethane | 89.1 | 83.6-123 | | %REC | 238968 | 1 | 03/03/2017 15:59 | BN |
| Surr: Toluene-d8 | 92.6 | 81.8-118 | | %REC | 238968 | 1 | 03/03/2017 15:59 | BN |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | 0.55 | 0.50 | | ug/L | 238741 | 1 | 03/07/2017 20:49 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238741 | 1 | 03/07/2017 20:49 | YH |
| Acenaphthene | BRL | 0.50 | | ug/L | 238741 | 1 | 03/07/2017 20:49 | YH |
| Fluorene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/07/2017 20:49 | YH |
| Phenanthrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/07/2017 20:49 | YH |
| Anthracene | 0.12 | 0.050 | | ug/L | 238741 | 1 | 03/07/2017 20:49 | YH |
| Fluoranthene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/07/2017 20:49 | YH |
| Pyrene | 0.14 | 0.050 | | ug/L | 238741 | 1 | 03/07/2017 20:49 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/07/2017 20:49 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/07/2017 20:49 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/07/2017 20:49 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/07/2017 20:49 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/07/2017 20:49 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/07/2017 20:49 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/07/2017 20:49 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/07/2017 20:49 | YH |
| Surr: 4-Terphenyl-d14 | 73.1 | 58.5-125 | | %REC | 238741 | 1 | 03/07/2017 20:49 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/02/2017 12:42 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/02/2017 12:42 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/02/2017 12:42 | YH |
| Phenol | BRL | 10 | | ug/L | 238787 | 1 | 03/02/2017 12:42 | YH |
| Surr: 2,4,6-Tribromophenol | 118 | 50-142 | | %REC | 238787 | 1 | 03/02/2017 12:42 | YH |
| Surr: 2-Fluorobiphenyl | 89.6 | 46-124 | | %REC | 238787 | 1 | 03/02/2017 12:42 | YH |
| Surr: 2-Fluorophenol | 59.2 | 25.3-120 | | %REC | 238787 | 1 | 03/02/2017 12:42 | YH |
| Surr: 4-Terphenyl-d14 | 99.6 | 45.1-133 | | %REC | 238787 | 1 | 03/02/2017 12:42 | YH |
| Surr: Nitrobenzene-d5 | 82.4 | 40.1-121 | | %REC | 238787 | 1 | 03/02/2017 12:42 | YH |
| Surr: Phenol-d5 | 44.4 | 16.3-120 | | %REC | 238787 | 1 | 03/02/2017 12:42 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-12DD-20170223-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/23/2017 2:05:00 PM |
| **Lab ID:** | 1702M96-011 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | 35 | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 12:34 | BN |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 12:34 | BN |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 12:34 | BN |
| Toluene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 12:34 | BN |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 12:34 | BN |
| Surr: 4-Bromofluorobenzene | 86 | 66.1-129 | | %REC | 238968 | 1 | 03/03/2017 12:34 | BN |
| Surr: Dibromofluoromethane | 91.9 | 83.6-123 | | %REC | 238968 | 1 | 03/03/2017 12:34 | BN |
| Surr: Toluene-d8 | 90.8 | 81.8-118 | | %REC | 238968 | 1 | 03/03/2017 12:34 | BN |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | 4.3 | 0.50 | | ug/L | 238741 | 1 | 03/01/2017 19:36 | YH |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238741 | 1 | 03/01/2017 19:36 | YH |
| Acenaphthene | 0.65 | 0.50 | | ug/L | 238741 | 1 | 03/01/2017 19:36 | YH |
| Fluorene | 0.33 | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 19:36 | YH |
| Phenanthrene | 0.16 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 19:36 | YH |
| Anthracene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 19:36 | YH |
| Fluoranthene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 19:36 | YH |
| Pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 19:36 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 19:36 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 19:36 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 19:36 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 19:36 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 19:36 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 19:36 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 19:36 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 19:36 | YH |
| Surr: 4-Terphenyl-d14 | 75.3 | 58.5-125 | | %REC | 238741 | 1 | 03/01/2017 19:36 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 18:58 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 18:58 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 18:58 | YH |
| Phenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 18:58 | YH |
| Surr: 2,4,6-Tribromophenol | 84.2 | 50-142 | | %REC | 238787 | 1 | 03/03/2017 18:58 | YH |
| Surr: 2-Fluorobiphenyl | 71.1 | 46-124 | | %REC | 238787 | 1 | 03/03/2017 18:58 | YH |
| Surr: 2-Fluorophenol | 57.6 | 25.3-120 | | %REC | 238787 | 1 | 03/03/2017 18:58 | YH |
| Surr: 4-Terphenyl-d14 | 81.8 | 45.1-133 | | %REC | 238787 | 1 | 03/03/2017 18:58 | YH |
| Surr: Nitrobenzene-d5 | 69.6 | 40.1-121 | | %REC | 238787 | 1 | 03/03/2017 18:58 | YH |
| Surr: Phenol-d5 | 41 | 16.3-120 | | %REC | 238787 | 1 | 03/03/2017 18:58 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-110D-20170223-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/23/2017 4:20:00 PM |
| **Lab ID:** | 1702M96-012 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | 70 | 5.0 | | ug/L | 238968 | 1 | 03/08/2017 12:17 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238968 | 1 | 03/08/2017 12:17 | NP |
| Ethylbenzene | 150 | 5.0 | | ug/L | 238968 | 1 | 03/08/2017 12:17 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/08/2017 12:17 | NP |
| Xylenes, Total | 5.7 | 5.0 | | ug/L | 238968 | 1 | 03/08/2017 12:17 | NP |
| Surr: 4-Bromofluorobenzene | 97 | 66.1-129 | | %REC | 238968 | 1 | 03/08/2017 12:17 | NP |
| Surr: Dibromofluoromethane | 96.8 | 83.6-123 | | %REC | 238968 | 1 | 03/08/2017 12:17 | NP |
| Surr: Toluene-d8 | 98.4 | 81.8-118 | | %REC | 238968 | 1 | 03/08/2017 12:17 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | 760 | 50 | | ug/L | 238741 | 100 | 03/03/2017 12:56 | YH |
| Acenaphthylene | 1.9 | 1.0 | | ug/L | 238741 | 1 | 03/01/2017 20:02 | YH |
| Acenaphthene | 46 | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 12:56 | YH |
| Fluorene | 15 | 10 | | ug/L | 238741 | 100 | 03/03/2017 12:56 | YH |
| Phenanthrene | 26 | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 12:56 | YH |
| Anthracene | 6.2 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:02 | YH |
| Fluoranthene | 4.5 | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:02 | YH |
| Pyrene | 5.6 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:02 | YH |
| Benz(a)anthracene | 0.20 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:02 | YH |
| Chrysene | 0.16 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:02 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:02 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:02 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:02 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:02 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:02 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:02 | YH |
| Surr: 4-Terphenyl-d14 | 79.6 | 58.5-125 | | %REC | 238741 | 1 | 03/01/2017 20:02 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 19:23 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 19:23 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 19:23 | YH |
| Phenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 19:23 | YH |
| Surr: 2,4,6-Tribromophenol | 92.5 | 50-142 | | %REC | 238787 | 1 | 03/03/2017 19:23 | YH |
| Surr: 2-Fluorobiphenyl | 74 | 46-124 | | %REC | 238787 | 1 | 03/03/2017 19:23 | YH |
| Surr: 2-Fluorophenol | 58.9 | 25.3-120 | | %REC | 238787 | 1 | 03/03/2017 19:23 | YH |
| Surr: 4-Terphenyl-d14 | 84.7 | 45.1-133 | | %REC | 238787 | 1 | 03/03/2017 19:23 | YH |
| Surr: Nitrobenzene-d5 | 73.1 | 40.1-121 | | %REC | 238787 | 1 | 03/03/2017 19:23 | YH |
| Surr: Phenol-d5 | 41.9 | 16.3-120 | | %REC | 238787 | 1 | 03/03/2017 19:23 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | DUP-04-20170223-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/23/2017 |
| **Lab ID:** | 1702M96-013 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | 63 | 5.0 | | ug/L | 238968 | 1 | 03/08/2017 11:24 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238968 | 1 | 03/08/2017 11:24 | NP |
| Ethylbenzene | 160 | 5.0 | | ug/L | 238968 | 1 | 03/08/2017 11:24 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/08/2017 11:24 | NP |
| Xylenes, Total | 6.0 | 5.0 | | ug/L | 238968 | 1 | 03/08/2017 11:24 | NP |
| Surr: 4-Bromofluorobenzene | 100 | 66.1-129 | | %REC | 238968 | 1 | 03/08/2017 11:24 | NP |
| Surr: Dibromofluoromethane | 94.5 | 83.6-123 | | %REC | 238968 | 1 | 03/08/2017 11:24 | NP |
| Surr: Toluene-d8 | 98.2 | 81.8-118 | | %REC | 238968 | 1 | 03/08/2017 11:24 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | 1100 | 500 | | ug/L | 238741 | 1000 | 03/08/2017 12:04 | YH |
| Acenaphthylene | 1.8 | 1.0 | | ug/L | 238741 | 1 | 03/01/2017 20:27 | YH |
| Acenaphthene | 55 | 50 | | ug/L | 238741 | 100 | 03/08/2017 11:38 | YH |
| Fluorene | 19 | 10 | | ug/L | 238741 | 100 | 03/08/2017 11:38 | YH |
| Phenanthrene | 32 | 5.0 | | ug/L | 238741 | 100 | 03/08/2017 11:38 | YH |
| Anthracene | 5.5 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:27 | YH |
| Fluoranthene | 4.1 | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:27 | YH |
| Pyrene | 5.1 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:27 | YH |
| Benz(a)anthracene | 0.17 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:27 | YH |
| Chrysene | 0.14 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:27 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:27 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:27 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:27 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:27 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:27 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:27 | YH |
| Surr: 4-Terphenyl-d14 | 73.3 | 58.5-125 | | %REC | 238741 | 1 | 03/01/2017 20:27 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 19:47 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 19:47 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 19:47 | YH |
| Phenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 19:47 | YH |
| Surr: 2,4,6-Tribromophenol | 89.1 | 50-142 | | %REC | 238787 | 1 | 03/03/2017 19:47 | YH |
| Surr: 2-Fluorobiphenyl | 73.3 | 46-124 | | %REC | 238787 | 1 | 03/03/2017 19:47 | YH |
| Surr: 2-Fluorophenol | 57.8 | 25.3-120 | | %REC | 238787 | 1 | 03/03/2017 19:47 | YH |
| Surr: 4-Terphenyl-d14 | 85.7 | 45.1-133 | | %REC | 238787 | 1 | 03/03/2017 19:47 | YH |
| Surr: Nitrobenzene-d5 | 72.6 | 40.1-121 | | %REC | 238787 | 1 | 03/03/2017 19:47 | YH |
| Surr: Phenol-d5 | 42.1 | 16.3-120 | | %REC | 238787 | 1 | 03/03/2017 19:47 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-14I-20170223-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/23/2017 4:45:00 PM |
| **Lab ID:** | 1702M96-014 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 16:28 | BN |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 16:28 | BN |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 16:28 | BN |
| Toluene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 16:28 | BN |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 16:28 | BN |
| Surr: 4-Bromofluorobenzene | 81.7 | 66.1-129 | | %REC | 238968 | 1 | 03/03/2017 16:28 | BN |
| Surr: Dibromofluoromethane | 92.3 | 83.6-123 | | %REC | 238968 | 1 | 03/03/2017 16:28 | BN |
| Surr: Toluene-d8 | 93.8 | 81.8-118 | | %REC | 238968 | 1 | 03/03/2017 16:28 | BN |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238741 | 1 | 03/01/2017 20:52 | YH |
| Acenaphthylene | 1.8 | 1.0 | | ug/L | 238741 | 1 | 03/01/2017 20:52 | YH |
| Acenaphthene | 1.9 | 0.50 | | ug/L | 238741 | 1 | 03/01/2017 20:52 | YH |
| Fluorene | 0.77 | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:52 | YH |
| Phenanthrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:52 | YH |
| Anthracene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:52 | YH |
| Fluoranthene | 0.11 | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:52 | YH |
| Pyrene | 0.29 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:52 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:52 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:52 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:52 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:52 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:52 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 20:52 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:52 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 20:52 | YH |
| Surr: 4-Terphenyl-d14 | 78.2 | 58.5-125 | | %REC | 238741 | 1 | 03/01/2017 20:52 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 20:13 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 20:13 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 20:13 | YH |
| Phenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 20:13 | YH |
| Surr: 2,4,6-Tribromophenol | 88.8 | 50-142 | | %REC | 238787 | 1 | 03/03/2017 20:13 | YH |
| Surr: 2-Fluorobiphenyl | 74.4 | 46-124 | | %REC | 238787 | 1 | 03/03/2017 20:13 | YH |
| Surr: 2-Fluorophenol | 59.7 | 25.3-120 | | %REC | 238787 | 1 | 03/03/2017 20:13 | YH |
| Surr: 4-Terphenyl-d14 | 84.6 | 45.1-133 | | %REC | 238787 | 1 | 03/03/2017 20:13 | YH |
| Surr: Nitrobenzene-d5 | 73.1 | 40.1-121 | | %REC | 238787 | 1 | 03/03/2017 20:13 | YH |
| Surr: Phenol-d5 | 42.4 | 16.3-120 | | %REC | 238787 | 1 | 03/03/2017 20:13 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

**Analytical Environmental Services, Inc** **Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-12DRR-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 10:05:00 AM |
| **Lab ID:** | 1702M96-015 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | 470 | 50 | | ug/L | 238968 | 10 | 03/03/2017 02:16 | BN |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 15:00 | BN |
| Ethylbenzene | 150 | 50 | | ug/L | 238968 | 10 | 03/03/2017 02:16 | BN |
| Toluene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 15:00 | BN |
| Xylenes, Total | 140 | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 15:00 | BN |
| Surr: 4-Bromofluorobenzene | 89.3 | 66.1-129 | | %REC | 238968 | 10 | 03/03/2017 02:16 | BN |
| Surr: 4-Bromofluorobenzene | 97.2 | 66.1-129 | | %REC | 238968 | 1 | 03/03/2017 15:00 | BN |
| Surr: Dibromofluoromethane | 89.7 | 83.6-123 | | %REC | 238968 | 1 | 03/03/2017 15:00 | BN |
| Surr: Dibromofluoromethane | 92.4 | 83.6-123 | | %REC | 238968 | 10 | 03/03/2017 02:16 | BN |
| Surr: Toluene-d8 | 88.9 | 81.8-118 | | %REC | 238968 | 10 | 03/03/2017 02:16 | BN |
| Surr: Toluene-d8 | 91.1 | 81.8-118 | | %REC | 238968 | 1 | 03/03/2017 15:00 | BN |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | 1600 | 500 | | ug/L | 238741 | 1000 | 03/06/2017 14:26 | YH |
| Acenaphthylene | 6.5 | 1.0 | | ug/L | 238741 | 1 | 03/01/2017 21:18 | YH |
| Acenaphthene | 36 | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 13:22 | YH |
| Fluorene | 32 | 10 | | ug/L | 238741 | 100 | 03/03/2017 13:22 | YH |
| Phenanthrene | 17 | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 13:22 | YH |
| Anthracene | 4.5 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:18 | YH |
| Fluoranthene | 5.0 | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 21:18 | YH |
| Pyrene | 5.3 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:18 | YH |
| Benz(a)anthracene | 0.15 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:18 | YH |
| Chrysene | 0.12 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:18 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 21:18 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:18 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:18 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:18 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 21:18 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 21:18 | YH |
| Surr: 4-Terphenyl-d14 | 84.1 | 58.5-125 | | %REC | 238741 | 1 | 03/01/2017 21:18 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 20:39 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 20:39 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 20:39 | YH |
| Phenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 20:39 | YH |
| Surr: 2,4,6-Tribromophenol | 89.8 | 50-142 | | %REC | 238787 | 1 | 03/03/2017 20:39 | YH |
| Surr: 2-Fluorobiphenyl | 71.7 | 46-124 | | %REC | 238787 | 1 | 03/03/2017 20:39 | YH |
| Surr: 2-Fluorophenol | 55.7 | 25.3-120 | | %REC | 238787 | 1 | 03/03/2017 20:39 | YH |
| Surr: 4-Terphenyl-d14 | 89.4 | 45.1-133 | | %REC | 238787 | 1 | 03/03/2017 20:39 | YH |
| Surr: Nitrobenzene-d5 | 69.7 | 40.1-121 | | %REC | 238787 | 1 | 03/03/2017 20:39 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

**Analytical Environmental Services, Inc** **Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-12DRR-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 10:05:00 AM |
| **Lab ID:** | 1702M96-015 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | | **(SW3510C)** | | | |
| Surr: Phenol-d5 | 40.7 | 16.3-120 | | %REC | 238787 | 1 | 03/03/2017 20:39 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-200DR-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 10:06:00 AM |
| **Lab ID:** | 1702M96-016 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | 110 | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 21:54 | BN |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 21:54 | BN |
| Ethylbenzene | 58 | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 21:54 | BN |
| Toluene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 21:54 | BN |
| Xylenes, Total | 5.2 | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 21:54 | BN |
| Surr: 4-Bromofluorobenzene | 88.4 | 66.1-129 | | %REC | 238968 | 1 | 03/03/2017 21:54 | BN |
| Surr: Dibromofluoromethane | 86 | 83.6-123 | | %REC | 238968 | 1 | 03/03/2017 21:54 | BN |
| Surr: Toluene-d8 | 90.9 | 81.8-118 | | %REC | 238968 | 1 | 03/03/2017 21:54 | BN |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | 680 | 50 | | ug/L | 238741 | 100 | 03/03/2017 13:48 | YH |
| Acenaphthylene | 2.2 | 1.0 | | ug/L | 238741 | 1 | 03/01/2017 21:44 | YH |
| Acenaphthene | 28 | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 13:48 | YH |
| Fluorene | 20 | 10 | | ug/L | 238741 | 100 | 03/03/2017 13:48 | YH |
| Phenanthrene | 5.4 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:44 | YH |
| Anthracene | 1.9 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:44 | YH |
| Fluoranthene | 3.0 | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 21:44 | YH |
| Pyrene | 3.1 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:44 | YH |
| Benz(a)anthracene | 0.065 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:44 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:44 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 21:44 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:44 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:44 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 21:44 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 21:44 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 21:44 | YH |
| Surr: 4-Terphenyl-d14 | 80.3 | 58.5-125 | | %REC | 238741 | 1 | 03/01/2017 21:44 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 21:04 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 21:04 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 21:04 | YH |
| Phenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 21:04 | YH |
| Surr: 2,4,6-Tribromophenol | 85.6 | 50-142 | | %REC | 238787 | 1 | 03/03/2017 21:04 | YH |
| Surr: 2-Fluorobiphenyl | 69.4 | 46-124 | | %REC | 238787 | 1 | 03/03/2017 21:04 | YH |
| Surr: 2-Fluorophenol | 50.8 | 25.3-120 | | %REC | 238787 | 1 | 03/03/2017 21:04 | YH |
| Surr: 4-Terphenyl-d14 | 75.7 | 45.1-133 | | %REC | 238787 | 1 | 03/03/2017 21:04 | YH |
| Surr: Nitrobenzene-d5 | 69.5 | 40.1-121 | | %REC | 238787 | 1 | 03/03/2017 21:04 | YH |
| Surr: Phenol-d5 | 34.1 | 16.3-120 | | %REC | 238787 | 1 | 03/03/2017 21:04 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-204D-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 10:55:00 AM |
| **Lab ID:** | 1702M96-017 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | 490 | 50 | | ug/L | 238968 | 10 | 03/03/2017 02:45 | BN |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 14:01 | BN |
| Ethylbenzene | 340 | 50 | | ug/L | 238968 | 10 | 03/03/2017 02:45 | BN |
| Toluene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 14:01 | BN |
| Xylenes, Total | 34 | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 14:01 | BN |
| Surr: 4-Bromofluorobenzene | 85.2 | 66.1-129 | | %REC | 238968 | 10 | 03/03/2017 02:45 | BN |
| Surr: 4-Bromofluorobenzene | 91.6 | 66.1-129 | | %REC | 238968 | 1 | 03/03/2017 14:01 | BN |
| Surr: Dibromofluoromethane | 89.1 | 83.6-123 | | %REC | 238968 | 1 | 03/03/2017 14:01 | BN |
| Surr: Dibromofluoromethane | 94.8 | 83.6-123 | | %REC | 238968 | 10 | 03/03/2017 02:45 | BN |
| Surr: Toluene-d8 | 86.2 | 81.8-118 | | %REC | 238968 | 1 | 03/03/2017 14:01 | BN |
| Surr: Toluene-d8 | 92.7 | 81.8-118 | | %REC | 238968 | 10 | 03/03/2017 02:45 | BN |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | 2000 | 500 | | ug/L | 238741 | 1000 | 03/06/2017 15:17 | YH |
| Acenaphthylene | 2.3 | 1.0 | | ug/L | 238741 | 1 | 03/01/2017 22:10 | YH |
| Acenaphthene | 50 | 50 | | ug/L | 238741 | 100 | 03/03/2017 14:14 | YH |
| Fluorene | 17 | 10 | | ug/L | 238741 | 100 | 03/03/2017 14:14 | YH |
| Phenanthrene | 20 | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 14:14 | YH |
| Anthracene | 4.1 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 22:10 | YH |
| Fluoranthene | 4.0 | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 22:10 | YH |
| Pyrene | 4.5 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 22:10 | YH |
| Benz(a)anthracene | 0.12 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 22:10 | YH |
| Chrysene | 0.081 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 22:10 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 22:10 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 22:10 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 22:10 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 22:10 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 22:10 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 22:10 | YH |
| Surr: 4-Terphenyl-d14 | 81.3 | 58.5-125 | | %REC | 238741 | 1 | 03/01/2017 22:10 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 21:30 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 21:30 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 21:30 | YH |
| Phenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 21:30 | YH |
| Surr: 2,4,6-Tribromophenol | 84.1 | 50-142 | | %REC | 238787 | 1 | 03/03/2017 21:30 | YH |
| Surr: 2-Fluorobiphenyl | 74 | 46-124 | | %REC | 238787 | 1 | 03/03/2017 21:30 | YH |
| Surr: 2-Fluorophenol | 52.4 | 25.3-120 | | %REC | 238787 | 1 | 03/03/2017 21:30 | YH |
| Surr: 4-Terphenyl-d14 | 85.6 | 45.1-133 | | %REC | 238787 | 1 | 03/03/2017 21:30 | YH |
| Surr: Nitrobenzene-d5 | 76 | 40.1-121 | | %REC | 238787 | 1 | 03/03/2017 21:30 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

**Analytical Environmental Services, Inc** **Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-204D-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 10:55:00 AM |
| **Lab ID:** | 1702M96-017 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Semivolatile Org. Comp. by GC/MS SW8270D (SW3510C)** | | | | | | | | |
| Surr: Phenol-d5 | 37 | 16.3-120 | | %REC | 238787 | 1 | 03/03/2017 21:30 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

**Analytical Environmental Services, Inc** **Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-205D-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 11:30:00 AM |
| **Lab ID:** | 1702M96-018 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | 4300 | 250 | | ug/L | 238968 | 50 | 03/03/2017 00:49 | BN |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 13:31 | BN |
| Ethylbenzene | 860 | 250 | | ug/L | 238968 | 50 | 03/03/2017 00:49 | BN |
| Toluene | 12 | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 13:31 | BN |
| Xylenes, Total | 580 | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 13:31 | BN |
| Surr: 4-Bromofluorobenzene | 87.7 | 66.1-129 | | %REC | 238968 | 50 | 03/03/2017 00:49 | BN |
| Surr: 4-Bromofluorobenzene | 101 | 66.1-129 | | %REC | 238968 | 1 | 03/03/2017 13:31 | BN |
| Surr: Dibromofluoromethane | 98.8 | 83.6-123 | | %REC | 238968 | 50 | 03/03/2017 00:49 | BN |
| Surr: Dibromofluoromethane | 83.9 | 83.6-123 | | %REC | 238968 | 1 | 03/03/2017 13:31 | BN |
| Surr: Toluene-d8 | 93.4 | 81.8-118 | | %REC | 238968 | 50 | 03/03/2017 00:49 | BN |
| Surr: Toluene-d8 | 86.3 | 81.8-118 | | %REC | 238968 | 1 | 03/03/2017 13:31 | BN |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | 3400 | 500 | | ug/L | 238741 | 1000 | 03/06/2017 15:44 | YH |
| Acenaphthylene | 1.4 | 1.0 | | ug/L | 238741 | 1 | 03/01/2017 22:35 | YH |
| Acenaphthene | 120 | 50 | | ug/L | 238741 | 100 | 03/03/2017 14:40 | YH |
| Fluorene | 29 | 10 | | ug/L | 238741 | 100 | 03/03/2017 14:40 | YH |
| Phenanthrene | 31 | 5.0 | | ug/L | 238741 | 100 | 03/03/2017 14:40 | YH |
| Anthracene | 5.3 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 22:35 | YH |
| Fluoranthene | 1.6 | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 22:35 | YH |
| Pyrene | 1.7 | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 22:35 | YH |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 22:35 | YH |
| Chrysene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 22:35 | YH |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 22:35 | YH |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 22:35 | YH |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 22:35 | YH |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238741 | 1 | 03/01/2017 22:35 | YH |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 22:35 | YH |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238741 | 1 | 03/01/2017 22:35 | YH |
| Surr: 4-Terphenyl-d14 | 77.4 | 58.5-125 | | %REC | 238741 | 1 | 03/01/2017 22:35 | YH |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 21:56 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 21:56 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 21:56 | YH |
| Phenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 21:56 | YH |
| Surr: 2,4,6-Tribromophenol | 83.8 | 50-142 | | %REC | 238787 | 1 | 03/03/2017 21:56 | YH |
| Surr: 2-Fluorobiphenyl | 71.5 | 46-124 | | %REC | 238787 | 1 | 03/03/2017 21:56 | YH |
| Surr: 2-Fluorophenol | 64.2 | 25.3-120 | | %REC | 238787 | 1 | 03/03/2017 21:56 | YH |
| Surr: 4-Terphenyl-d14 | 80.4 | 45.1-133 | | %REC | 238787 | 1 | 03/03/2017 21:56 | YH |
| Surr: Nitrobenzene-d5 | 79.2 | 40.1-121 | | %REC | 238787 | 1 | 03/03/2017 21:56 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

**Analytical Environmental Services, Inc** **Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-205D-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 11:30:00 AM |
| **Lab ID:** | 1702M96-018 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | | **(SW3510C)** | | | |
| Surr: Phenol-d5 | 51.4 | 16.3-120 | | %REC | 238787 | 1 | 03/03/2017 21:56 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-205DD-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 12:45:00 PM |
| **Lab ID:** | 1702M96-019 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 20:28 | BN |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 20:28 | BN |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 20:28 | BN |
| Toluene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 20:28 | BN |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 20:28 | BN |
| Surr: 4-Bromofluorobenzene | 82.7 | 66.1-129 | | %REC | 238968 | 1 | 03/03/2017 20:28 | BN |
| Surr: Dibromofluoromethane | 89.5 | 83.6-123 | | %REC | 238968 | 1 | 03/03/2017 20:28 | BN |
| Surr: Toluene-d8 | 92.9 | 81.8-118 | | %REC | 238968 | 1 | 03/03/2017 20:28 | BN |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 15:59 | RF |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238785 | 1 | 03/01/2017 15:59 | RF |
| Acenaphthene | 2.3 | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 15:59 | RF |
| Fluorene | 0.40 | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 15:59 | RF |
| Phenanthrene | 0.068 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 15:59 | RF |
| Anthracene | 0.051 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 15:59 | RF |
| Fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 15:59 | RF |
| Pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 15:59 | RF |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 15:59 | RF |
| Chrysene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 15:59 | RF |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 15:59 | RF |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 15:59 | RF |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 15:59 | RF |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 15:59 | RF |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 15:59 | RF |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 15:59 | RF |
| Surr: 4-Terphenyl-d14 | 88.1 | 58.5-125 | | %REC | 238785 | 1 | 03/01/2017 15:59 | RF |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 22:21 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 22:21 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 22:21 | YH |
| Phenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 22:21 | YH |
| Surr: 2,4,6-Tribromophenol | 84.6 | 50-142 | | %REC | 238787 | 1 | 03/03/2017 22:21 | YH |
| Surr: 2-Fluorobiphenyl | 69.9 | 46-124 | | %REC | 238787 | 1 | 03/03/2017 22:21 | YH |
| Surr: 2-Fluorophenol | 58.6 | 25.3-120 | | %REC | 238787 | 1 | 03/03/2017 22:21 | YH |
| Surr: 4-Terphenyl-d14 | 84.1 | 45.1-133 | | %REC | 238787 | 1 | 03/03/2017 22:21 | YH |
| Surr: Nitrobenzene-d5 | 70.4 | 40.1-121 | | %REC | 238787 | 1 | 03/03/2017 22:21 | YH |
| Surr: Phenol-d5 | 40.3 | 16.3-120 | | %REC | 238787 | 1 | 03/03/2017 22:21 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-302D-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 11:35:00 AM |
| **Lab ID:** | 1702M96-020 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | 5.4 | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 20:57 | BN |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 20:57 | BN |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 20:57 | BN |
| Toluene | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 20:57 | BN |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238968 | 1 | 03/03/2017 20:57 | BN |
| Surr: 4-Bromofluorobenzene | 88.6 | 66.1-129 | | %REC | 238968 | 1 | 03/03/2017 20:57 | BN |
| Surr: Dibromofluoromethane | 92.9 | 83.6-123 | | %REC | 238968 | 1 | 03/03/2017 20:57 | BN |
| Surr: Toluene-d8 | 94.1 | 81.8-118 | | %REC | 238968 | 1 | 03/03/2017 20:57 | BN |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | 5.5 | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 16:27 | RF |
| Acenaphthylene | 7.2 | 1.0 | | ug/L | 238785 | 1 | 03/01/2017 16:27 | RF |
| Acenaphthene | 2.5 | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 16:27 | RF |
| Fluorene | 6.8 | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 16:27 | RF |
| Phenanthrene | 11 | 0.25 | | ug/L | 238785 | 5 | 03/01/2017 23:47 | RF |
| Anthracene | 1.9 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 16:27 | RF |
| Fluoranthene | 0.96 | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 16:27 | RF |
| Pyrene | 1.2 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 16:27 | RF |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 16:27 | RF |
| Chrysene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 16:27 | RF |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 16:27 | RF |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 16:27 | RF |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 16:27 | RF |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 16:27 | RF |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 16:27 | RF |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 16:27 | RF |
| Surr: 4-Terphenyl-d14 | 73.7 | 58.5-125 | | %REC | 238785 | 1 | 03/01/2017 16:27 | RF |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 22:47 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 22:47 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 22:47 | YH |
| Phenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 22:47 | YH |
| Surr: 2,4,6-Tribromophenol | 80.5 | 50-142 | | %REC | 238787 | 1 | 03/03/2017 22:47 | YH |
| Surr: 2-Fluorobiphenyl | 68.2 | 46-124 | | %REC | 238787 | 1 | 03/03/2017 22:47 | YH |
| Surr: 2-Fluorophenol | 54.2 | 25.3-120 | | %REC | 238787 | 1 | 03/03/2017 22:47 | YH |
| Surr: 4-Terphenyl-d14 | 77.9 | 45.1-133 | | %REC | 238787 | 1 | 03/03/2017 22:47 | YH |
| Surr: Nitrobenzene-d5 | 67.7 | 40.1-121 | | %REC | 238787 | 1 | 03/03/2017 22:47 | YH |
| Surr: Phenol-d5 | 38.3 | 16.3-120 | | %REC | 238787 | 1 | 03/03/2017 22:47 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-306D-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 1:00:00 PM |
| **Lab ID:** | 1702M96-021 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 04:53 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 04:53 | NP |
| Ethylbenzene | 5.9 | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 04:53 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 04:53 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 04:53 | NP |
| Surr: 4-Bromofluorobenzene | 95.2 | 66.1-129 | | %REC | 238923 | 1 | 03/03/2017 04:53 | NP |
| Surr: Dibromofluoromethane | 94.2 | 83.6-123 | | %REC | 238923 | 1 | 03/03/2017 04:53 | NP |
| Surr: Toluene-d8 | 96.6 | 81.8-118 | | %REC | 238923 | 1 | 03/03/2017 04:53 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 16:55 | RF |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238785 | 1 | 03/01/2017 16:55 | RF |
| Acenaphthene | 1.3 | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 16:55 | RF |
| Fluorene | 0.57 | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 16:55 | RF |
| Phenanthrene | 0.46 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 16:55 | RF |
| Anthracene | 0.053 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 16:55 | RF |
| Fluoranthene | 0.11 | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 16:55 | RF |
| Pyrene | 0.12 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 16:55 | RF |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 16:55 | RF |
| Chrysene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 16:55 | RF |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 16:55 | RF |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 16:55 | RF |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 16:55 | RF |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 16:55 | RF |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 16:55 | RF |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 16:55 | RF |
| Surr: 4-Terphenyl-d14 | 69.4 | 58.5-125 | | %REC | 238785 | 1 | 03/01/2017 16:55 | RF |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/02/2017 18:55 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/02/2017 18:55 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/02/2017 18:55 | YH |
| Phenol | BRL | 10 | | ug/L | 238787 | 1 | 03/02/2017 18:55 | YH |
| Surr: 2,4,6-Tribromophenol | 91.5 | 50-142 | | %REC | 238787 | 1 | 03/02/2017 18:55 | YH |
| Surr: 2-Fluorobiphenyl | 74.9 | 46-124 | | %REC | 238787 | 1 | 03/02/2017 18:55 | YH |
| Surr: 2-Fluorophenol | 51.5 | 25.3-120 | | %REC | 238787 | 1 | 03/02/2017 18:55 | YH |
| Surr: 4-Terphenyl-d14 | 85.6 | 45.1-133 | | %REC | 238787 | 1 | 03/02/2017 18:55 | YH |
| Surr: Nitrobenzene-d5 | 72.4 | 40.1-121 | | %REC | 238787 | 1 | 03/02/2017 18:55 | YH |
| Surr: Phenol-d5 | 37.6 | 16.3-120 | | %REC | 238787 | 1 | 03/02/2017 18:55 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-401-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 11:10:00 AM |
| **Lab ID:** | 1702M96-022 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 05:18 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 05:18 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 05:18 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 05:18 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 05:18 | NP |
| Surr: 4-Bromofluorobenzene | 94.6 | 66.1-129 | | %REC | 238923 | 1 | 03/03/2017 05:18 | NP |
| Surr: Dibromofluoromethane | 96.8 | 83.6-123 | | %REC | 238923 | 1 | 03/03/2017 05:18 | NP |
| Surr: Toluene-d8 | 96.8 | 81.8-118 | | %REC | 238923 | 1 | 03/03/2017 05:18 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 17:23 | RF |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238785 | 1 | 03/01/2017 17:23 | RF |
| Acenaphthene | 0.83 | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 17:23 | RF |
| Fluorene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 17:23 | RF |
| Phenanthrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 17:23 | RF |
| Anthracene | 0.060 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 17:23 | RF |
| Fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 17:23 | RF |
| Pyrene | 1.0 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 17:23 | RF |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 17:23 | RF |
| Chrysene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 17:23 | RF |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 17:23 | RF |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 17:23 | RF |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 17:23 | RF |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 17:23 | RF |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 17:23 | RF |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 17:23 | RF |
| Surr: 4-Terphenyl-d14 | 82.5 | 58.5-125 | | %REC | 238785 | 1 | 03/01/2017 17:23 | RF |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/02/2017 19:20 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/02/2017 19:20 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/02/2017 19:20 | YH |
| Phenol | BRL | 10 | | ug/L | 238787 | 1 | 03/02/2017 19:20 | YH |
| Surr: 2,4,6-Tribromophenol | 82.2 | 50-142 | | %REC | 238787 | 1 | 03/02/2017 19:20 | YH |
| Surr: 2-Fluorobiphenyl | 64.9 | 46-124 | | %REC | 238787 | 1 | 03/02/2017 19:20 | YH |
| Surr: 2-Fluorophenol | 45.6 | 25.3-120 | | %REC | 238787 | 1 | 03/02/2017 19:20 | YH |
| Surr: 4-Terphenyl-d14 | 78.9 | 45.1-133 | | %REC | 238787 | 1 | 03/02/2017 19:20 | YH |
| Surr: Nitrobenzene-d5 | 64.5 | 40.1-121 | | %REC | 238787 | 1 | 03/02/2017 19:20 | YH |
| Surr: Phenol-d5 | 32.5 | 16.3-120 | | %REC | 238787 | 1 | 03/02/2017 19:20 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-103-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 12:20:00 PM |
| **Lab ID:** | 1702M96-023 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 05:44 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 05:44 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 05:44 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 05:44 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 05:44 | NP |
| Surr: 4-Bromofluorobenzene | 95.4 | 66.1-129 | | %REC | 238923 | 1 | 03/03/2017 05:44 | NP |
| Surr: Dibromofluoromethane | 97 | 83.6-123 | | %REC | 238923 | 1 | 03/03/2017 05:44 | NP |
| Surr: Toluene-d8 | 96.9 | 81.8-118 | | %REC | 238923 | 1 | 03/03/2017 05:44 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 17:50 | RF |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238785 | 1 | 03/01/2017 17:50 | RF |
| Acenaphthene | BRL | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 17:50 | RF |
| Fluorene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 17:50 | RF |
| Phenanthrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 17:50 | RF |
| Anthracene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 17:50 | RF |
| Fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 17:50 | RF |
| Pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 17:50 | RF |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 17:50 | RF |
| Chrysene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 17:50 | RF |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 17:50 | RF |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 17:50 | RF |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 17:50 | RF |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 17:50 | RF |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 17:50 | RF |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 17:50 | RF |
| Surr: 4-Terphenyl-d14 | 90.3 | 58.5-125 | | %REC | 238785 | 1 | 03/01/2017 17:50 | RF |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/02/2017 19:46 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/02/2017 19:46 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/02/2017 19:46 | YH |
| Phenol | BRL | 10 | | ug/L | 238787 | 1 | 03/02/2017 19:46 | YH |
| Surr: 2,4,6-Tribromophenol | 82.2 | 50-142 | | %REC | 238787 | 1 | 03/02/2017 19:46 | YH |
| Surr: 2-Fluorobiphenyl | 67 | 46-124 | | %REC | 238787 | 1 | 03/02/2017 19:46 | YH |
| Surr: 2-Fluorophenol | 49.5 | 25.3-120 | | %REC | 238787 | 1 | 03/02/2017 19:46 | YH |
| Surr: 4-Terphenyl-d14 | 83.3 | 45.1-133 | | %REC | 238787 | 1 | 03/02/2017 19:46 | YH |
| Surr: Nitrobenzene-d5 | 66.2 | 40.1-121 | | %REC | 238787 | 1 | 03/02/2017 19:46 | YH |
| Surr: Phenol-d5 | 33.2 | 16.3-120 | | %REC | 238787 | 1 | 03/02/2017 19:46 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-14-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 11:50:00 AM |
| **Lab ID:** | 1702M96-024 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 06:09 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 06:09 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 06:09 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 06:09 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 06:09 | NP |
| Surr: 4-Bromofluorobenzene | 94.9 | 66.1-129 | | %REC | 238923 | 1 | 03/03/2017 06:09 | NP |
| Surr: Dibromofluoromethane | 100 | 83.6-123 | | %REC | 238923 | 1 | 03/03/2017 06:09 | NP |
| Surr: Toluene-d8 | 98.4 | 81.8-118 | | %REC | 238923 | 1 | 03/03/2017 06:09 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 18:16 | RF |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238785 | 1 | 03/01/2017 18:16 | RF |
| Acenaphthene | BRL | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 18:16 | RF |
| Fluorene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 18:16 | RF |
| Phenanthrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 18:16 | RF |
| Anthracene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 18:16 | RF |
| Fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 18:16 | RF |
| Pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 18:16 | RF |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 18:16 | RF |
| Chrysene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 18:16 | RF |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 18:16 | RF |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 18:16 | RF |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 18:16 | RF |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 18:16 | RF |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 18:16 | RF |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 18:16 | RF |
| Surr: 4-Terphenyl-d14 | 85.7 | 58.5-125 | | %REC | 238785 | 1 | 03/01/2017 18:16 | RF |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/02/2017 20:12 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/02/2017 20:12 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/02/2017 20:12 | YH |
| Phenol | BRL | 10 | | ug/L | 238787 | 1 | 03/02/2017 20:12 | YH |
| Surr: 2,4,6-Tribromophenol | 80.2 | 50-142 | | %REC | 238787 | 1 | 03/02/2017 20:12 | YH |
| Surr: 2-Fluorobiphenyl | 69.2 | 46-124 | | %REC | 238787 | 1 | 03/02/2017 20:12 | YH |
| Surr: 2-Fluorophenol | 47.1 | 25.3-120 | | %REC | 238787 | 1 | 03/02/2017 20:12 | YH |
| Surr: 4-Terphenyl-d14 | 88.1 | 45.1-133 | | %REC | 238787 | 1 | 03/02/2017 20:12 | YH |
| Surr: Nitrobenzene-d5 | 67.7 | 40.1-121 | | %REC | 238787 | 1 | 03/02/2017 20:12 | YH |
| Surr: Phenol-d5 | 33.8 | 16.3-120 | | %REC | 238787 | 1 | 03/02/2017 20:12 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-12IR-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 10:00:00 AM |
| **Lab ID:** | 1702M96-025 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 06:35 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 06:35 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 06:35 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 06:35 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 06:35 | NP |
| Surr: 4-Bromofluorobenzene | 94.3 | 66.1-129 | | %REC | 238923 | 1 | 03/03/2017 06:35 | NP |
| Surr: Dibromofluoromethane | 95.5 | 83.6-123 | | %REC | 238923 | 1 | 03/03/2017 06:35 | NP |
| Surr: Toluene-d8 | 97.2 | 81.8-118 | | %REC | 238923 | 1 | 03/03/2017 06:35 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | 7.9 | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 18:43 | RF |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238785 | 1 | 03/01/2017 18:43 | RF |
| Acenaphthene | 1.6 | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 18:43 | RF |
| Fluorene | 3.6 | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 18:43 | RF |
| Phenanthrene | 0.25 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 18:43 | RF |
| Anthracene | 0.24 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 18:43 | RF |
| Fluoranthene | 3.1 | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 18:43 | RF |
| Pyrene | 4.2 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 18:43 | RF |
| Benz(a)anthracene | 0.26 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 18:43 | RF |
| Chrysene | 0.17 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 18:43 | RF |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 18:43 | RF |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 18:43 | RF |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 18:43 | RF |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 18:43 | RF |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 18:43 | RF |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 18:43 | RF |
| Surr: 4-Terphenyl-d14 | 77.6 | 58.5-125 | | %REC | 238785 | 1 | 03/01/2017 18:43 | RF |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 23:13 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 23:13 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 23:13 | YH |
| Phenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 23:13 | YH |
| Surr: 2,4,6-Tribromophenol | 84.3 | 50-142 | | %REC | 238787 | 1 | 03/03/2017 23:13 | YH |
| Surr: 2-Fluorobiphenyl | 68.1 | 46-124 | | %REC | 238787 | 1 | 03/03/2017 23:13 | YH |
| Surr: 2-Fluorophenol | 50.6 | 25.3-120 | | %REC | 238787 | 1 | 03/03/2017 23:13 | YH |
| Surr: 4-Terphenyl-d14 | 84 | 45.1-133 | | %REC | 238787 | 1 | 03/03/2017 23:13 | YH |
| Surr: Nitrobenzene-d5 | 66.3 | 40.1-121 | | %REC | 238787 | 1 | 03/03/2017 23:13 | YH |
| Surr: Phenol-d5 | 36.5 | 16.3-120 | | %REC | 238787 | 1 | 03/03/2017 23:13 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-12R-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 11:05:00 AM |
| **Lab ID:** | 1702M96-026 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 07:01 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 07:01 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 07:01 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 07:01 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 07:01 | NP |
| Surr: 4-Bromofluorobenzene | 96.6 | 66.1-129 | | %REC | 238923 | 1 | 03/03/2017 07:01 | NP |
| Surr: Dibromofluoromethane | 96.8 | 83.6-123 | | %REC | 238923 | 1 | 03/03/2017 07:01 | NP |
| Surr: Toluene-d8 | 97.5 | 81.8-118 | | %REC | 238923 | 1 | 03/03/2017 07:01 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 19:10 | RF |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238785 | 1 | 03/01/2017 19:10 | RF |
| Acenaphthene | BRL | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 19:10 | RF |
| Fluorene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 19:10 | RF |
| Phenanthrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 19:10 | RF |
| Anthracene | 0.072 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 19:10 | RF |
| Fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 19:10 | RF |
| Pyrene | 0.18 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 19:10 | RF |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 19:10 | RF |
| Chrysene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 19:10 | RF |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 19:10 | RF |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 19:10 | RF |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 19:10 | RF |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 19:10 | RF |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 19:10 | RF |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 19:10 | RF |
| Surr: 4-Terphenyl-d14 | 78.5 | 58.5-125 | | %REC | 238785 | 1 | 03/01/2017 19:10 | RF |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 23:38 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 23:38 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 23:38 | YH |
| Phenol | BRL | 10 | | ug/L | 238787 | 1 | 03/03/2017 23:38 | YH |
| Surr: 2,4,6-Tribromophenol | 88.6 | 50-142 | | %REC | 238787 | 1 | 03/03/2017 23:38 | YH |
| Surr: 2-Fluorobiphenyl | 68.2 | 46-124 | | %REC | 238787 | 1 | 03/03/2017 23:38 | YH |
| Surr: 2-Fluorophenol | 49 | 25.3-120 | | %REC | 238787 | 1 | 03/03/2017 23:38 | YH |
| Surr: 4-Terphenyl-d14 | 85.6 | 45.1-133 | | %REC | 238787 | 1 | 03/03/2017 23:38 | YH |
| Surr: Nitrobenzene-d5 | 64.1 | 40.1-121 | | %REC | 238787 | 1 | 03/03/2017 23:38 | YH |
| Surr: Phenol-d5 | 35 | 16.3-120 | | %REC | 238787 | 1 | 03/03/2017 23:38 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | DUP-05-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 |
| **Lab ID:** | 1702M96-027 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | 4300 | 250 | | ug/L | 238923 | 50 | 03/03/2017 03:36 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 08:05 | NP |
| Ethylbenzene | 950 | 250 | | ug/L | 238923 | 50 | 03/03/2017 03:36 | NP |
| Toluene | 14 | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 08:05 | NP |
| Xylenes, Total | 420 | 250 | | ug/L | 238923 | 50 | 03/03/2017 03:36 | NP |
| Surr: 4-Bromofluorobenzene | 96.9 | 66.1-129 | | %REC | 238923 | 50 | 03/03/2017 03:36 | NP |
| Surr: 4-Bromofluorobenzene | 103 | 66.1-129 | | %REC | 238923 | 1 | 03/03/2017 08:05 | NP |
| Surr: Dibromofluoromethane | 96 | 83.6-123 | | %REC | 238923 | 50 | 03/03/2017 03:36 | NP |
| Surr: Dibromofluoromethane | 89.3 | 83.6-123 | | %REC | 238923 | 1 | 03/03/2017 08:05 | NP |
| Surr: Toluene-d8 | 97.8 | 81.8-118 | | %REC | 238923 | 50 | 03/03/2017 03:36 | NP |
| Surr: Toluene-d8 | 95.5 | 81.8-118 | | %REC | 238923 | 1 | 03/03/2017 08:05 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | 3700 | 250 | | ug/L | 238785 | 500 | 03/02/2017 10:18 | RF |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238785 | 1 | 03/01/2017 19:37 | RF |
| Acenaphthene | 140 | 50 | | ug/L | 238785 | 100 | 03/02/2017 09:51 | RF |
| Fluorene | 34 | 10 | | ug/L | 238785 | 100 | 03/02/2017 09:51 | RF |
| Phenanthrene | 37 | 5.0 | | ug/L | 238785 | 100 | 03/02/2017 09:51 | RF |
| Anthracene | 4.9 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 19:37 | RF |
| Fluoranthene | 1.6 | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 19:37 | RF |
| Pyrene | 1.5 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 19:37 | RF |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 19:37 | RF |
| Chrysene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 19:37 | RF |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 19:37 | RF |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 19:37 | RF |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 19:37 | RF |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 19:37 | RF |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 19:37 | RF |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 19:37 | RF |
| Surr: 4-Terphenyl-d14 | 79.7 | 58.5-125 | | %REC | 238785 | 1 | 03/01/2017 19:37 | RF |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/04/2017 00:04 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/04/2017 00:04 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/04/2017 00:04 | YH |
| Phenol | BRL | 10 | | ug/L | 238787 | 1 | 03/04/2017 00:04 | YH |
| Surr: 2,4,6-Tribromophenol | 94.1 | 50-142 | | %REC | 238787 | 1 | 03/04/2017 00:04 | YH |
| Surr: 2-Fluorobiphenyl | 73.8 | 46-124 | | %REC | 238787 | 1 | 03/04/2017 00:04 | YH |
| Surr: 2-Fluorophenol | 51.5 | 25.3-120 | | %REC | 238787 | 1 | 03/04/2017 00:04 | YH |
| Surr: 4-Terphenyl-d14 | 89.3 | 45.1-133 | | %REC | 238787 | 1 | 03/04/2017 00:04 | YH |
| Surr: Nitrobenzene-d5 | 81.5 | 40.1-121 | | %REC | 238787 | 1 | 03/04/2017 00:04 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

**Analytical Environmental Services, Inc** **Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | DUP-05-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 |
| **Lab ID:** | 1702M96-027 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | | **(SW3510C)** | | | |
| Surr: Phenol-d5 | 37.7 | 16.3-120 | | %REC | 238787 | 1 | 03/04/2017 00:04 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-104-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 2:35:00 PM |
| **Lab ID:** | 1702M96-028 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 07:27 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 07:27 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 07:27 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 07:27 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 07:27 | NP |
| Surr: 4-Bromofluorobenzene | 94.4 | 66.1-129 | | %REC | 238923 | 1 | 03/03/2017 07:27 | NP |
| Surr: Dibromofluoromethane | 95 | 83.6-123 | | %REC | 238923 | 1 | 03/03/2017 07:27 | NP |
| Surr: Toluene-d8 | 97.8 | 81.8-118 | | %REC | 238923 | 1 | 03/03/2017 07:27 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238785 | 1 | 03/02/2017 08:57 | RF |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238785 | 1 | 03/02/2017 08:57 | RF |
| Acenaphthene | BRL | 0.50 | | ug/L | 238785 | 1 | 03/02/2017 08:57 | RF |
| Fluorene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/02/2017 08:57 | RF |
| Phenanthrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/02/2017 08:57 | RF |
| Anthracene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/02/2017 08:57 | RF |
| Fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/02/2017 08:57 | RF |
| Pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/02/2017 08:57 | RF |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/02/2017 08:57 | RF |
| Chrysene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/02/2017 08:57 | RF |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/02/2017 08:57 | RF |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/02/2017 08:57 | RF |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/02/2017 08:57 | RF |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/02/2017 08:57 | RF |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/02/2017 08:57 | RF |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/02/2017 08:57 | RF |
| Surr: 4-Terphenyl-d14 | 75.8 | 58.5-125 | | %REC | 238785 | 1 | 03/02/2017 08:57 | RF |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/04/2017 00:30 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/04/2017 00:30 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238787 | 1 | 03/04/2017 00:30 | YH |
| Phenol | BRL | 10 | | ug/L | 238787 | 1 | 03/04/2017 00:30 | YH |
| Surr: 2,4,6-Tribromophenol | 86.8 | 50-142 | | %REC | 238787 | 1 | 03/04/2017 00:30 | YH |
| Surr: 2-Fluorobiphenyl | 72.5 | 46-124 | | %REC | 238787 | 1 | 03/04/2017 00:30 | YH |
| Surr: 2-Fluorophenol | 54.5 | 25.3-120 | | %REC | 238787 | 1 | 03/04/2017 00:30 | YH |
| Surr: 4-Terphenyl-d14 | 90.5 | 45.1-133 | | %REC | 238787 | 1 | 03/04/2017 00:30 | YH |
| Surr: Nitrobenzene-d5 | 74.9 | 40.1-121 | | %REC | 238787 | 1 | 03/04/2017 00:30 | YH |
| Surr: Phenol-d5 | 39 | 16.3-120 | | %REC | 238787 | 1 | 03/04/2017 00:30 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | TB-01-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 |
| **Lab ID:** | 1702M96-029 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B (SW5030B)** | | | | | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 00:35 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 00:35 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 00:35 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 00:35 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 00:35 | NP |
| Surr: 4-Bromofluorobenzene | 94.7 | 66.1-129 | | %REC | 238923 | 1 | 03/03/2017 00:35 | NP |
| Surr: Dibromofluoromethane | 97 | 83.6-123 | | %REC | 238923 | 1 | 03/03/2017 00:35 | NP |
| Surr: Toluene-d8 | 97 | 81.8-118 | | %REC | 238923 | 1 | 03/03/2017 00:35 | NP |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | TB-02-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 |
| **Lab ID:** | 1702M96-030 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B (SW5030B)** | | | | | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 01:01 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 01:01 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 01:01 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 01:01 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 01:01 | NP |
| Surr: 4-Bromofluorobenzene | 94.2 | 66.1-129 | | %REC | 238923 | 1 | 03/03/2017 01:01 | NP |
| Surr: Dibromofluoromethane | 97.1 | 83.6-123 | | %REC | 238923 | 1 | 03/03/2017 01:01 | NP |
| Surr: Toluene-d8 | 97 | 81.8-118 | | %REC | 238923 | 1 | 03/03/2017 01:01 | NP |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | TB-03-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 |
| **Lab ID:** | 1702M96-031 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B (SW5030B)** | | | | | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 01:27 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 01:27 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 01:27 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 01:27 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 01:27 | NP |
| Surr: 4-Bromofluorobenzene | 93.7 | 66.1-129 | | %REC | 238923 | 1 | 03/03/2017 01:27 | NP |
| Surr: Dibromofluoromethane | 97.3 | 83.6-123 | | %REC | 238923 | 1 | 03/03/2017 01:27 | NP |
| Surr: Toluene-d8 | 97.2 | 81.8-118 | | %REC | 238923 | 1 | 03/03/2017 01:27 | NP |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | TB-04-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 |
| **Lab ID:** | 1702M96-032 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B (SW5030B)** | | | | | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 01:52 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 01:52 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 01:52 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 01:52 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 01:52 | NP |
| Surr: 4-Bromofluorobenzene | 94.7 | 66.1-129 | | %REC | 238923 | 1 | 03/03/2017 01:52 | NP |
| Surr: Dibromofluoromethane | 97.8 | 83.6-123 | | %REC | 238923 | 1 | 03/03/2017 01:52 | NP |
| Surr: Toluene-d8 | 98.6 | 81.8-118 | | %REC | 238923 | 1 | 03/03/2017 01:52 | NP |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

**Analytical Environmental Services, Inc** **Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | TB-05-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 |
| **Lab ID:** | 1702M96-033 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 02:18 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 02:18 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 02:18 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 02:18 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 02:18 | NP |
| Surr: 4-Bromofluorobenzene | 95 | 66.1-129 | | %REC | 238923 | 1 | 03/03/2017 02:18 | NP |
| Surr: Dibromofluoromethane | 95.9 | 83.6-123 | | %REC | 238923 | 1 | 03/03/2017 02:18 | NP |
| Surr: Toluene-d8 | 96.8 | 81.8-118 | | %REC | 238923 | 1 | 03/03/2017 02:18 | NP |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | TB-06-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 |
| **Lab ID:** | 1702M96-034 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B (SW5030B)** | | | | | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 02:44 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 02:44 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 02:44 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 02:44 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 02:44 | NP |
| Surr: 4-Bromofluorobenzene | 94.2 | 66.1-129 | | %REC | 238923 | 1 | 03/03/2017 02:44 | NP |
| Surr: Dibromofluoromethane | 95.1 | 83.6-123 | | %REC | 238923 | 1 | 03/03/2017 02:44 | NP |
| Surr: Toluene-d8 | 97.6 | 81.8-118 | | %REC | 238923 | 1 | 03/03/2017 02:44 | NP |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | TB-07-20170224-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/24/2017 |
| **Lab ID:** | 1702M96-035 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B (SW5030B)** | | | | | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 03:10 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 03:10 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 03:10 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 03:10 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238923 | 1 | 03/03/2017 03:10 | NP |
| Surr: 4-Bromofluorobenzene | 93.7 | 66.1-129 | | %REC | 238923 | 1 | 03/03/2017 03:10 | NP |
| Surr: Dibromofluoromethane | 97 | 83.6-123 | | %REC | 238923 | 1 | 03/03/2017 03:10 | NP |
| Surr: Toluene-d8 | 97.9 | 81.8-118 | | %REC | 238923 | 1 | 03/03/2017 03:10 | NP |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

Clear | Save as

AES ANALYTICAL ENVIRONMENTAL SERVICES, INC.

# SAMPLE/COOLER RECEIPT CHECKLIST

1. Client Name: **ERM-Southeast** AES Work Order Number: **1702K47**

2. Carrier: FedEx ☐ UPS ☐ USPS ☐ Client ☐ Courier ■ Other _____

| | | Yes | No | N/A | Details | Comments |
|---|---|---|---|---|---|---|
| 3. | Shipping container/cooler received in good condition? | ○ | ○ | ○ | damaged ☐ leaking ☐ other ☐ | |
| 4. | Custody seals present on shipping container? | ○ | ○ | ○ | | |
| 5. | Custody seals intact on shipping container? | ○ | ○ | ○ | | |
| 6. | Temperature blanks present? | ○ | ○ | ○ | | |
| 7. | Cooler temperature(s) within limits of 0-6°C? [See item 13 and 14 for temperature recordings.] | ○ | ○ | ○ | Cooling initiated for recently collected samples / ice present ☐ | |
| 8. | Chain of Custody (COC) present? | ○ | ○ | ○ | | |
| 9. | Chain of Custody signed, dated, and timed when relinquished and received? | ○ | ○ | ○ | | |
| 10. | Sampler name and/or signature on COC? | ○ | ○ | ○ | | |
| 11. | Were all samples received within holding time? | ○ | ○ | ○ | | |
| 12. | TAT marked on the COC? | ○ | ○ | ○ | If no TAT indicated, proceeded with standard TAT per Terms & Conditions. ☐ | |

13. Cooler 1 Temperature 1.3 °C Cooler 2 Temperature 1.5 °C Cooler 3 Temperature 1.9 °C Cooler 4 Temperature 2.6 °C

14. Cooler 5 Temperature 2.3 °C Cooler 6 Temperature 1.7 °C Cooler 7 Temperature _____ °C Cooler 8 Temperature _____ °C

15. Comments: _____

**I certify that I have completed sections 1-15 (dated initials).** MJ 2/23/17

| | | Yes | No | N/A | Details | Comments |
|---|---|---|---|---|---|---|
| 16. | Were sample containers intact upon receipt? | ○ | ○ | ○ | | |
| 17. | Custody seals present on sample containers? | ○ | ○ | ○ | | |
| 18. | Custody seals intact on sample containers? | ○ | ○ | ○ | | |
| 19. | Do sample container labels match the COC? | ○ | ○ | ○ | incomplete info ☐ illegible ☐ no label ☐ other ☐ | |
| 20. | Are analyses requested indicated on the COC? | ○ | ○ | ○ | | |
| 21. | Were all of the samples listed on the COC received? | ○ | ○ | ○ | samples received but not listed on COC ☐ samples listed on COC not received ☐ | |
| 22. | Was the sample collection date/time noted? | ○ | ○ | ○ | | |
| 23. | Did we receive sufficient sample volume for indicated analyses? | ○ | ○ | ○ | | |
| 24. | Were samples received in appropriate containers? | ○ | ○ | ○ | | |
| 25. | Were VOA samples received without headspace (< 1/4" bubble)? | ○ | ○ | ○ | | |
| 26. | Were trip blanks submitted? | ○ | ○ | ○ | listed on COC ■ not listed on COC ☐ | |

27. Comments: _____

**I certify that I have completed sections 16-27 (dated initials).** MJ 2/23/17

| | | Yes | No | N/A | Details | Comments |
|---|---|---|---|---|---|---|
| 28. | Have containers needing chemical preservation been checked? | ○ | ○ | ○ | | check at analyses |
| 29. | Containers meet preservation guidelines? | ○ | ○ | ○ | | check at analyses |
| 30. | Was pH adjusted? | ○ | ○ | ○ | | |

**I certify that I have completed sections 28-30 (dated initials).** MJ 2/23/17

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702M96

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238726

Sample ID: **MB-238726** Client ID: Units: **ug/L** Prep Date: **02/28/2017** Run No: **337652**
SampleType: **MBLK** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238726** Analysis Date: **03/02/2017** Seq No: **7377492**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,4-Dimethylphenol | BRL | 10 | | | | | | | | | |
| 2-Methylphenol | BRL | 10 | | | | | | | | | |
| 3,4-Methylphenol | BRL | 10 | | | | | | | | | |
| Phenol | BRL | 10 | | | | | | | | | |
| Surr: 2,4,6-Tribromophenol | 97.59 | 0 | 100.0 | | 97.6 | 50 | 142 | | | | |
| Surr: 2-Fluorobiphenyl | 40.54 | 0 | 50.00 | | 81.1 | 46 | 124 | | | | |
| Surr: 2-Fluorophenol | 38.00 | 0 | 100.0 | | 38.0 | 25.3 | 120 | | | | |
| Surr: 4-Terphenyl-d14 | 51.26 | 0 | 50.00 | | 103 | 45.1 | 133 | | | | |
| Surr: Nitrobenzene-d5 | 37.66 | 0 | 50.00 | | 75.3 | 40.1 | 121 | | | | |
| Surr: Phenol-d5 | 22.11 | 0 | 100.0 | | 22.1 | 16.3 | 120 | | | | |

Sample ID: **LCS-238726** Client ID: Units: **ug/L** Prep Date: **02/28/2017** Run No: **337652**
SampleType: **LCS** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238726** Analysis Date: **03/02/2017** Seq No: **7377498**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | 30.25 | 10 | 100.0 | | 30.2 | 25 | 120 | | | | |
| Surr: 2,4,6-Tribromophenol | 103.0 | 0 | 100.0 | | 103 | 50 | 142 | | | | |
| Surr: 2-Fluorobiphenyl | 42.13 | 0 | 50.00 | | 84.3 | 46 | 124 | | | | |
| Surr: 2-Fluorophenol | 51.87 | 0 | 100.0 | | 51.9 | 25.3 | 120 | | | | |
| Surr: 4-Terphenyl-d14 | 52.97 | 0 | 50.00 | | 106 | 45.1 | 133 | | | | |
| Surr: Nitrobenzene-d5 | 40.27 | 0 | 50.00 | | 80.5 | 40.1 | 121 | | | | |
| Surr: Phenol-d5 | 32.65 | 0 | 100.0 | | 32.6 | 16.3 | 120 | | | | |

Sample ID: **1702M34-012BMS** Client ID: Units: **ug/L** Prep Date: **02/28/2017** Run No: **337855**
SampleType: **MS** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238726** Analysis Date: **03/05/2017** Seq No: **7382539**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | 25.44 | 10 | 100.0 | | 25.4 | 31.5 | 120 | | | | S |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702M96

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238726

Sample ID: **1702M34-012BMS** Client ID: Units: **ug/L** Prep Date: **02/28/2017** Run No: **337855**
SampleType: **MS** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238726** Analysis Date: **03/05/2017** Seq No: **7382539**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Surr: 2,4,6-Tribromophenol | 79.48 | 0 | 100.0 | | 79.5 | 50 | 142 | | | | |
| Surr: 2-Fluorobiphenyl | 30.31 | 0 | 50.00 | | 60.6 | 46 | 124 | | | | |
| Surr: 2-Fluorophenol | 37.06 | 0 | 100.0 | | 37.1 | 25.3 | 120 | | | | |
| Surr: 4-Terphenyl-d14 | 43.80 | 0 | 50.00 | | 87.6 | 45.1 | 133 | | | | |
| Surr: Nitrobenzene-d5 | 28.18 | 0 | 50.00 | | 56.4 | 40.1 | 121 | | | | |
| Surr: Phenol-d5 | 27.21 | 0 | 100.0 | | 27.2 | 16.3 | 120 | | | | |

Sample ID: **1702M34-012BMSD** Client ID: Units: **ug/L** Prep Date: **02/28/2017** Run No: **337855**
SampleType: **MSD** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238726** Analysis Date: **03/05/2017** Seq No: **7382540**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | 34.95 | 10 | 100.0 | | 35.0 | 31.5 | 120 | 25.44 | 31.5 | 28.5 | R |
| Surr: 2,4,6-Tribromophenol | 94.34 | 0 | 100.0 | | 94.3 | 50 | 142 | 79.48 | 0 | 0 | |
| Surr: 2-Fluorobiphenyl | 38.27 | 0 | 50.00 | | 76.5 | 46 | 124 | 30.31 | 0 | 0 | |
| Surr: 2-Fluorophenol | 54.56 | 0 | 100.0 | | 54.6 | 25.3 | 120 | 37.06 | 0 | 0 | |
| Surr: 4-Terphenyl-d14 | 49.66 | 0 | 50.00 | | 99.3 | 45.1 | 133 | 43.80 | 0 | 0 | |
| Surr: Nitrobenzene-d5 | 37.36 | 0 | 50.00 | | 74.7 | 40.1 | 121 | 28.18 | 0 | 0 | |
| Surr: Phenol-d5 | 39.75 | 0 | 100.0 | | 39.8 | 16.3 | 120 | 27.21 | 0 | 0 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702M96

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238741

Sample ID: **MB-238741** Client ID: Units: **ug/L** Prep Date: **02/28/2017** Run No: **337414**
SampleType: **MBLK** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238741** Analysis Date: **03/01/2017** Seq No: **7373740**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | BRL | 0.50 | | | | | | | | | |
| Acenaphthylene | BRL | 1.0 | | | | | | | | | |
| Anthracene | BRL | 0.050 | | | | | | | | | |
| Benz(a)anthracene | BRL | 0.050 | | | | | | | | | |
| Benzo(a)pyrene | BRL | 0.050 | | | | | | | | | |
| Benzo(b)fluoranthene | BRL | 0.10 | | | | | | | | | |
| Benzo(g,h,i)perylene | BRL | 0.10 | | | | | | | | | |
| Benzo(k)fluoranthene | BRL | 0.050 | | | | | | | | | |
| Chrysene | BRL | 0.050 | | | | | | | | | |
| Dibenz(a,h)anthracene | BRL | 0.10 | | | | | | | | | |
| Fluoranthene | BRL | 0.10 | | | | | | | | | |
| Fluorene | BRL | 0.10 | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | | | | | | | | |
| Naphthalene | BRL | 0.50 | | | | | | | | | |
| Phenanthrene | BRL | 0.050 | | | | | | | | | |
| Pyrene | BRL | 0.050 | | | | | | | | | |
| Surr: 4-Terphenyl-d14 | 1.797 | 0 | 2.000 | | 89.8 | 58.5 | 125 | | | | |

Sample ID: **LCS-238741** Client ID: Units: **ug/L** Prep Date: **02/28/2017** Run No: **337414**
SampleType: **LCS** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238741** Analysis Date: **03/01/2017** Seq No: **7374583**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 1.819 | 0.50 | 2.000 | | 90.9 | 69.1 | 117 | | | | |
| Acenaphthylene | 1.809 | 1.0 | 2.000 | | 90.4 | 59.7 | 118 | | | | |
| Anthracene | 1.955 | 0.050 | 2.000 | | 97.7 | 64.7 | 121 | | | | |
| Benz(a)anthracene | 2.377 | 0.050 | 2.000 | | 119 | 61.7 | 139 | | | | |
| Benzo(a)pyrene | 1.886 | 0.050 | 2.000 | | 94.3 | 65.1 | 124 | | | | |
| Benzo(b)fluoranthene | 1.852 | 0.10 | 2.000 | | 92.6 | 60.8 | 129 | | | | |

**Qualifiers:**
> Greater than Result value
< Less than Result value
B Analyte detected in the associated method blank
BRL Below reporting limit
E Estimated (value above quantitation range)
H Holding times for preparation or analysis exceeded
J Estimated value detected below Reporting Limit
N Analyte not NELAC certified
R RPD outside limits due to matrix
Rpt Lim Reporting Limit
S Spike Recovery outside limits due to matrix

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702M96

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238741

Sample ID: **LCS-238741** Client ID: Units: **ug/L** Prep Date: **02/28/2017** Run No: **337414**
SampleType: **LCS** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238741** Analysis Date: **03/01/2017** Seq No: **7374583**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | 1.766 | 0.10 | 2.000 | | 88.3 | 60.1 | 129 | | | | |
| Benzo(k)fluoranthene | 1.692 | 0.050 | 2.000 | | 84.6 | 69.6 | 130 | | | | |
| Chrysene | 1.972 | 0.050 | 2.000 | | 98.6 | 76.5 | 127 | | | | |
| Dibenz(a,h)anthracene | 1.833 | 0.10 | 2.000 | | 91.7 | 55.2 | 126 | | | | |
| Fluoranthene | 2.056 | 0.10 | 2.000 | | 103 | 66.5 | 133 | | | | |
| Fluorene | 1.866 | 0.10 | 2.000 | | 93.3 | 66.1 | 122 | | | | |
| Indeno(1,2,3-cd)pyrene | 1.912 | 0.050 | 2.000 | | 95.6 | 58.8 | 132 | | | | |
| Naphthalene | 1.801 | 0.50 | 2.000 | | 90.0 | 60.6 | 120 | | | | |
| Phenanthrene | 1.805 | 0.050 | 2.000 | | 90.3 | 65.9 | 118 | | | | |
| Pyrene | 1.927 | 0.050 | 2.000 | | 96.3 | 70.2 | 129 | | | | |
| Surr: 4-Terphenyl-d14 | 1.789 | 0 | 2.000 | | 89.4 | 58.5 | 125 | | | | |

Sample ID: **1702M96-001BMS** Client ID: **MW-207D-20170223-01** Units: **ug/L** Prep Date: **02/28/2017** Run No: **337414**
SampleType: **MS** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238741** Analysis Date: **03/02/2017** Seq No: **7375197**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 2.389 | 0.50 | 2.000 | 1.359 | 51.5 | 49.7 | 118 | | | | |
| Acenaphthylene | 1.512 | 1.0 | 2.000 | 0.3002 | 60.6 | 56.7 | 120 | | | | |
| Anthracene | 1.441 | 0.050 | 2.000 | 0.02733 | 70.7 | 54.4 | 117 | | | | |
| Benz(a)anthracene | 1.776 | 0.050 | 2.000 | 0.02735 | 87.4 | 52.4 | 135 | | | | |
| Benzo(a)pyrene | 1.414 | 0.050 | 2.000 | | 70.7 | 51.5 | 117 | | | | |
| Benzo(b)fluoranthene | 1.297 | 0.10 | 2.000 | | 64.8 | 45.6 | 124 | | | | |
| Benzo(g,h,i)perylene | 1.275 | 0.10 | 2.000 | | 63.7 | 45.9 | 120 | | | | |
| Benzo(k)fluoranthene | 1.381 | 0.050 | 2.000 | | 69.1 | 51.8 | 122 | | | | |
| Chrysene | 1.523 | 0.050 | 2.000 | 0.02371 | 75.0 | 59.9 | 120 | | | | |
| Dibenz(a,h)anthracene | 1.209 | 0.10 | 2.000 | | 60.4 | 41.6 | 120 | | | | |
| Fluoranthene | 2.569 | 0.10 | 2.000 | 1.149 | 71.0 | 59.7 | 122 | | | | |
| Fluorene | 1.783 | 0.10 | 2.000 | 0.5425 | 62.0 | 57.9 | 117 | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702M96

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238741

Sample ID: **1702M96-001BMS** Client ID: **MW-207D-20170223-01** Units: **ug/L** Prep Date: **02/28/2017** Run No: **337414**
SampleType: **MS** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238741** Analysis Date: **03/02/2017** Seq No: **7375197**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Indeno(1,2,3-cd)pyrene | 1.335 | 0.050 | 2.000 | | 66.7 | 45.5 | 120 | | | | |
| Naphthalene | 1.351 | 0.50 | 2.000 | 0.1394 | 60.6 | 53.9 | 120 | | | | |
| Phenanthrene | 1.357 | 0.050 | 2.000 | | 67.9 | 58.1 | 120 | | | | |
| Pyrene | 3.186 | 0.050 | 2.000 | 1.991 | 59.7 | 61.6 | 120 | | | | S |
| Surr: 4-Terphenyl-d14 | 1.436 | 0 | 2.000 | | 71.8 | 58.5 | 125 | | | | |

Sample ID: **1702M96-001BMSD** Client ID: **MW-207D-20170223-01** Units: **ug/L** Prep Date: **02/28/2017** Run No: **337872**
SampleType: **MSD** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238741** Analysis Date: **03/06/2017** Seq No: **7383097**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 3.093 | 0.50 | 2.000 | 1.359 | 86.7 | 49.7 | 118 | 2.389 | 25.7 | 17.4 | R |
| Acenaphthylene | 1.933 | 1.0 | 2.000 | 0.3002 | 81.6 | 56.7 | 120 | 1.512 | 24.4 | 19.5 | R |
| Anthracene | 1.752 | 0.050 | 2.000 | 0.02733 | 86.2 | 54.4 | 117 | 1.441 | 19.5 | 24.5 | |
| Benz(a)anthracene | 2.149 | 0.050 | 2.000 | 0.02735 | 106 | 52.4 | 135 | 1.776 | 19.0 | 30.2 | |
| Benzo(a)pyrene | 1.680 | 0.050 | 2.000 | | 84.0 | 51.5 | 117 | 1.414 | 17.2 | 25.6 | |
| Benzo(b)fluoranthene | 1.624 | 0.10 | 2.000 | | 81.2 | 45.6 | 124 | 1.297 | 22.5 | 20.9 | R |
| Benzo(g,h,i)perylene | 1.552 | 0.10 | 2.000 | | 77.6 | 45.9 | 120 | 1.275 | 19.6 | 28.6 | |
| Benzo(k)fluoranthene | 1.620 | 0.050 | 2.000 | | 81.0 | 51.8 | 122 | 1.381 | 15.9 | 28.6 | |
| Chrysene | 1.817 | 0.050 | 2.000 | 0.02371 | 89.7 | 59.9 | 120 | 1.523 | 17.6 | 26.4 | |
| Dibenz(a,h)anthracene | 1.485 | 0.10 | 2.000 | | 74.2 | 41.6 | 120 | 1.209 | 20.5 | 17.8 | R |
| Fluoranthene | 3.123 | 0.10 | 2.000 | 1.149 | 98.7 | 59.7 | 122 | 2.569 | 19.5 | 22.1 | |
| Fluorene | 2.299 | 0.10 | 2.000 | 0.5425 | 87.8 | 57.9 | 117 | 1.783 | 25.3 | 20.8 | R |
| Indeno(1,2,3-cd)pyrene | 1.647 | 0.050 | 2.000 | | 82.4 | 45.5 | 120 | 1.335 | 21.0 | 19.3 | R |
| Naphthalene | 1.712 | 0.50 | 2.000 | 0.1394 | 78.6 | 53.9 | 120 | 1.351 | 23.6 | 20.6 | R |
| Phenanthrene | 1.648 | 0.050 | 2.000 | | 82.4 | 58.1 | 120 | 1.357 | 19.3 | 19.4 | |
| Pyrene | 3.819 | 0.050 | 2.000 | 1.991 | 91.4 | 61.6 | 120 | 3.186 | 18.1 | 21.2 | |
| Surr: 4-Terphenyl-d14 | 1.679 | 0 | 2.000 | | 84.0 | 58.5 | 125 | 1.436 | 0 | 0 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702M96

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238785

Sample ID: **MB-238785** Client ID: Units: **ug/L** Prep Date: **03/01/2017** Run No: **337521**
SampleType: **MBLK** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238785** Analysis Date: **03/01/2017** Seq No: **7373956**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | BRL | 0.50 | | | | | | | | | |
| Acenaphthylene | BRL | 1.0 | | | | | | | | | |
| Anthracene | BRL | 0.050 | | | | | | | | | |
| Benz(a)anthracene | BRL | 0.050 | | | | | | | | | |
| Benzo(a)pyrene | BRL | 0.050 | | | | | | | | | |
| Benzo(b)fluoranthene | BRL | 0.10 | | | | | | | | | |
| Benzo(g,h,i)perylene | BRL | 0.10 | | | | | | | | | |
| Benzo(k)fluoranthene | BRL | 0.050 | | | | | | | | | |
| Chrysene | BRL | 0.050 | | | | | | | | | |
| Dibenz(a,h)anthracene | BRL | 0.10 | | | | | | | | | |
| Fluoranthene | BRL | 0.10 | | | | | | | | | |
| Fluorene | BRL | 0.10 | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | | | | | | | | |
| Naphthalene | BRL | 0.50 | | | | | | | | | |
| Phenanthrene | BRL | 0.050 | | | | | | | | | |
| Pyrene | BRL | 0.050 | | | | | | | | | |
| Surr: 4-Terphenyl-d14 | 1.780 | 0 | 2.000 | | 89.0 | 58.5 | 125 | | | | |

Sample ID: **LCS-238785** Client ID: Units: **ug/L** Prep Date: **03/01/2017** Run No: **337521**
SampleType: **LCS** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238785** Analysis Date: **03/01/2017** Seq No: **7374026**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 1.532 | 0.50 | 2.000 | | 76.6 | 69.1 | 117 | | | | |
| Acenaphthylene | 1.491 | 1.0 | 2.000 | | 74.5 | 59.7 | 118 | | | | |
| Anthracene | 1.566 | 0.050 | 2.000 | | 78.3 | 64.7 | 121 | | | | |
| Benz(a)anthracene | 1.595 | 0.050 | 2.000 | 0.01968 | 78.8 | 61.7 | 139 | | | | |
| Benzo(a)pyrene | 1.644 | 0.050 | 2.000 | | 82.2 | 65.1 | 124 | | | | |
| Benzo(b)fluoranthene | 1.771 | 0.10 | 2.000 | 0.02664 | 87.2 | 60.8 | 129 | | | | |

**Qualifiers:**
- > Greater than Result value
- BRL Below reporting limit
- J Estimated value detected below Reporting Limit
- Rpt Lim Reporting Limit
- < Less than Result value
- E Estimated (value above quantitation range)
- N Analyte not NELAC certified
- S Spike Recovery outside limits due to matrix
- B Analyte detected in the associated method blank
- H Holding times for preparation or analysis exceeded
- R RPD outside limits due to matrix

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702M96

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238785

Sample ID: **LCS-238785** Client ID: Units: **ug/L** Prep Date: **03/01/2017** Run No: **337521**
SampleType: **LCS** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238785** Analysis Date: **03/01/2017** Seq No: **7374026**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(g,h,i)perylene | 1.781 | 0.10 | 2.000 | | 89.0 | 60.1 | 129 | | | | |
| Benzo(k)fluoranthene | 1.797 | 0.050 | 2.000 | 0.03083 | 88.3 | 69.6 | 130 | | | | |
| Chrysene | 1.623 | 0.050 | 2.000 | 0.01833 | 80.3 | 76.5 | 127 | | | | |
| Dibenz(a,h)anthracene | 1.638 | 0.10 | 2.000 | | 81.9 | 55.2 | 126 | | | | |
| Fluoranthene | 1.662 | 0.10 | 2.000 | 0.02468 | 81.9 | 66.5 | 133 | | | | |
| Fluorene | 1.571 | 0.10 | 2.000 | | 78.6 | 66.1 | 122 | | | | |
| Indeno(1,2,3-cd)pyrene | 1.635 | 0.050 | 2.000 | 0.01925 | 80.8 | 58.8 | 132 | | | | |
| Naphthalene | 1.429 | 0.50 | 2.000 | | 71.4 | 60.6 | 120 | | | | |
| Phenanthrene | 1.571 | 0.050 | 2.000 | | 78.6 | 65.9 | 118 | | | | |
| Pyrene | 1.494 | 0.050 | 2.000 | 0.02836 | 73.3 | 70.2 | 129 | | | | |
| Surr: 4-Terphenyl-d14 | 1.549 | 0 | 2.000 | | 77.4 | 58.5 | 125 | | | | |

Sample ID: **1702O89-003BMS** Client ID: Units: **ug/L** Prep Date: **03/01/2017** Run No: **337521**
SampleType: **MS** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238785** Analysis Date: **03/01/2017** Seq No: **7375399**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 1.728 | 0.50 | 2.000 | | 86.4 | 49.7 | 118 | | | | |
| Acenaphthylene | 1.625 | 1.0 | 2.000 | | 81.3 | 56.7 | 120 | | | | |
| Anthracene | 1.702 | 0.050 | 2.000 | | 85.1 | 54.4 | 117 | | | | |
| Benz(a)anthracene | 1.835 | 0.050 | 2.000 | | 91.8 | 52.4 | 135 | | | | |
| Benzo(a)pyrene | 1.741 | 0.050 | 2.000 | | 87.0 | 51.5 | 117 | | | | |
| Benzo(b)fluoranthene | 1.970 | 0.10 | 2.000 | | 98.5 | 45.6 | 124 | | | | |
| Benzo(g,h,i)perylene | 1.721 | 0.10 | 2.000 | | 86.1 | 45.9 | 120 | | | | |
| Benzo(k)fluoranthene | 1.707 | 0.050 | 2.000 | | 85.4 | 51.8 | 122 | | | | |
| Chrysene | 1.737 | 0.050 | 2.000 | | 86.8 | 59.9 | 120 | | | | |
| Dibenz(a,h)anthracene | 1.661 | 0.10 | 2.000 | | 83.1 | 41.6 | 120 | | | | |
| Fluoranthene | 1.815 | 0.10 | 2.000 | | 90.8 | 59.7 | 122 | | | | |
| Fluorene | 1.721 | 0.10 | 2.000 | | 86.0 | 57.9 | 117 | | | | |

**Qualifiers:**
> Greater than Result value
< Less than Result value
B Analyte detected in the associated method blank
BRL Below reporting limit
E Estimated (value above quantitation range)
H Holding times for preparation or analysis exceeded
J Estimated value detected below Reporting Limit
N Analyte not NELAC certified
R RPD outside limits due to matrix
Rpt Lim Reporting Limit
S Spike Recovery outside limits due to matrix

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702M96

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238785

Sample ID: **1702O89-003BMS** Client ID: Units: **ug/L** Prep Date: **03/01/2017** Run No: **337521**
SampleType: **MS** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238785** Analysis Date: **03/01/2017** Seq No: **7375399**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Indeno(1,2,3-cd)pyrene | 1.641 | 0.050 | 2.000 | | 82.0 | 45.5 | 120 | | | | |
| Naphthalene | 1.600 | 0.50 | 2.000 | | 80.0 | 53.9 | 120 | | | | |
| Phenanthrene | 1.716 | 0.050 | 2.000 | | 85.8 | 58.1 | 120 | | | | |
| Pyrene | 1.818 | 0.050 | 2.000 | | 90.9 | 61.6 | 120 | | | | |
| Surr: 4-Terphenyl-d14 | 1.639 | 0 | 2.000 | | 81.9 | 58.5 | 125 | | | | |

Sample ID: **1702O89-003BMSD** Client ID: Units: **ug/L** Prep Date: **03/01/2017** Run No: **337521**
SampleType: **MSD** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238785** Analysis Date: **03/01/2017** Seq No: **7375400**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 1.666 | 0.50 | 2.000 | | 83.3 | 49.7 | 118 | 1.728 | 3.65 | 17.4 | |
| Acenaphthylene | 1.589 | 1.0 | 2.000 | | 79.5 | 56.7 | 120 | 1.625 | 2.26 | 19.5 | |
| Anthracene | 1.627 | 0.050 | 2.000 | | 81.3 | 54.4 | 117 | 1.702 | 4.51 | 24.5 | |
| Benz(a)anthracene | 1.743 | 0.050 | 2.000 | | 87.1 | 52.4 | 135 | 1.835 | 5.17 | 30.2 | |
| Benzo(a)pyrene | 1.620 | 0.050 | 2.000 | | 81.0 | 51.5 | 117 | 1.741 | 7.20 | 25.6 | |
| Benzo(b)fluoranthene | 1.838 | 0.10 | 2.000 | | 91.9 | 45.6 | 124 | 1.970 | 6.93 | 20.9 | |
| Benzo(g,h,i)perylene | 1.647 | 0.10 | 2.000 | | 82.3 | 45.9 | 120 | 1.721 | 4.42 | 28.6 | |
| Benzo(k)fluoranthene | 1.797 | 0.050 | 2.000 | | 89.8 | 51.8 | 122 | 1.707 | 5.09 | 28.6 | |
| Chrysene | 1.703 | 0.050 | 2.000 | | 85.2 | 59.9 | 120 | 1.737 | 1.92 | 26.4 | |
| Dibenz(a,h)anthracene | 1.586 | 0.10 | 2.000 | | 79.3 | 41.6 | 120 | 1.661 | 4.59 | 17.8 | |
| Fluoranthene | 1.755 | 0.10 | 2.000 | | 87.8 | 59.7 | 122 | 1.815 | 3.37 | 22.1 | |
| Fluorene | 1.741 | 0.10 | 2.000 | | 87.0 | 57.9 | 117 | 1.721 | 1.16 | 20.8 | |
| Indeno(1,2,3-cd)pyrene | 1.576 | 0.050 | 2.000 | | 78.8 | 45.5 | 120 | 1.641 | 4.04 | 19.3 | |
| Naphthalene | 1.531 | 0.50 | 2.000 | | 76.5 | 53.9 | 120 | 1.600 | 4.40 | 20.6 | |
| Phenanthrene | 1.662 | 0.050 | 2.000 | | 83.1 | 58.1 | 120 | 1.716 | 3.17 | 19.4 | |
| Pyrene | 1.555 | 0.050 | 2.000 | | 77.7 | 61.6 | 120 | 1.818 | 15.6 | 21.2 | |
| Surr: 4-Terphenyl-d14 | 1.635 | 0 | 2.000 | | 81.8 | 58.5 | 125 | 1.639 | 0 | 0 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702M96

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238787

Sample ID: **MB-238787** Client ID: Units: **ug/L** Prep Date: **03/01/2017** Run No: **337631**
SampleType: **MBLK** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238787** Analysis Date: **03/02/2017** Seq No: **7377210**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,4-Dimethylphenol | BRL | 10 | | | | | | | | | |
| 2-Methylphenol | BRL | 10 | | | | | | | | | |
| 3,4-Methylphenol | BRL | 10 | | | | | | | | | |
| Phenol | BRL | 10 | | | | | | | | | |
| Surr: 2,4,6-Tribromophenol | 125.1 | 0 | 100.0 | | 125 | 50 | 142 | | | | |
| Surr: 2-Fluorobiphenyl | 50.50 | 0 | 50.00 | | 101 | 46 | 124 | | | | |
| Surr: 2-Fluorophenol | 49.95 | 0 | 100.0 | | 50.0 | 25.3 | 120 | | | | |
| Surr: 4-Terphenyl-d14 | 54.48 | 0 | 50.00 | | 109 | 45.1 | 133 | | | | |
| Surr: Nitrobenzene-d5 | 48.64 | 0 | 50.00 | | 97.3 | 40.1 | 121 | | | | |
| Surr: Phenol-d5 | 30.19 | 0 | 100.0 | | 30.2 | 16.3 | 120 | | | | |

Sample ID: **LCS-238787** Client ID: Units: **ug/L** Prep Date: **03/01/2017** Run No: **337631**
SampleType: **LCS** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238787** Analysis Date: **03/02/2017** Seq No: **7377211**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | 41.32 | 10 | 100.0 | | 41.3 | 25 | 120 | | | | |
| Surr: 2,4,6-Tribromophenol | 137.6 | 0 | 100.0 | | 138 | 50 | 142 | | | | |
| Surr: 2-Fluorobiphenyl | 51.79 | 0 | 50.00 | | 104 | 46 | 124 | | | | |
| Surr: 2-Fluorophenol | 62.56 | 0 | 100.0 | | 62.6 | 25.3 | 120 | | | | |
| Surr: 4-Terphenyl-d14 | 57.57 | 0 | 50.00 | | 115 | 45.1 | 133 | | | | |
| Surr: Nitrobenzene-d5 | 46.92 | 0 | 50.00 | | 93.8 | 40.1 | 121 | | | | |
| Surr: Phenol-d5 | 44.53 | 0 | 100.0 | | 44.5 | 16.3 | 120 | | | | |

Sample ID: **1702N65-001AMS** Client ID: Units: **ug/L** Prep Date: **03/01/2017** Run No: **337631**
SampleType: **MS** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238787** Analysis Date: **03/02/2017** Seq No: **7377213**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | 32.32 | 10 | 100.0 | | 32.3 | 31.5 | 120 | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702M96

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238787

Sample ID: **1702N65-001AMS** Client ID: Units: **ug/L** Prep Date: **03/01/2017** Run No: **337631**
SampleType: **MS** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238787** Analysis Date: **03/02/2017** Seq No: **7377213**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Surr: 2,4,6-Tribromophenol | 86.85 | 0 | 100.0 | | 86.8 | 50 | 142 | | | | |
| Surr: 2-Fluorobiphenyl | 45.65 | 0 | 50.00 | | 91.3 | 46 | 124 | | | | |
| Surr: 2-Fluorophenol | 45.62 | 0 | 100.0 | | 45.6 | 25.3 | 120 | | | | |
| Surr: 4-Terphenyl-d14 | 49.10 | 0 | 50.00 | | 98.2 | 45.1 | 133 | | | | |
| Surr: Nitrobenzene-d5 | 41.52 | 0 | 50.00 | | 83.0 | 40.1 | 121 | | | | |
| Surr: Phenol-d5 | 32.98 | 0 | 100.0 | | 33.0 | 16.3 | 120 | | | | |

Sample ID: **1702N65-001AMSD** Client ID: Units: **ug/L** Prep Date: **03/01/2017** Run No: **337631**
SampleType: **MSD** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238787** Analysis Date: **03/02/2017** Seq No: **7377214**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | 31.07 | 10 | 100.0 | | 31.1 | 31.5 | 120 | 32.32 | 3.94 | 28.5 | S |
| Surr: 2,4,6-Tribromophenol | 78.94 | 0 | 100.0 | | 78.9 | 50 | 142 | 86.85 | 0 | 0 | |
| Surr: 2-Fluorobiphenyl | 42.33 | 0 | 50.00 | | 84.7 | 46 | 124 | 45.65 | 0 | 0 | |
| Surr: 2-Fluorophenol | 42.93 | 0 | 100.0 | | 42.9 | 25.3 | 120 | 45.62 | 0 | 0 | |
| Surr: 4-Terphenyl-d14 | 47.32 | 0 | 50.00 | | 94.6 | 45.1 | 133 | 49.10 | 0 | 0 | |
| Surr: Nitrobenzene-d5 | 39.10 | 0 | 50.00 | | 78.2 | 40.1 | 121 | 41.52 | 0 | 0 | |
| Surr: Phenol-d5 | 32.45 | 0 | 100.0 | | 32.4 | 16.3 | 120 | 32.98 | 0 | 0 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702M96

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238923

Sample ID: **MB-238923** Client ID: Units: **ug/L** Prep Date: **03/02/2017** Run No: **337667**
SampleType: **MBLK** TestCode: **Volatile Organic Compounds by GC/MS SW8260B** BatchID: **238923** Analysis Date: **03/02/2017** Seq No: **7377832**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | BRL | 5.0 | | | | | | | | | |
| Carbon disulfide | BRL | 5.0 | | | | | | | | | |
| Ethylbenzene | BRL | 5.0 | | | | | | | | | |
| Toluene | BRL | 5.0 | | | | | | | | | |
| Xylenes, Total | BRL | 5.0 | | | | | | | | | |
| Surr: 4-Bromofluorobenzene | 47.00 | 0 | 50.00 | | 94.0 | 66.1 | 129 | | | | |
| Surr: Dibromofluoromethane | 47.63 | 0 | 50.00 | | 95.3 | 83.6 | 123 | | | | |
| Surr: Toluene-d8 | 48.50 | 0 | 50.00 | | 97.0 | 81.8 | 118 | | | | |

Sample ID: **LCS-238923** Client ID: Units: **ug/L** Prep Date: **03/02/2017** Run No: **337667**
SampleType: **LCS** TestCode: **Volatile Organic Compounds by GC/MS SW8260B** BatchID: **238923** Analysis Date: **03/02/2017** Seq No: **7377831**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 50.89 | 5.0 | 50.00 | | 102 | 74 | 125 | | | | |
| Toluene | 52.34 | 5.0 | 50.00 | | 105 | 75.9 | 126 | | | | |
| Surr: 4-Bromofluorobenzene | 47.12 | 0 | 50.00 | | 94.2 | 66.1 | 129 | | | | |
| Surr: Dibromofluoromethane | 47.27 | 0 | 50.00 | | 94.5 | 83.6 | 123 | | | | |
| Surr: Toluene-d8 | 48.74 | 0 | 50.00 | | 97.5 | 81.8 | 118 | | | | |

Sample ID: **1702M96-027AMS** Client ID: **DUP-05-20170224-01** Units: **ug/L** Prep Date: **03/02/2017** Run No: **337667**
SampleType: **MS** TestCode: **Volatile Organic Compounds by GC/MS SW8260B** BatchID: **238923** Analysis Date: **03/03/2017** Seq No: **7377847**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 6774 | 250 | 2500 | 4330 | 97.8 | 71.6 | 132 | | | | |
| Toluene | 2462 | 250 | 2500 | | 98.5 | 72.5 | 135 | | | | |
| Surr: 4-Bromofluorobenzene | 2350 | 0 | 2500 | | 94.0 | 66.1 | 129 | | | | |
| Surr: Dibromofluoromethane | 2339 | 0 | 2500 | | 93.6 | 83.6 | 123 | | | | |
| Surr: Toluene-d8 | 2431 | 0 | 2500 | | 97.2 | 81.8 | 118 | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702M96

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** **238923**

Sample ID: **1702M96-027AMSD** Client ID: **DUP-05-20170224-01** Units: **ug/L** Prep Date: **03/02/2017** Run No: **337667**
SampleType: **MSD** TestCode: **Volatile Organic Compounds by GC/MS SW8260B** BatchID: **238923** Analysis Date: **03/03/2017** Seq No: **7377848**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 6730 | 250 | 2500 | 4330 | 96.0 | 71.6 | 132 | 6774 | 0.652 | 20.7 | |
| Toluene | 2469 | 250 | 2500 | | 98.8 | 72.5 | 135 | 2462 | 0.264 | 23.2 | |
| Surr: 4-Bromofluorobenzene | 2318 | 0 | 2500 | | 92.7 | 66.1 | 129 | 2350 | 0 | 0 | |
| Surr: Dibromofluoromethane | 2338 | 0 | 2500 | | 93.5 | 83.6 | 123 | 2339 | 0 | 0 | |
| Surr: Toluene-d8 | 2428 | 0 | 2500 | | 97.1 | 81.8 | 118 | 2431 | 0 | 0 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702M96

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238968

Sample ID: **MB-238968** Client ID: Units: **ug/L** Prep Date: **03/02/2017** Run No: **337661**
SampleType: **MBLK** TestCode: **Volatile Organic Compounds by GC/MS SW8260B** BatchID: **238968** Analysis Date: **03/02/2017** Seq No: **7378914**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | BRL | 5.0 | | | | | | | | | |
| Carbon disulfide | BRL | 5.0 | | | | | | | | | |
| Ethylbenzene | BRL | 5.0 | | | | | | | | | |
| Toluene | BRL | 5.0 | | | | | | | | | |
| Xylenes, Total | BRL | 5.0 | | | | | | | | | |
| Surr: 4-Bromofluorobenzene | 40.01 | 0 | 50.00 | | 80.0 | 66.1 | 129 | | | | |
| Surr: Dibromofluoromethane | 46.63 | 0 | 50.00 | | 93.3 | 83.6 | 123 | | | | |
| Surr: Toluene-d8 | 45.66 | 0 | 50.00 | | 91.3 | 81.8 | 118 | | | | |

Sample ID: **LCS-238968** Client ID: Units: **ug/L** Prep Date: **03/02/2017** Run No: **337661**
SampleType: **LCS** TestCode: **Volatile Organic Compounds by GC/MS SW8260B** BatchID: **238968** Analysis Date: **03/02/2017** Seq No: **7378915**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 51.48 | 5.0 | 50.00 | | 103 | 74 | 125 | | | | |
| Toluene | 50.71 | 5.0 | 50.00 | | 101 | 75.9 | 126 | | | | |
| Surr: 4-Bromofluorobenzene | 42.72 | 0 | 50.00 | | 85.4 | 66.1 | 129 | | | | |
| Surr: Dibromofluoromethane | 45.23 | 0 | 50.00 | | 90.5 | 83.6 | 123 | | | | |
| Surr: Toluene-d8 | 45.71 | 0 | 50.00 | | 91.4 | 81.8 | 118 | | | | |

Sample ID: **1702M96-002AMS** Client ID: **MW-302DD-20170223-01** Units: **ug/L** Prep Date: **03/02/2017** Run No: **337661**
SampleType: **MS** TestCode: **Volatile Organic Compounds by GC/MS SW8260B** BatchID: **238968** Analysis Date: **03/02/2017** Seq No: **7378921**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 2381 | 250 | 2500 | | 95.2 | 71.6 | 132 | | | | |
| Toluene | 2323 | 250 | 2500 | | 92.9 | 72.5 | 135 | | | | |
| Surr: 4-Bromofluorobenzene | 2312 | 0 | 2500 | | 92.5 | 66.1 | 129 | | | | |
| Surr: Dibromofluoromethane | 2218 | 0 | 2500 | | 88.7 | 83.6 | 123 | | | | |
| Surr: Toluene-d8 | 2336 | 0 | 2500 | | 93.5 | 81.8 | 118 | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702M96

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238968

Sample ID: **1702M96-002AMSD** Client ID: **MW-302DD-20170223-01** Units: **ug/L** Prep Date: **03/02/2017** Run No: **337661**
SampleType: **MSD** TestCode: **Volatile Organic Compounds by GC/MS SW8260B** BatchID: **238968** Analysis Date: **03/02/2017** Seq No: **7378922**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 2260 | 250 | 2500 | | 90.4 | 71.6 | 132 | 2381 | 5.24 | 20.7 | |
| Toluene | 2224 | 250 | 2500 | | 89.0 | 72.5 | 135 | 2323 | 4.35 | 23.2 | |
| Surr: 4-Bromofluorobenzene | 2093 | 0 | 2500 | | 83.7 | 66.1 | 129 | 2312 | 0 | 0 | |
| Surr: Dibromofluoromethane | 2336 | 0 | 2500 | | 93.4 | 83.6 | 123 | 2218 | 0 | 0 | |
| Surr: Toluene-d8 | 2252 | 0 | 2500 | | 90.1 | 81.8 | 118 | 2336 | 0 | 0 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

ANALYTICAL ENVIRONMENTAL SERVICES, INC.

AES

March 09, 2017

Adria Reimer
ERM-Southeast
3200 Windy Hill Rd
Atlanta GA 30339

TEL: (678) 486-2700
FAX: (404) 745-0103

RE: AGLC Macon

Dear Adria Reimer: Order No: 1702O89

Analytical Environmental Services, Inc. received 7 samples on February 28, 2017 5:30 pm for the analyses presented in following report.

No problems were encountered during the analyses. Additionally, all results for the associated Quality Control samples were within EPA and/or AES established limits. Any discrepancies associated with the analyses contained herein will be noted and submitted in the form of a project Case Narrative.
AES's accreditations are as follows:
-NELAC/Florida State Laboratory ID E87582 for analysis of Non-Potable Water, Solid & Chemical Materials, and Drinking Water Microbiology, effective 07/01/16-06/30/17.
-NELAC/Louisiana Agency Interest No. 100818 for or analysis of Non-Potable Water and Solid & Chemical Materials, effective 07/01/16-06/30/17.
-AIHA-LAP, LLC Laboratory ID: 100671 for Industrial Hygiene samples (Organics, Metals, PCM Asbestos, Gravimetric), Environmental Lead (Paint, Soil, Dust Wipes, Air), and Environmental Microbiology (Fungal) Direct Examination, effective until 09/01/17.

These results relate only to the items tested. This report may only be reproduced in full.

Mirzeta Kararic

Mirzeta Kararic
Project Manager

ANALYTICAL ENVIRONMENTAL SERVICES, INC
3080 Presidential Drive, Atlanta GA 30340-3704
AES TEL.: (770) 457-8177 / TOLL-FREE (800) 972-4889 / FAX: (770) 457-8188

# CHAIN OF CUSTODY

Work Order: 170208a

Date: 2/28/17 Page 1 of 1

COMPANY: ERM

ADDRESS: 3200 Windy Hill Rd ATL, GA 30339

PHONE: 678-486-2700

FAX:

SAMPLED BY: KS, MR, CH

SIGNATURE:

ANALYSIS REQUESTED: 8260B, 8270C

Visit our website www.aesatlanta.com to check on the status of your results, place bottle orders, etc.

| # | SAMPLE ID | SAMPLED DATE | SAMPLED TIME | Grab | Composite | Matrix (See codes) | 8260B (PRESERVATION: HCl) | 8270C (PRESERVATION: I) | REMARKS | No # of Containers |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-24D-20170228-01 | 2/28/17 | 1000 | X | | GW | 2 | 2 | | 4 |
| 2 | MW-21-20170227-01 | 2/27/17 | 1300 | X | | | 2 | 2 | | 4 |
| 3 | MW-102-20170227-01 | ↓ | 1010 | X | | | 6 | 6 | MS/MSD | 12 |
| 4 | MW-206D-20170227-01 | ↓ | 1030 | X | | | 2 | 2 | | 4 |
| 5 | MW-305D-20170227-01 | ↓ | 1200 | X | | | 2 | 2 | | 4 |
| 6 | TB-01-20170228-01 | 2/28/17 | — | | | W | 2 | | | 2 |
| 7 | TB-02-20170228-01 | 2/28/17 | | | | W | 2 | | | 2 |
| 8 | | | | | | | | | | |
| 9 | | | | | | | | | | |
| 10 | | | | | | | | | | |
| 11 | | | | | | | | | | |
| 12 | | | | | | | | | | |
| 13 | | | | | | | | | | |
| 14 | | | | | | | | | | |

| RELINQUISHED BY | DATE/TIME | RECEIVED BY | DATE/TIME |
|---|---|---|---|
| 1: | 2/28/17 1730 | 1: | 2/28/17 1730 |
| 2: | | 2: | |
| 3: | | 3: | |

PROJECT INFORMATION
PROJECT NAME: AGL Macon
PROJECT #:
SITE ADDRESS: Walnut St.
SEND REPORT TO: adria.reimer@erm.com
INVOICE TO: (IF DIFFERENT FROM ABOVE)
QUOTE #: PO#: 0366660

RECEIPT
Total # of Containers: 32

Turnaround Time Request
- [x] Standard 5 Business Days
- [ ] 2 Business Day Rush
- [ ] Next Business Day Rush
- [ ] Same Day Rush (auth req.)
- [ ] Other

STATE PROGRAM (if any):
E-mail? Y / N; Fax? Y / N
DATA PACKAGE: I II III IV

SPECIAL INSTRUCTIONS/COMMENTS:

SHIPMENT METHOD
OUT / / VIA:
IN / / VIA:
CLIENT FedEx UPS MAIL COURIER GREYHOUND OTHER

SAMPLES RECEIVED AFTER 3PM OR ON SATURDAY ARE CONSIDERED RECEIVED THE NEXT BUSINESS DAY. IF TURNAROUND TIME IS NOT INDICATED, AES WILL PROCEED WITH STANDARD TAT OF SAMPLES. SAMPLES ARE DISPOSED 30 DAYS AFTER REPORT COMPLETION UNLESS OTHER ARRANGEMENTS ARE MADE.

MATRIX CODES: A = Air GW = Groundwater SE = Sediment SO = Soil SW = Surface Water W = Water (Blanks) DW = Drinking Water (Blanks) O = Other (specify) WW = Waste Water
PRESERVATIVE CODES: H+I = Hydrochloric acid + ice I = Ice only N = Nitric acid S+I = Sulfuric acid + ice S/M+I = Sodium Bisulfate/Methanol + ice O = Other (specify) NA = None

White Copy - Original; Yellow Copy - Client

**Client:** ERM-Southeast
**Project:** AGLC Macon
**Lab ID:** 1702O89

# Case Narrative

Volatile Organic Compounds Analysis by Method 8260B:

Due to sample matrix, sample 1702O89-005A required dilution during preparation and/or analysis resulting in elevated reporting limits.

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-24D-20170228-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/28/2017 10:00:00 AM |
| **Lab ID:** | 1702O89-001 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 20:53 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 20:53 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 20:53 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 20:53 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 20:53 | NP |
| Surr: 4-Bromofluorobenzene | 94.3 | 66.1-129 | | %REC | 238866 | 1 | 03/03/2017 20:53 | NP |
| Surr: Dibromofluoromethane | 98.1 | 83.6-123 | | %REC | 238866 | 1 | 03/03/2017 20:53 | NP |
| Surr: Toluene-d8 | 99.1 | 81.8-118 | | %REC | 238866 | 1 | 03/03/2017 20:53 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 20:31 | RF |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238785 | 1 | 03/01/2017 20:31 | RF |
| Acenaphthene | BRL | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 20:31 | RF |
| Fluorene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 20:31 | RF |
| Phenanthrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 20:31 | RF |
| Anthracene | 0.17 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 20:31 | RF |
| Fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 20:31 | RF |
| Pyrene | 0.055 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 20:31 | RF |
| Benz(a)anthracene | 0.56 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 20:31 | RF |
| Chrysene | 0.53 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 20:31 | RF |
| Benzo(b)fluoranthene | 1.1 | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 20:31 | RF |
| Benzo(k)fluoranthene | 1.0 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 20:31 | RF |
| Benzo(a)pyrene | 0.98 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 20:31 | RF |
| Indeno(1,2,3-cd)pyrene | 1.0 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 20:31 | RF |
| Dibenz(a,h)anthracene | 1.0 | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 20:31 | RF |
| Benzo(g,h,i)perylene | 1.1 | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 20:31 | RF |
| Surr: 4-Terphenyl-d14 | 80.5 | 58.5-125 | | %REC | 238785 | 1 | 03/01/2017 20:31 | RF |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238858 | 1 | 03/04/2017 00:55 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238858 | 1 | 03/04/2017 00:55 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238858 | 1 | 03/04/2017 00:55 | YH |
| Phenol | BRL | 10 | | ug/L | 238858 | 1 | 03/04/2017 00:55 | YH |
| Surr: 2,4,6-Tribromophenol | 84.3 | 50-142 | | %REC | 238858 | 1 | 03/04/2017 00:55 | YH |
| Surr: 2-Fluorobiphenyl | 71.4 | 46-124 | | %REC | 238858 | 1 | 03/04/2017 00:55 | YH |
| Surr: 2-Fluorophenol | 50.2 | 25.3-120 | | %REC | 238858 | 1 | 03/04/2017 00:55 | YH |
| Surr: 4-Terphenyl-d14 | 83.4 | 45.1-133 | | %REC | 238858 | 1 | 03/04/2017 00:55 | YH |
| Surr: Nitrobenzene-d5 | 72.2 | 40.1-121 | | %REC | 238858 | 1 | 03/04/2017 00:55 | YH |
| Surr: Phenol-d5 | 32.8 | 16.3-120 | | %REC | 238858 | 1 | 03/04/2017 00:55 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

**Analytical Environmental Services, Inc** **Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-21-20170227-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/27/2017 1:00:00 PM |
| **Lab ID:** | 1702O89-002 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 21:18 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 21:18 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 21:18 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 21:18 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 21:18 | NP |
| Surr: 4-Bromofluorobenzene | 95.5 | 66.1-129 | | %REC | 238866 | 1 | 03/03/2017 21:18 | NP |
| Surr: Dibromofluoromethane | 99.8 | 83.6-123 | | %REC | 238866 | 1 | 03/03/2017 21:18 | NP |
| Surr: Toluene-d8 | 101 | 81.8-118 | | %REC | 238866 | 1 | 03/03/2017 21:18 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 20:59 | RF |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238785 | 1 | 03/01/2017 20:59 | RF |
| Acenaphthene | BRL | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 20:59 | RF |
| Fluorene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 20:59 | RF |
| Phenanthrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 20:59 | RF |
| Anthracene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 20:59 | RF |
| Fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 20:59 | RF |
| Pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 20:59 | RF |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 20:59 | RF |
| Chrysene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 20:59 | RF |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 20:59 | RF |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 20:59 | RF |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 20:59 | RF |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 20:59 | RF |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 20:59 | RF |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 20:59 | RF |
| Surr: 4-Terphenyl-d14 | 92.9 | 58.5-125 | | %REC | 238785 | 1 | 03/01/2017 20:59 | RF |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238858 | 1 | 03/04/2017 01:21 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238858 | 1 | 03/04/2017 01:21 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238858 | 1 | 03/04/2017 01:21 | YH |
| Phenol | BRL | 10 | | ug/L | 238858 | 1 | 03/04/2017 01:21 | YH |
| Surr: 2,4,6-Tribromophenol | 79.9 | 50-142 | | %REC | 238858 | 1 | 03/04/2017 01:21 | YH |
| Surr: 2-Fluorobiphenyl | 65.2 | 46-124 | | %REC | 238858 | 1 | 03/04/2017 01:21 | YH |
| Surr: 2-Fluorophenol | 50 | 25.3-120 | | %REC | 238858 | 1 | 03/04/2017 01:21 | YH |
| Surr: 4-Terphenyl-d14 | 79.7 | 45.1-133 | | %REC | 238858 | 1 | 03/04/2017 01:21 | YH |
| Surr: Nitrobenzene-d5 | 66 | 40.1-121 | | %REC | 238858 | 1 | 03/04/2017 01:21 | YH |
| Surr: Phenol-d5 | 33.9 | 16.3-120 | | %REC | 238858 | 1 | 03/04/2017 01:21 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-102-20170227-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/27/2017 10:10:00 AM |
| **Lab ID:** | 1702O89-003 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 19:37 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 19:37 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 19:37 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 19:37 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 19:37 | NP |
| Surr: 4-Bromofluorobenzene | 94.5 | 66.1-129 | | %REC | 238866 | 1 | 03/03/2017 19:37 | NP |
| Surr: Dibromofluoromethane | 98.7 | 83.6-123 | | %REC | 238866 | 1 | 03/03/2017 19:37 | NP |
| Surr: Toluene-d8 | 99.3 | 81.8-118 | | %REC | 238866 | 1 | 03/03/2017 19:37 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | BRL | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 21:27 | RF |
| Acenaphthylene | BRL | 1.0 | | ug/L | 238785 | 1 | 03/01/2017 21:27 | RF |
| Acenaphthene | BRL | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 21:27 | RF |
| Fluorene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 21:27 | RF |
| Phenanthrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 21:27 | RF |
| Anthracene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 21:27 | RF |
| Fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 21:27 | RF |
| Pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 21:27 | RF |
| Benz(a)anthracene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 21:27 | RF |
| Chrysene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 21:27 | RF |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 21:27 | RF |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 21:27 | RF |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 21:27 | RF |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 21:27 | RF |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 21:27 | RF |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 21:27 | RF |
| Surr: 4-Terphenyl-d14 | 84.4 | 58.5-125 | | %REC | 238785 | 1 | 03/01/2017 21:27 | RF |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238858 | 1 | 03/04/2017 01:47 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238858 | 1 | 03/04/2017 01:47 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238858 | 1 | 03/04/2017 01:47 | YH |
| Phenol | BRL | 10 | | ug/L | 238858 | 1 | 03/04/2017 01:47 | YH |
| Surr: 2,4,6-Tribromophenol | 86.3 | 50-142 | | %REC | 238858 | 1 | 03/04/2017 01:47 | YH |
| Surr: 2-Fluorobiphenyl | 74.2 | 46-124 | | %REC | 238858 | 1 | 03/04/2017 01:47 | YH |
| Surr: 2-Fluorophenol | 56.4 | 25.3-120 | | %REC | 238858 | 1 | 03/04/2017 01:47 | YH |
| Surr: 4-Terphenyl-d14 | 89.8 | 45.1-133 | | %REC | 238858 | 1 | 03/04/2017 01:47 | YH |
| Surr: Nitrobenzene-d5 | 74.6 | 40.1-121 | | %REC | 238858 | 1 | 03/04/2017 01:47 | YH |
| Surr: Phenol-d5 | 39 | 16.3-120 | | %REC | 238858 | 1 | 03/04/2017 01:47 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-206D-20170227-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/27/2017 10:30:00 AM |
| **Lab ID:** | 1702O89-004 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | 19 | 5.0 | | ug/L | 238866 | 1 | 03/06/2017 14:18 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238866 | 1 | 03/06/2017 14:18 | NP |
| Ethylbenzene | 89 | 5.0 | | ug/L | 238866 | 1 | 03/06/2017 14:18 | NP |
| Toluene | 6.3 | 5.0 | | ug/L | 238866 | 1 | 03/06/2017 14:18 | NP |
| Xylenes, Total | 11 | 5.0 | | ug/L | 238866 | 1 | 03/06/2017 14:18 | NP |
| Surr: 4-Bromofluorobenzene | 93.9 | 66.1-129 | | %REC | 238866 | 1 | 03/06/2017 14:18 | NP |
| Surr: Dibromofluoromethane | 99.7 | 83.6-123 | | %REC | 238866 | 1 | 03/06/2017 14:18 | NP |
| Surr: Toluene-d8 | 98.9 | 81.8-118 | | %REC | 238866 | 1 | 03/06/2017 14:18 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | 530 | 5.0 | | ug/L | 238785 | 100 | 03/02/2017 09:24 | RF |
| Acenaphthylene | 1.5 | 1.0 | | ug/L | 238785 | 1 | 03/01/2017 22:51 | RF |
| Acenaphthene | 30 | 5.0 | | ug/L | 238785 | 100 | 03/02/2017 09:24 | RF |
| Fluorene | 9.5 | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 22:51 | RF |
| Phenanthrene | 3.5 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 22:51 | RF |
| Anthracene | 0.55 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 22:51 | RF |
| Fluoranthene | 1.3 | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 22:51 | RF |
| Pyrene | 3.3 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 22:51 | RF |
| Benz(a)anthracene | 0.081 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 22:51 | RF |
| Chrysene | 0.057 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 22:51 | RF |
| Benzo(b)fluoranthene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 22:51 | RF |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 22:51 | RF |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 22:51 | RF |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 22:51 | RF |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 22:51 | RF |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 22:51 | RF |
| Surr: 4-Terphenyl-d14 | 77.5 | 58.5-125 | | %REC | 238785 | 1 | 03/01/2017 22:51 | RF |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238858 | 1 | 03/04/2017 02:13 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238858 | 1 | 03/04/2017 02:13 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238858 | 1 | 03/04/2017 02:13 | YH |
| Phenol | BRL | 10 | | ug/L | 238858 | 1 | 03/04/2017 02:13 | YH |
| Surr: 2,4,6-Tribromophenol | 87.1 | 50-142 | | %REC | 238858 | 1 | 03/04/2017 02:13 | YH |
| Surr: 2-Fluorobiphenyl | 71.1 | 46-124 | | %REC | 238858 | 1 | 03/04/2017 02:13 | YH |
| Surr: 2-Fluorophenol | 49.8 | 25.3-120 | | %REC | 238858 | 1 | 03/04/2017 02:13 | YH |
| Surr: 4-Terphenyl-d14 | 77.6 | 45.1-133 | | %REC | 238858 | 1 | 03/04/2017 02:13 | YH |
| Surr: Nitrobenzene-d5 | 67.4 | 40.1-121 | | %REC | 238858 | 1 | 03/04/2017 02:13 | YH |
| Surr: Phenol-d5 | 34.2 | 16.3-120 | | %REC | 238858 | 1 | 03/04/2017 02:13 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

**Analytical Environmental Services, Inc** **Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-305D-20170227-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/27/2017 12:00:00 PM |
| **Lab ID:** | 1702O89-005 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | 9600 | 2500 | | ug/L | 238866 | 500 | 03/03/2017 18:45 | NP |
| Carbon disulfide | BRL | 250 | | ug/L | 238866 | 50 | 03/06/2017 13:52 | NP |
| Ethylbenzene | 250 | 250 | | ug/L | 238866 | 50 | 03/06/2017 13:52 | NP |
| Toluene | 5000 | 250 | | ug/L | 238866 | 50 | 03/06/2017 13:52 | NP |
| Xylenes, Total | 960 | 250 | | ug/L | 238866 | 50 | 03/06/2017 13:52 | NP |
| Surr: 4-Bromofluorobenzene | 94.9 | 66.1-129 | | %REC | 238866 | 50 | 03/06/2017 13:52 | NP |
| Surr: 4-Bromofluorobenzene | 97.7 | 66.1-129 | | %REC | 238866 | 500 | 03/03/2017 18:45 | NP |
| Surr: Dibromofluoromethane | 96.2 | 83.6-123 | | %REC | 238866 | 500 | 03/03/2017 18:45 | NP |
| Surr: Dibromofluoromethane | 98 | 83.6-123 | | %REC | 238866 | 50 | 03/06/2017 13:52 | NP |
| Surr: Toluene-d8 | 97.5 | 81.8-118 | | %REC | 238866 | 50 | 03/06/2017 13:52 | NP |
| Surr: Toluene-d8 | 99.5 | 81.8-118 | | %REC | 238866 | 500 | 03/03/2017 18:45 | NP |
| **SIM Polynuclear Aromatic Hydrocarbons SW8270D** | | | | **(SW3510C)** | | | | |
| Naphthalene | 3500 | 250 | | ug/L | 238785 | 500 | 03/02/2017 11:11 | RF |
| Acenaphthylene | 51 | 10 | | ug/L | 238785 | 10 | 03/02/2017 10:44 | RF |
| Acenaphthene | 3.3 | 0.50 | | ug/L | 238785 | 1 | 03/01/2017 23:19 | RF |
| Fluorene | 9.0 | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 23:19 | RF |
| Phenanthrene | 9.3 | 0.50 | | ug/L | 238785 | 10 | 03/02/2017 10:44 | RF |
| Anthracene | 1.5 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 23:19 | RF |
| Fluoranthene | 1.1 | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 23:19 | RF |
| Pyrene | 1.1 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 23:19 | RF |
| Benz(a)anthracene | 0.099 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 23:19 | RF |
| Chrysene | 0.076 | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 23:19 | RF |
| Benzo(b)fluoranthene | 0.12 | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 23:19 | RF |
| Benzo(k)fluoranthene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 23:19 | RF |
| Benzo(a)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 23:19 | RF |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | ug/L | 238785 | 1 | 03/01/2017 23:19 | RF |
| Dibenz(a,h)anthracene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 23:19 | RF |
| Benzo(g,h,i)perylene | BRL | 0.10 | | ug/L | 238785 | 1 | 03/01/2017 23:19 | RF |
| Surr: 4-Terphenyl-d14 | 75.2 | 58.5-125 | | %REC | 238785 | 1 | 03/01/2017 23:19 | RF |
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | **(SW3510C)** | | | | |
| 2,4-Dimethylphenol | BRL | 10 | | ug/L | 238858 | 1 | 03/04/2017 02:38 | YH |
| 2-Methylphenol | BRL | 10 | | ug/L | 238858 | 1 | 03/04/2017 02:38 | YH |
| 3,4-Methylphenol | BRL | 10 | | ug/L | 238858 | 1 | 03/04/2017 02:38 | YH |
| Phenol | BRL | 10 | | ug/L | 238858 | 1 | 03/04/2017 02:38 | YH |
| Surr: 2,4,6-Tribromophenol | 94.8 | 50-142 | | %REC | 238858 | 1 | 03/04/2017 02:38 | YH |
| Surr: 2-Fluorobiphenyl | 76.1 | 46-124 | | %REC | 238858 | 1 | 03/04/2017 02:38 | YH |
| Surr: 2-Fluorophenol | 55.3 | 25.3-120 | | %REC | 238858 | 1 | 03/04/2017 02:38 | YH |
| Surr: 4-Terphenyl-d14 | 77.1 | 45.1-133 | | %REC | 238858 | 1 | 03/04/2017 02:38 | YH |
| Surr: Nitrobenzene-d5 | 83.4 | 40.1-121 | | %REC | 238858 | 1 | 03/04/2017 02:38 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

**Analytical Environmental Services, Inc** **Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | MW-305D-20170227-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/27/2017 12:00:00 PM |
| **Lab ID:** | 1702O89-005 | **Matrix:** | Groundwater |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Semivolatile Org. Comp. by GC/MS SW8270D** | | | | | **(SW3510C)** | | | |
| Surr: Phenol-d5 | 41.2 | 16.3-120 | | %REC | 238858 | 1 | 03/04/2017 02:38 | YH |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

## Analytical Environmental Services, Inc

**Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | TB-01-20170228-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/28/2017 |
| **Lab ID:** | 1702O89-006 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B (SW5030B)** | | | | | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 17:54 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 17:54 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 17:54 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 17:54 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 17:54 | NP |
| Surr: 4-Bromofluorobenzene | 96.4 | 66.1-129 | | %REC | 238866 | 1 | 03/03/2017 17:54 | NP |
| Surr: Dibromofluoromethane | 98.2 | 83.6-123 | | %REC | 238866 | 1 | 03/03/2017 17:54 | NP |
| Surr: Toluene-d8 | 98.8 | 81.8-118 | | %REC | 238866 | 1 | 03/03/2017 17:54 | NP |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

**Analytical Environmental Services, Inc** **Date:** 9-Mar-17

| | | | |
|---|---|---|---|
| **Client:** | ERM-Southeast | **Client Sample ID:** | TB-02-20170228-01 |
| **Project Name:** | AGLC Macon | **Collection Date:** | 2/28/2017 |
| **Lab ID:** | 1702O89-007 | **Matrix:** | Aqueous |

| Analyses | Result | Reporting Limit | Qual | Units | BatchID | Dilution Factor | Date Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by GC/MS SW8260B** | | | | **(SW5030B)** | | | | |
| Benzene | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 18:20 | NP |
| Carbon disulfide | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 18:20 | NP |
| Ethylbenzene | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 18:20 | NP |
| Toluene | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 18:20 | NP |
| Xylenes, Total | BRL | 5.0 | | ug/L | 238866 | 1 | 03/03/2017 18:20 | NP |
| Surr: 4-Bromofluorobenzene | 94.9 | 66.1-129 | | %REC | 238866 | 1 | 03/03/2017 18:20 | NP |
| Surr: Dibromofluoromethane | 97.2 | 83.6-123 | | %REC | 238866 | 1 | 03/03/2017 18:20 | NP |
| Surr: Toluene-d8 | 98.5 | 81.8-118 | | %REC | 238866 | 1 | 03/03/2017 18:20 | NP |

**Qualifiers:**

| | | | |
|---|---|---|---|
| * | Value exceeds maximum contaminant level | E | Estimated (value above quantitation range) |
| BRL | Below reporting limit | S | Spike Recovery outside limits due to matrix |
| H | Holding times for preparation or analysis exceeded | Narr | See case narrative |
| N | Analyte not NELAC certified | NC | Not confirmed |
| B | Analyte detected in the associated method blank | < | Less than Result value |
| > | Greater than Result value | J | Estimated value detected below Reporting Limit |

Clear | Save as

AES ANALYTICAL ENVIRONMENTAL SERVICES, INC.

# SAMPLE/COOLER RECEIPT CHECKLIST

1. Client Name: ERM-Southeast  AES Work Order Number: 1702K47

2. Carrier: FedEx ☐ UPS ☐ USPS ☐ Client ☐ Courier ■ Other _____

| | | Yes | No | N/A | Details | Comments |
|---|---|---|---|---|---|---|
| 3. | Shipping container/cooler received in good condition? | ○ | ○ | ○ | damaged ☐ leaking ☐ other ☐ | |
| 4. | Custody seals present on shipping container? | ○ | ○ | ○ | | |
| 5. | Custody seals intact on shipping container? | ○ | ○ | ○ | | |
| 6. | Temperature blanks present? | ○ | ○ | ○ | | |
| 7. | Cooler temperature(s) within limits of 0-6°C? [See item 13 and 14 for temperature recordings.] | ○ | ○ | ○ | Cooling initiated for recently collected samples / ice present ☐ | |
| 8. | Chain of Custody (COC) present? | ○ | ○ | ○ | | |
| 9. | Chain of Custody signed, dated, and timed when relinquished and received? | ○ | ○ | ○ | | |
| 10. | Sampler name and/or signature on COC? | ○ | ○ | ○ | | |
| 11. | Were all samples received within holding time? | ○ | ○ | ○ | | |
| 12. | TAT marked on the COC? | ○ | ○ | ○ | If no TAT indicated, proceeded with standard TAT per Terms & Conditions. ☐ | |

13. Cooler 1 Temperature 1.3 °C  Cooler 2 Temperature 1.5 °C  Cooler 3 Temperature 1.9 °C  Cooler 4 Temperature 2.6 °C

14. Cooler 5 Temperature 2.3 °C  Cooler 6 Temperature 1.7 °C  Cooler 7 Temperature _____ °C  Cooler 8 Temperature _____ °C

15. Comments: _____

**I certify that I have completed sections 1-15 (dated initials).** MJ 2/23/17

| | | Yes | No | N/A | Details | Comments |
|---|---|---|---|---|---|---|
| 16. | Were sample containers intact upon receipt? | ○ | ○ | ○ | | |
| 17. | Custody seals present on sample containers? | ○ | ○ | ○ | | |
| 18. | Custody seals intact on sample containers? | ○ | ○ | ○ | | |
| 19. | Do sample container labels match the COC? | ○ | ○ | ○ | incomplete info ☐ illegible ☐ no label ☐ other ☐ | |
| 20. | Are analyses requested indicated on the COC? | ○ | ○ | ○ | | |
| 21. | Were all of the samples listed on the COC received? | ○ | ○ | ○ | samples received but not listed on COC ☐ samples listed on COC not received ☐ | |
| 22. | Was the sample collection date/time noted? | ○ | ○ | ○ | | |
| 23. | Did we receive sufficient sample volume for indicated analyses? | ○ | ○ | ○ | | |
| 24. | Were samples received in appropriate containers? | ○ | ○ | ○ | | |
| 25. | Were VOA samples received without headspace (< 1/4" bubble)? | ○ | ○ | ○ | | |
| 26. | Were trip blanks submitted? | ○ | ○ | ○ | listed on COC ■ not listed on COC ☐ | |

27. Comments: _____

**I certify that I have completed sections 16-27 (dated initials).** MJ 2/23/17

| | | Yes | No | N/A | Details | Comments |
|---|---|---|---|---|---|---|
| 28. | Have containers needing chemical preservation been checked? | ○ | ○ | ○ | | check at analyses |
| 29. | Containers meet preservation guidelines? | ○ | ○ | ○ | | check at analyses |
| 30. | Was pH adjusted? | ○ | ○ | ○ | | |

**I certify that I have completed sections 28-30 (dated initials).** MJ 2/23/17

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702O89

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238785

Sample ID: **MB-238785** Client ID: Units: **ug/L** Prep Date: **03/01/2017** Run No: **337521**
SampleType: **MBLK** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238785** Analysis Date: **03/01/2017** Seq No: **7373956**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | BRL | 0.50 | | | | | | | | | |
| Acenaphthylene | BRL | 1.0 | | | | | | | | | |
| Anthracene | BRL | 0.050 | | | | | | | | | |
| Benz(a)anthracene | BRL | 0.050 | | | | | | | | | |
| Benzo(a)pyrene | BRL | 0.050 | | | | | | | | | |
| Benzo(b)fluoranthene | BRL | 0.10 | | | | | | | | | |
| Benzo(g,h,i)perylene | BRL | 0.10 | | | | | | | | | |
| Benzo(k)fluoranthene | BRL | 0.050 | | | | | | | | | |
| Chrysene | BRL | 0.050 | | | | | | | | | |
| Dibenz(a,h)anthracene | BRL | 0.10 | | | | | | | | | |
| Fluoranthene | BRL | 0.10 | | | | | | | | | |
| Fluorene | BRL | 0.10 | | | | | | | | | |
| Indeno(1,2,3-cd)pyrene | BRL | 0.050 | | | | | | | | | |
| Naphthalene | BRL | 0.50 | | | | | | | | | |
| Phenanthrene | BRL | 0.050 | | | | | | | | | |
| Pyrene | BRL | 0.050 | | | | | | | | | |
| Surr: 4-Terphenyl-d14 | 1.780 | 0 | 2.000 | | 89.0 | 58.5 | 125 | | | | |

Sample ID: **LCS-238785** Client ID: Units: **ug/L** Prep Date: **03/01/2017** Run No: **337521**
SampleType: **LCS** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238785** Analysis Date: **03/01/2017** Seq No: **7374026**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 1.532 | 0.50 | 2.000 | | 76.6 | 69.1 | 117 | | | | |
| Acenaphthylene | 1.491 | 1.0 | 2.000 | | 74.5 | 59.7 | 118 | | | | |
| Anthracene | 1.566 | 0.050 | 2.000 | | 78.3 | 64.7 | 121 | | | | |
| Benz(a)anthracene | 1.595 | 0.050 | 2.000 | 0.01968 | 78.8 | 61.7 | 139 | | | | |
| Benzo(a)pyrene | 1.644 | 0.050 | 2.000 | | 82.2 | 65.1 | 124 | | | | |

**Qualifiers:**
> Greater than Result value
< Less than Result value
B Analyte detected in the associated method blank
BRL Below reporting limit
E Estimated (value above quantitation range)
H Holding times for preparation or analysis exceeded
J Estimated value detected below Reporting Limit
N Analyte not NELAC certified
R RPD outside limits due to matrix
Rpt Lim Reporting Limit
S Spike Recovery outside limits due to matrix

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702O89

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238785

Sample ID: **LCS-238785** Client ID: Units: **ug/L** Prep Date: **03/01/2017** Run No: **337521**
SampleType: **LCS** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238785** Analysis Date: **03/01/2017** Seq No: **7374026**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzo(b)fluoranthene | 1.771 | 0.10 | 2.000 | 0.02664 | 87.2 | 60.8 | 129 | | | | |
| Benzo(g,h,i)perylene | 1.781 | 0.10 | 2.000 | | 89.0 | 60.1 | 129 | | | | |
| Benzo(k)fluoranthene | 1.797 | 0.050 | 2.000 | 0.03083 | 88.3 | 69.6 | 130 | | | | |
| Chrysene | 1.623 | 0.050 | 2.000 | 0.01833 | 80.3 | 76.5 | 127 | | | | |
| Dibenz(a,h)anthracene | 1.638 | 0.10 | 2.000 | | 81.9 | 55.2 | 126 | | | | |
| Fluoranthene | 1.662 | 0.10 | 2.000 | 0.02468 | 81.9 | 66.5 | 133 | | | | |
| Fluorene | 1.571 | 0.10 | 2.000 | | 78.6 | 66.1 | 122 | | | | |
| Indeno(1,2,3-cd)pyrene | 1.635 | 0.050 | 2.000 | 0.01925 | 80.8 | 58.8 | 132 | | | | |
| Naphthalene | 1.429 | 0.50 | 2.000 | | 71.4 | 60.6 | 120 | | | | |
| Phenanthrene | 1.571 | 0.050 | 2.000 | | 78.6 | 65.9 | 118 | | | | |
| Pyrene | 1.494 | 0.050 | 2.000 | 0.02836 | 73.3 | 70.2 | 129 | | | | |
| Surr: 4-Terphenyl-d14 | 1.549 | 0 | 2.000 | | 77.4 | 58.5 | 125 | | | | |

Sample ID: **1702O89-003BMS** Client ID: **MW-102-20170227-01** Units: **ug/L** Prep Date: **03/01/2017** Run No: **337521**
SampleType: **MS** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238785** Analysis Date: **03/01/2017** Seq No: **7375399**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 1.728 | 0.50 | 2.000 | | 86.4 | 49.7 | 118 | | | | |
| Acenaphthylene | 1.625 | 1.0 | 2.000 | | 81.3 | 56.7 | 120 | | | | |
| Anthracene | 1.702 | 0.050 | 2.000 | | 85.1 | 54.4 | 117 | | | | |
| Benz(a)anthracene | 1.835 | 0.050 | 2.000 | | 91.8 | 52.4 | 135 | | | | |
| Benzo(a)pyrene | 1.741 | 0.050 | 2.000 | | 87.0 | 51.5 | 117 | | | | |
| Benzo(b)fluoranthene | 1.970 | 0.10 | 2.000 | | 98.5 | 45.6 | 124 | | | | |
| Benzo(g,h,i)perylene | 1.721 | 0.10 | 2.000 | | 86.1 | 45.9 | 120 | | | | |
| Benzo(k)fluoranthene | 1.707 | 0.050 | 2.000 | | 85.4 | 51.8 | 122 | | | | |
| Chrysene | 1.737 | 0.050 | 2.000 | | 86.8 | 59.9 | 120 | | | | |
| Dibenz(a,h)anthracene | 1.661 | 0.10 | 2.000 | | 83.1 | 41.6 | 120 | | | | |
| Fluoranthene | 1.815 | 0.10 | 2.000 | | 90.8 | 59.7 | 122 | | | | |

**Qualifiers:**
- > Greater than Result value
- BRL Below reporting limit
- J Estimated value detected below Reporting Limit
- Rpt Lim Reporting Limit
- < Less than Result value
- E Estimated (value above quantitation range)
- N Analyte not NELAC certified
- S Spike Recovery outside limits due to matrix
- B Analyte detected in the associated method blank
- H Holding times for preparation or analysis exceeded
- R RPD outside limits due to matrix

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702O89

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238785

Sample ID: **1702O89-003BMS** Client ID: **MW-102-20170227-01** Units: **ug/L** Prep Date: **03/01/2017** Run No: **337521**
SampleType: **MS** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238785** Analysis Date: **03/01/2017** Seq No: **7375399**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fluorene | 1.721 | 0.10 | 2.000 | | 86.0 | 57.9 | 117 | | | | |
| Indeno(1,2,3-cd)pyrene | 1.641 | 0.050 | 2.000 | | 82.0 | 45.5 | 120 | | | | |
| Naphthalene | 1.600 | 0.50 | 2.000 | | 80.0 | 53.9 | 120 | | | | |
| Phenanthrene | 1.716 | 0.050 | 2.000 | | 85.8 | 58.1 | 120 | | | | |
| Pyrene | 1.818 | 0.050 | 2.000 | | 90.9 | 61.6 | 120 | | | | |
| Surr: 4-Terphenyl-d14 | 1.639 | 0 | 2.000 | | 81.9 | 58.5 | 125 | | | | |

Sample ID: **1702O89-003BMSD** Client ID: **MW-102-20170227-01** Units: **ug/L** Prep Date: **03/01/2017** Run No: **337521**
SampleType: **MSD** TestCode: **SIM Polynuclear Aromatic Hydrocarbons SW8270D** BatchID: **238785** Analysis Date: **03/01/2017** Seq No: **7375400**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Acenaphthene | 1.666 | 0.50 | 2.000 | | 83.3 | 49.7 | 118 | 1.728 | 3.65 | 17.4 | |
| Acenaphthylene | 1.589 | 1.0 | 2.000 | | 79.5 | 56.7 | 120 | 1.625 | 2.26 | 19.5 | |
| Anthracene | 1.627 | 0.050 | 2.000 | | 81.3 | 54.4 | 117 | 1.702 | 4.51 | 24.5 | |
| Benz(a)anthracene | 1.743 | 0.050 | 2.000 | | 87.1 | 52.4 | 135 | 1.835 | 5.17 | 30.2 | |
| Benzo(a)pyrene | 1.620 | 0.050 | 2.000 | | 81.0 | 51.5 | 117 | 1.741 | 7.20 | 25.6 | |
| Benzo(b)fluoranthene | 1.838 | 0.10 | 2.000 | | 91.9 | 45.6 | 124 | 1.970 | 6.93 | 20.9 | |
| Benzo(g,h,i)perylene | 1.647 | 0.10 | 2.000 | | 82.3 | 45.9 | 120 | 1.721 | 4.42 | 28.6 | |
| Benzo(k)fluoranthene | 1.797 | 0.050 | 2.000 | | 89.8 | 51.8 | 122 | 1.707 | 5.09 | 28.6 | |
| Chrysene | 1.703 | 0.050 | 2.000 | | 85.2 | 59.9 | 120 | 1.737 | 1.92 | 26.4 | |
| Dibenz(a,h)anthracene | 1.586 | 0.10 | 2.000 | | 79.3 | 41.6 | 120 | 1.661 | 4.59 | 17.8 | |
| Fluoranthene | 1.755 | 0.10 | 2.000 | | 87.8 | 59.7 | 122 | 1.815 | 3.37 | 22.1 | |
| Fluorene | 1.741 | 0.10 | 2.000 | | 87.0 | 57.9 | 117 | 1.721 | 1.16 | 20.8 | |
| Indeno(1,2,3-cd)pyrene | 1.576 | 0.050 | 2.000 | | 78.8 | 45.5 | 120 | 1.641 | 4.04 | 19.3 | |
| Naphthalene | 1.531 | 0.50 | 2.000 | | 76.5 | 53.9 | 120 | 1.600 | 4.40 | 20.6 | |
| Phenanthrene | 1.662 | 0.050 | 2.000 | | 83.1 | 58.1 | 120 | 1.716 | 3.17 | 19.4 | |
| Pyrene | 1.555 | 0.050 | 2.000 | | 77.7 | 61.6 | 120 | 1.818 | 15.6 | 21.2 | |
| Surr: 4-Terphenyl-d14 | 1.635 | 0 | 2.000 | | 81.8 | 58.5 | 125 | 1.639 | 0 | 0 | |

**Qualifiers:**
- > Greater than Result value
- BRL Below reporting limit
- J Estimated value detected below Reporting Limit
- Rpt Lim Reporting Limit
- < Less than Result value
- E Estimated (value above quantitation range)
- N Analyte not NELAC certified
- S Spike Recovery outside limits due to matrix
- B Analyte detected in the associated method blank
- H Holding times for preparation or analysis exceeded
- R RPD outside limits due to matrix

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702O89

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238785

**Analytical Environmental Services, Inc** **Date:** 9-Mar-17

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702O89

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238858

Sample ID: **MB-238858** Client ID: Units: **ug/L** Prep Date: **03/02/2017** Run No: **337760**
SampleType: **MBLK** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238858** Analysis Date: **03/03/2017** Seq No: **7380146**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2,4-Dimethylphenol | BRL | 10 | | | | | | | | | |
| 2-Methylphenol | BRL | 10 | | | | | | | | | |
| 3,4-Methylphenol | BRL | 10 | | | | | | | | | |
| Phenol | BRL | 10 | | | | | | | | | |
| Surr: 2,4,6-Tribromophenol | 80.43 | 0 | 100.0 | | 80.4 | 50 | 142 | | | | |
| Surr: 2-Fluorobiphenyl | 34.84 | 0 | 50.00 | | 69.7 | 46 | 124 | | | | |
| Surr: 2-Fluorophenol | 37.73 | 0 | 100.0 | | 37.7 | 25.3 | 120 | | | | |
| Surr: 4-Terphenyl-d14 | 40.91 | 0 | 50.00 | | 81.8 | 45.1 | 133 | | | | |
| Surr: Nitrobenzene-d5 | 34.85 | 0 | 50.00 | | 69.7 | 40.1 | 121 | | | | |
| Surr: Phenol-d5 | 21.62 | 0 | 100.0 | | 21.6 | 16.3 | 120 | | | | |

Sample ID: **LCS-238858** Client ID: Units: **ug/L** Prep Date: **03/02/2017** Run No: **337760**
SampleType: **LCS** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238858** Analysis Date: **03/03/2017** Seq No: **7380147**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | 29.60 | 10 | 100.0 | | 29.6 | 25 | 120 | | | | |
| Surr: 2,4,6-Tribromophenol | 98.18 | 0 | 100.0 | | 98.2 | 50 | 142 | | | | |
| Surr: 2-Fluorobiphenyl | 41.37 | 0 | 50.00 | | 82.7 | 46 | 124 | | | | |
| Surr: 2-Fluorophenol | 53.57 | 0 | 100.0 | | 53.6 | 25.3 | 120 | | | | |
| Surr: 4-Terphenyl-d14 | 47.94 | 0 | 50.00 | | 95.9 | 45.1 | 133 | | | | |
| Surr: Nitrobenzene-d5 | 40.46 | 0 | 50.00 | | 80.9 | 40.1 | 121 | | | | |
| Surr: Phenol-d5 | 33.15 | 0 | 100.0 | | 33.2 | 16.3 | 120 | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702O89

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238858

Sample ID: **1702O89-003BMS** Client ID: **MW-102-20170227-01** Units: **ug/L** Prep Date: **03/02/2017** Run No: **337874**
SampleType: **MS** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238858** Analysis Date: **03/06/2017** Seq No: **7383104**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | 37.99 | 10 | 100.0 | | 38.0 | 31.5 | 120 | | | | |
| Surr: 2,4,6-Tribromophenol | 89.58 | 0 | 100.0 | | 89.6 | 50 | 142 | | | | |
| Surr: 2-Fluorobiphenyl | 36.48 | 0 | 50.00 | | 73.0 | 46 | 124 | | | | |
| Surr: 2-Fluorophenol | 57.88 | 0 | 100.0 | | 57.9 | 25.3 | 120 | | | | |
| Surr: 4-Terphenyl-d14 | 42.27 | 0 | 50.00 | | 84.5 | 45.1 | 133 | | | | |
| Surr: Nitrobenzene-d5 | 38.26 | 0 | 50.00 | | 76.5 | 40.1 | 121 | | | | |
| Surr: Phenol-d5 | 42.04 | 0 | 100.0 | | 42.0 | 16.3 | 120 | | | | |

Sample ID: **1702O89-003BMSD** Client ID: **MW-102-20170227-01** Units: **ug/L** Prep Date: **03/02/2017** Run No: **337874**
SampleType: **MSD** TestCode: **Semivolatile Org. Comp. by GC/MS SW8270D** BatchID: **238858** Analysis Date: **03/06/2017** Seq No: **7383105**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Phenol | 35.81 | 10 | 100.0 | | 35.8 | 31.5 | 120 | 37.99 | 5.91 | 28.5 | |
| Surr: 2,4,6-Tribromophenol | 89.70 | 0 | 100.0 | | 89.7 | 50 | 142 | 89.58 | 0 | 0 | |
| Surr: 2-Fluorobiphenyl | 35.10 | 0 | 50.00 | | 70.2 | 46 | 124 | 36.48 | 0 | 0 | |
| Surr: 2-Fluorophenol | 55.61 | 0 | 100.0 | | 55.6 | 25.3 | 120 | 57.88 | 0 | 0 | |
| Surr: 4-Terphenyl-d14 | 41.87 | 0 | 50.00 | | 83.7 | 45.1 | 133 | 42.27 | 0 | 0 | |
| Surr: Nitrobenzene-d5 | 37.14 | 0 | 50.00 | | 74.3 | 40.1 | 121 | 38.26 | 0 | 0 | |
| Surr: Phenol-d5 | 39.29 | 0 | 100.0 | | 39.3 | 16.3 | 120 | 42.04 | 0 | 0 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702O89

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238866

Sample ID: **MB-238866** Client ID: Units: **ug/L** Prep Date: **03/02/2017** Run No: **337619**
SampleType: **MBLK** TestCode: **Volatile Organic Compounds by GC/MS SW8260B** BatchID: **238866** Analysis Date: **03/02/2017** Seq No: **7376176**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | BRL | 5.0 | | | | | | | | | |
| Carbon disulfide | BRL | 5.0 | | | | | | | | | |
| Ethylbenzene | BRL | 5.0 | | | | | | | | | |
| Toluene | BRL | 5.0 | | | | | | | | | |
| Xylenes, Total | BRL | 5.0 | | | | | | | | | |
| Surr: 4-Bromofluorobenzene | 47.47 | 0 | 50.00 | | 94.9 | 66.1 | 129 | | | | |
| Surr: Dibromofluoromethane | 46.84 | 0 | 50.00 | | 93.7 | 83.6 | 123 | | | | |
| Surr: Toluene-d8 | 47.17 | 0 | 50.00 | | 94.3 | 81.8 | 118 | | | | |

Sample ID: **LCS-238866** Client ID: Units: **ug/L** Prep Date: **03/02/2017** Run No: **337619**
SampleType: **LCS** TestCode: **Volatile Organic Compounds by GC/MS SW8260B** BatchID: **238866** Analysis Date: **03/02/2017** Seq No: **7376175**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 49.44 | 5.0 | 50.00 | | 98.9 | 74 | 125 | | | | |
| Toluene | 50.00 | 5.0 | 50.00 | | 100 | 75.9 | 126 | | | | |
| Surr: 4-Bromofluorobenzene | 46.61 | 0 | 50.00 | | 93.2 | 66.1 | 129 | | | | |
| Surr: Dibromofluoromethane | 46.85 | 0 | 50.00 | | 93.7 | 83.6 | 123 | | | | |
| Surr: Toluene-d8 | 46.15 | 0 | 50.00 | | 92.3 | 81.8 | 118 | | | | |

Sample ID: **1702M33-008AMS** Client ID: Units: **ug/L** Prep Date: **03/02/2017** Run No: **337619**
SampleType: **MS** TestCode: **Volatile Organic Compounds by GC/MS SW8260B** BatchID: **238866** Analysis Date: **03/02/2017** Seq No: **7377797**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 49200 | 5000 | 50000 | | 98.4 | 71.6 | 132 | | | | |
| Toluene | 50590 | 5000 | 50000 | | 101 | 72.5 | 135 | | | | |
| Surr: 4-Bromofluorobenzene | 47690 | 0 | 50000 | | 95.4 | 66.1 | 129 | | | | |
| Surr: Dibromofluoromethane | 50510 | 0 | 50000 | | 101 | 83.6 | 123 | | | | |
| Surr: Toluene-d8 | 48260 | 0 | 50000 | | 96.5 | 81.8 | 118 | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

**Client:** ERM-Southeast
**Project Name:** AGLC Macon
**Workorder:** 1702O89

# ANALYTICAL QC SUMMARY REPORT

**BatchID:** 238866

Sample ID: **1702O89-003AMS** Client ID: **MW-102-20170227-01** Units: **ug/L** Prep Date: **03/02/2017** Run No: **337705**
SampleType: **MS** TestCode: **Volatile Organic Compounds by GC/MS SW8260B** BatchID: **238866** Analysis Date: **03/03/2017** Seq No: **7379070**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 46.83 | 5.0 | 50.00 | | 93.7 | 71.6 | 132 | | | | |
| Toluene | 47.36 | 5.0 | 50.00 | | 94.7 | 72.5 | 135 | | | | |
| Surr: 4-Bromofluorobenzene | 47.73 | 0 | 50.00 | | 95.5 | 66.1 | 129 | | | | |
| Surr: Dibromofluoromethane | 47.92 | 0 | 50.00 | | 95.8 | 83.6 | 123 | | | | |
| Surr: Toluene-d8 | 49.33 | 0 | 50.00 | | 98.7 | 81.8 | 118 | | | | |

Sample ID: **1702M33-008AMSD** Client ID: Units: **ug/L** Prep Date: **03/02/2017** Run No: **337619**
SampleType: **MSD** TestCode: **Volatile Organic Compounds by GC/MS SW8260B** BatchID: **238866** Analysis Date: **03/02/2017** Seq No: **7377798**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 48310 | 5000 | 50000 | | 96.6 | 71.6 | 132 | 49200 | 1.83 | 20.7 | |
| Toluene | 48860 | 5000 | 50000 | | 97.7 | 72.5 | 135 | 50590 | 3.48 | 23.2 | |
| Surr: 4-Bromofluorobenzene | 47910 | 0 | 50000 | | 95.8 | 66.1 | 129 | 47690 | 0 | 0 | |
| Surr: Dibromofluoromethane | 50160 | 0 | 50000 | | 100 | 83.6 | 123 | 50510 | 0 | 0 | |
| Surr: Toluene-d8 | 48660 | 0 | 50000 | | 97.3 | 81.8 | 118 | 48260 | 0 | 0 | |

Sample ID: **1702O89-003AMSD** Client ID: **MW-102-20170227-01** Units: **ug/L** Prep Date: **03/02/2017** Run No: **337705**
SampleType: **MSD** TestCode: **Volatile Organic Compounds by GC/MS SW8260B** BatchID: **238866** Analysis Date: **03/03/2017** Seq No: **7379071**

| Analyte | Result | RPT Limit | SPK value | SPK Ref Val | %REC | Low Limit | High Limit | RPD Ref Val | %RPD | RPD Limit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 46.31 | 5.0 | 50.00 | | 92.6 | 71.6 | 132 | 46.83 | 1.12 | 20.7 | |
| Toluene | 46.67 | 5.0 | 50.00 | | 93.3 | 72.5 | 135 | 47.36 | 1.47 | 23.2 | |
| Surr: 4-Bromofluorobenzene | 47.65 | 0 | 50.00 | | 95.3 | 66.1 | 129 | 47.73 | 0 | 0 | |
| Surr: Dibromofluoromethane | 48.90 | 0 | 50.00 | | 97.8 | 83.6 | 123 | 47.92 | 0 | 0 | |
| Surr: Toluene-d8 | 49.49 | 0 | 50.00 | | 99.0 | 81.8 | 118 | 49.33 | 0 | 0 | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| > | Greater than Result value | < | Less than Result value | B | Analyte detected in the associated method blank |
| BRL | Below reporting limit | E | Estimated (value above quantitation range) | H | Holding times for preparation or analysis exceeded |
| J | Estimated value detected below Reporting Limit | N | Analyte not NELAC certified | R | RPD outside limits due to matrix |
| Rpt Lim | Reporting Limit | S | Spike Recovery outside limits due to matrix | | |

# Data ValidationEvaluation

*Appendix E*

*Project No. 0366660*
*Atlanta Gas Light Company*

**Environmental Resources Management**
3200 Windy Hill Road SE, Suite 1500W
Atlanta, Georgia 30339
(678) 486-2700

# Appendix E - Data Validation
## Sample Submittals
## AGLC - Macon, Georgia
## February 21-28, 2017

| Matrix | Sample ID | Laboratory ID |
|---|---|---|
| Water | AMW-2-20170221-01 | 1702K47-001 |
| Water | AMW-12-20170221-01 | 1702K47-002 |
| Water | AMW-6-20170221-01 | 1702K47-003 |
| Water | AMW-14-20170221-01 | 1702K47-004 |
| Water | MW-109-20170222-01 | 1702K47-008 |
| Water | MW-205-20170222-01 | 1702K47-009 |
| Water | MW-108-20170222-01 | 1702K47-010 |
| Water | AMW-11-20170222-01 | 1702K47-011 |
| Water | AMW-13-20170222-01 | 1702K47-012 |
| Water | MW-8-20170222-01 | 1702K47-018 |
| Water | TB-01-20170223-01 | 1702K47-022 |
| Water | TB-02-20170223-01 | 1702K47-023 |
| Water | TB-03-20170223-01 | 1702K47-024 |
| Water | MW-101-20170223-01 | 1702M96-003 |
| Water | AMW-15-20170223-01 | 1702M96-004 |
| Water | MW-15-20170223-01 | 1702M96-005 |
| Water | MW-400-20170223-01 | 1702M96-006 |
| Water | DUP-01-20170223-01 | 1702M96-008 |
| Water | DUP-02-20170223-01 | 1702M96-009 |
| Water | DUP-03-20170223-01 | 1702M96-010 |
| Water | MW-401-20170224-01 | 1702M96-022 |
| Water | MW-103-20170224-01 | 1702M96-023 |
| Water | MW-14-20170224-01 | 1702M96-024 |
| Water | MW-12R-20170224-01 | 1702M96-026 |
| Water | MW-104-20170224-01 | 1702M96-028 |
| Water | TB-01-20170224-01 | 1702M96-029 |
| Water | TB-02-20170224-01 | 1702M96-030 |
| Water | TB-03-20170224-01 | 1702M96-031 |
| Water | MW-21-20170227-01 | 1702O89-002 |
| Water | MW-102-20170227-01 | 1702O89-003 |
| Water | TB-01-20170228-01 | 1702O89-006 |

## Appendix E - Data Validation
## ERM Analytical Data Validation Checklist

| | |
|---|---|
| Project Name: AGLC/Macon | Laboratory: Analytical Environmental Services, Inc. |
| Project Reference: 0366660 | Sample Matrix: Aqueous |
| ERM Project Phase Number: 052 | Sample Start Date: 2/21/2017 |
| Date Validated: 4/11/2017 | Sample End Date: 2/28/2017 |

Sample Analyzed: Approximately ten percent (10%) of the samples collected were chosen for validation. The following samples within Order No: 1702M96 were validated. For a full list of the samples collected, see the sample submittal summary above.

| | |
|---|---|
| MW-101-20170223-01 | DUP-01-20170223-01 |
| AMW-15-20170223-01 | DUP-02-20170223-01 |
| MW-400-20170223-01 | DUP-03-20170223-01 |

Parameters Analyzed: Volatile Organic Compounds (Benzene, Toluene, Ethylbenzene, Total Xylenes and carbon disulfide) by SW-846 Method 8260B, Low Level Semi-Volatile Organic Compounds and SIM Polynuclear Aromatic Hydrocarbons by SW-846 Method 8270D

Laboratory Order No: 1702K47, 1702M96, 1702O89

**PRECISION, ACCURACY, METHOD CONFORMANCE, AND COMPLETENESS ASSESSMENT**

| | | | | | |
|---|---|---|---|---|---|
| Precision: | **X** | Acceptable | Unacceptable | JMM | Initials |

Comments: Laboratory precision was evaluated using laboratory control samples (LCSs), laboratory duplicates, and matrix spike duplicates (MSDs). Evaluation of duplicates was done using the Relative Percent Difference (RPD). The RPD is defined as the difference between two duplicate sample results divided by the mean, and expressed as a percent. Overall, laboratory and field sampling precision were acceptable.

| | | | | | |
|---|---|---|---|---|---|
| Accuracy: | **X** | Acceptable | Unacceptable | JMM | Initials |

Comments: Accuracy is a measure of the system bias. Laboratory accuracy was evaluated using blanks, matrix spikes (MSs), LCSs, and surrogate recoveries. Overall, laboratory accuracy was acceptable.

| | | | | | |
|---|---|---|---|---|---|
| Method Compliance: | **X** | Acceptable | Unacceptable | JMM | Initials |

Comments: Method compliance was evaluated using holding times, internal standard recoveries, and surrogate recoveries. Overall method compliance was acceptable.

| | | | | | |
|---|---|---|---|---|---|
| Completeness: | **X** | Acceptable | Unacceptable | JMM | Initials |

Comments: Completeness is a percentage expression of the ratio of total acceptable data points to the total possible data points. No data points were rejected; all data are usable with some usable with qualification. For the sample data validated, no data points were rejected. The data set was 100% complete.

## Appendix E - Data Validation
## ERM Analytical Data Validation Checklist (Continued)

| EVALUATION CRITERIA CHECK | | | | | | |
|---|---|---|---|---|---|---|
| Data validation flags used in this review only include those used by the laboratory:<br>BRL Below reporting limit<br><br>**Only bolded comments required qualification.** The other comments are of interest, but qualification of the results was not necessary. | | | | | | |
| 1. Did the laboratory identify any nonconformances related to the analytical results? | **X** | Yes | | No | JMM | Initials |
| Explanation: The laboratory identified the following nonconformance in the case narratives for the samples validated. | | | | | | |
| **PAH Analysis by Method 8270D SIM:**<br>Due to sample matrix, sample 1702M96-008B, 009B required dilution during preparation and/or analysis resulting in elevated reporting limits. | | | | | | |
| 2. Were samples Chain-of Custody (COC) forms complete? | | Yes | **X** | No | JMM | Initials |
| Comments: Collection time for sample 1702M96-028 was not listed. Sample was logged in using time on sample bottles. | | | | | | |
| 3. Were all the analyses requested for the samples on the COCs completed by the laboratory? | **X** | Yes | | No | JMM | Initials |
| Comments: All analyses requested for the samples on the COCs were completed by the laboratory. | | | | | | |
| 4. Were samples received in good condition and at appropriate temperature? | **X** | Yes | | No | JMM | Initials |
| Comments: Samples were received in good condition and at appropriate temperature. | | | | | | |
| 5. Were the requested analytical methods in compliance with WP/QAPP, permit, or COC? | **X** | Yes | | No | JMM | Initials |
| Comments: Requested analytical methods were in compliance with COC forms. Additionally, the test results in the validated report meet all NELAP requirements for parameters for which accreditation is required or available. | | | | | | |
| 6. Were detection limits in accordance with WP/QAPP, permit, or method? | **X** | Yes | | No | JMM | Initials |
| Comments: Results were reported down to the practical quantitation limits. | | | | | | |
| 7. Do the laboratory reports include only those constituents requested to be reported for a specific analytical method? | **X** | Yes | | No | JMM | Initials |
| Comments: The laboratory reported the requested constituents. | | | | | | |
| 8. Were the sample holding times met? | **X** | Yes | | No | JMM | Initials |
| Comments: All sample holding times were met. | | | | | | |
| 9. Were correct concentration units reported? | **X** | Yes | | No | JMM | Initials |
| Comments: Organic results were reported in µg/L and inorganics in mg/L | | | | | | |
| 10. Were the reporting requirements for flagged data met? | **X** | Yes | | No | JMM | Initials |
| Comments: No data was flagged during the February 2017 sampling event. | | | | | | |
| 11. Were laboratory blank samples free of target analyte contamination? | **X** | Yes | | No | JMM | Initials |
| Comments: Target analytes were not detected in blanks. | | | | | | |

## Appendix E - Data Validation
## ERM Analytical Data Validation Checklist (Continued)

| | | | | | | |
|---|---|---|---|---|---|---|
| 12. Were trip blank, field blank, and/or equipment rinse blank samples free of target analyte contamination? | **X** | Yes | | No | JMM | Initials |
| Comments: Trip blanks were free of analytes. | | | | | | |
| 13. Were instrument calibrations within method control limits? | **X** | Yes | | No | JMM | Initials |
| Comments: The initial calibrations were within control limits. | | | | | | |
| 14. Were surrogate recoveries within control limits? | **X** | Yes | | No | JMM | Initials |
| Comments: Surrogate recoveries were within laboratory QC limits. | | | | | | |
| 15. Were laboratory control sample recoveries within control limits? | **X** | Yes | | No | JMM | Initials |
| Comments: The LCS recoveries were within control limits. | | | | | | |
| 16. Were matrix spike recoveries within control limits? | **X** | Yes | | No | JMM | Initials |
| Comments: All matrix spike recoveries were within control limits | | | | | | |
| 17. Were duplicate RPDs and/or serial dilution %Ds within control limits? | **X** | Yes | | No | JMM | Initials |
| Comments: RPDs for MS/MSDs, laboratory duplicate samples and LCS/LCSDs met QC criteria for all target compounds/analytes for the samples validated. | | | | | | |
| 18. Were organic system performance criteria met? | **X** | Yes | | No | JMM | Initials |
| Comments: All GC/MS internal standards were within method criteria for the samples validated. | | | | | | |
| 19. Were internal standards within method criteria for GS/MS sample analyses? | **X** | Yes | | No | JMM | Initials |
| Comments: All GC/MS internal standards were within method criteria for the samples validated. | | | | | | |
| 20. Were inorganic system performance criteria met? | **NA** | Yes | **NA** | No | JMM | Initials |
| Comments: Inorganic analyses were not performed | | | | | | |
| 21. Were blind field duplicates collected? If so, discuss the precision (RPD) of the results. | **X** | Yes | | No | JMM | Initials |
| Comments: The largest RPD vaule that was recorded between the parent samples and the field duplicates was 69% for naphthalene in MW-101/DUP-1. All other RPDs were within acceptance limits | | | | | | |
| 22. Were qualitative criteria for organic target analyte identification met? | **X** | Yes | | No | JMM | Initials |
| Comments: All qualitative criteria for organic target analyte identification were met. | | | | | | |
| 23. Were 100% of the EDD concentrations and reporting limits compared to the hardcopy data reports? | **NA** | Yes | **NA** | No | JMM | Initials |
| Comments: The EDD is not routinely reviewed as part of the data validation process. | | | | | | |

# Appendix E - Data Validation
# Field Duplicate Comparisons
# ACLC - Macon, Georgia
# February 21-28, 2017

| Parameter | MW-101-20170223-01 | | DUP-01-20170223-01 | | RPD(%) |
|---|---|---|---|---|---|
| Acenaphthene | 1.4 | µg/L | <50 | µg/L | NC |
| Anthracene | 0.22 | ug/L | <5.0 | ug/L | NC |
| Fluoranthene | 0.12 | ug/L | <10 | ug/L | NC |
| Fluorene | 1.7 | µg/L | <10 | µg/L | NC |
| **Naphthalene** | **43** | **µg/L** | **21** | **ug/L** | **69** |
| Phenanthrene | 1.0 | µg/L | <5.0 | µg/L | NC |
| Pyrene | 0.084 | µg/L | <5.0 | µg/L | NC |

| Parameter | AMW-15-20170223-01 | | DUP-02-20170223-01 | | RPD(%) |
|---|---|---|---|---|---|
| Benzene | 78 | µg/L | 80 | µg/L | 3 |
| Ethylbenzene | 14 | µg/L | 17 | µg/L | 19 |
| Xylenes | 10 | µg/L | 12 | µg/L | 18 |
| Acenaphthylene | 1.9 | µg/L | <100 | µg/L | NC |
| Acenaphthene | 11 | µg/L | 10 | µg/L | 10 |
| Anthracene | 0.49 | ug/L | <5.0 | ug/L | NC |
| Fluoranthene | 0.29 | ug/L | <10 | ug/L | NC |
| Fluorene | 4.0 | µg/L | <5.0 | µg/L | NC |
| Naphthalene | 12 | µg/L | 11 | ug/L | 9 |
| Phenanthrene | 3.2 | µg/L | <5.0 | µg/L | NC |
| Pyrene | 0.2 | µg/L | <5.0 | µg/L | NC |

| Parameter | MW-400-20170223-01 | | DUP-03-20170223-01 | | RPD(%) |
|---|---|---|---|---|---|
| Anthracene | 0.11 | ug/L | 0.12 | ug/L | 9 |
| Fluoranthene | 0.10 | ug/L | <0.10 | ug/L | NC |
| Naphthalene | 0.56 | µg/L | 0.55 | ug/L | 2 |
| Pyrene | 0.14 | µg/L | 0.14 | µg/L | 0 |

# Appendix E - Data Validation
## Sample Submittals
## AGLC Macon
## February 21-28, 2017

| Matrix | Sample ID | Laboratory ID |
|---|---|---|
| Water | MW-27D-20170221-01 | 1702K47-005 |
| Water | MW-22D-20170221-01 | 1702K47-006 |
| Water | MW-301D-20170221-01 | 1702K47-007 |
| Water | MW-108D-20170222-01 | 1702K47-013 |
| Water | MW-23D-20170222-01 | 1702K47-014 |
| Water | MW-113D-20170222-01 | 1702K47-015 |
| Water | MW-308D-20170222-01 | 1702K47-016 |
| Water | MW-112D-20170222-01 | 1702K47-017 |
| Water | MW-26D-20170222-01 | 1702K47-019 |
| Water | MW-307D-20170222-01 | 1702K47-020 |
| Water | MW-300D-20170222-01 | 1702K47-021 |
| Water | TB-04-20170223-01 | 1702K47-025 |
| Water | TB-05-20170223-01 | 1702K47-026 |
| Water | TB-06-20170223-01 | 1702K47-027 |
| Water | MW-207D-20170223-01 | 1702M96-001 |
| Water | MW-302DD-20170223-01 | 1702M96-002 |
| Water | MW-304D-20170223-01 | 1702M96-007 |
| Water | MW-12DD-20170223-01 | 1702M96-011 |
| Water | MW-110D-20170223-01 | 1702M96-012 |
| Water | DUP-04-20170223-01 | 1702M96-013 |
| Water | MW-14I-20170223-01 | 1702M96-014 |
| Water | MW-12DRR-20170224-01 | 1702M96-015 |
| Water | MW-200DR-20170224-01 | 1702M96-016 |
| Water | MW-204D-20170224-01 | 1702M96-017 |
| Water | MW-205D-20170224-01 | 1702M96-018 |
| Water | MW-205DD-20170224-01 | 1702M96-019 |
| Water | MW-302D-20170224-01 | 1702M96-020 |
| Water | MW-306D-20170224-01 | 1702M96-021 |
| Water | MW-12IR-20170224-01 | 1702M96-025 |
| Water | DUP-05-20170224-01 | 1702M96-027 |
| Water | TB-04-20170224-01 | 1702M96-032 |
| Water | TB-05-20170224-01 | 1702M96-033 |
| Water | TB-06-20170224-01 | 1702M96-034 |
| Water | TB-07-20170224-01 | 1702M96-035 |
| Water | MW-24D-20170228-01 | 1702O89-001 |
| Water | MW-206D-20170227-01 | 1702O89-004 |
| Water | MW-305D-20170227-01 | 1702O89-005 |
| Water | TB-02-20170228-01 | 1702O89-007 |

## Appendix E - Data Validation
## ERM Analytical Data Validation Checklist

| | |
|---|---|
| Project Name: AGLC/Macon | Laboratory: Analytical Environmental Services, Inc. |
| Project Reference: 0366660 | Sample Matrix: Aqueous |
| ERM Project Phase Number: 052 | Sample Start Date: 2/21/2017 |
| Date Validated: April 11, 2017 | Sample End Date: 2/28/2017 |

Sample Analyzed: Approximately ten percent (10%) of the samples collected were chosen for validation. The following samples within Order No: 1702M96 were validated. For a full list of the samples collected, see the sample submittal summary above.

| | |
|---|---|
| MW-110D-20170223-01 | DUP-04-20170223-01 |
| MW-205D-20170224-01 | DUP-05-20170224-01 |

Parameters Analyzed: Volatile Organic Compounds (Benzene, Toluene, Ethylbenzene, Total Xylenes and carbon disulfide) by SW-846 Method 8260B, Low Level Semi-Volatile Organic Compounds and SIM Polynuclear Aromatic Hydrocarbons by SW-846 Method 8270D.

Laboratory Order No: 1702K47, 1702M96, 1702O89

**PRECISION, ACCURACY, METHOD CONFORMANCE, AND COMPLETENESS ASSESSMENT**

| | | | | | | |
|---|---|---|---|---|---|---|
| Precision: | X | Acceptable | | Unacceptable | JMM | Initials |

Comments: Laboratory precision was evaluated using laboratory control samples (LCSs), laboratory duplicates, and matrix spike duplicates (MSDs). Field sampling precision was evaluated using field duplicates. Evaluation of duplicates was done using the Relative Percent Difference (RPD). The RPD is defined as the difference between two duplicate sample results divided by the mean, and expressed as a percent. Overall, laboratory and field sampling precision were acceptable.

| | | | | | | |
|---|---|---|---|---|---|---|
| Accuracy: | X | Acceptable | | Unacceptable | JMM | Initials |

Comments: Accuracy is a measure of the system bias. Laboratory accuracy was evaluated using blanks, matrix spikes (MSs), LCSs, and surrogate recoveries. Overall, laboratory accuracy was acceptable.

| | | | | | | |
|---|---|---|---|---|---|---|
| Method Compliance: | X | Acceptable | | Unacceptable | JMM | Initials |

Comments: Method compliance was evaluated using holding times, internal standard recoveries, and surrogate recoveries. Overall method compliance was acceptable.

| | | | | | | |
|---|---|---|---|---|---|---|
| Completeness: | X | Acceptable | | Unacceptable | JMM | Initials |

Comments: Completeness is a percentage expression of the ratio of total acceptable data points to the total possible data points. No data points were rejected; all data are usable with some usable with qualification. For the sample data validated, no data points were rejected. The data set was 100% complete.

**EVALUATION CRITERIA CHECK**

Data validation flags used in this review only include those used by the laboratory:

| | |
|---|---|
| BRL | Below reporting limit |
| | |

## Appendix E - Data Validation
## ERM Analytical Data Validation Checklist (Continued)

| | | | | | | |
|---|---|---|---|---|---|---|
| **Only bolded comments required qualification.** The other comments are of interest, but qualification of the results was not necessary. | | | | | | |
| 1. Did the laboratory identify any nonconformances related to the analytical results? | **X** | Yes | | No | | Initials |
| Explanation: The laboratory identified the following nonconformance in the case narratives for the samples validated. | | | | | | |
| **Volatile Organic Compounds Analysis by Method 8260B:** Due to sample matrix, sample 1702O89-005A required dilution during preparation and/or analysis resulting in elevated reporting limits.<br>One of the Trip Blank vials for TB-05-20170223-01 was received broken. Sufficient volume remained and the lab proceeded with analysis. | | | | | | |
| 2. Were samples Chain-of Custody (COC) forms complete? | **X** | Yes | | No | JMM | Initials |
| Comments: Chains-of-Custody were complete and correct; | | | | | | |
| 3. Were all the analyses requested for the samples on the COCs completed by the laboratory? | **X** | Yes | | No | JMM | Initials |
| Comments: All analyses requested for the samples on the COCs were completed by the laboratory. | | | | | | |
| 4. Were samples received in good condition and at appropriate temperature? | | Yes | **X** | No | JMM | Initials |
| Comments: Samples were received in good condition and at appropriate temperature with the exception of 1 trip blank vial for TB-05020170223-01 which was broken. Sufficient volume remained and the lab proceeded with analysis. | | | | | | |
| 5. Were the requested analytical methods in compliance with WP/QAPP, permit, or COC? | **X** | Yes | | No | JMM | Initials |
| Comments: Requested analytical methods were in compliance with COC forms. Additionally, the test results in the validated report meet all NELAP requirements for parameters for which accreditation is required or available. | | | | | | |
| 6. Were detection limits in accordance with WP/QAPP, permit, or method? | **X** | Yes | | No | JMM | Initials |
| Comments: Results were reported down to the practical quantitation limits. | | | | | | |
| 7. Do the laboratory reports include only those constituents requested to be reported for a specific analytical method? | **X** | Yes | | No | JMM | Initials |
| Comments: The laboratory reported the requested constituents. | | | | | | |
| 8. Were the sample holding times met? | **X** | Yes | | No | JMM | Initials |
| Comments: All sample holding times were met. | | | | | | |
| 9. Were correct concentration units reported? | **X** | Yes | | No | JMM | Initials |
| Comments: Organic results were reported in µg/L and inorganics in mg/L | | | | | | |
| 10. Were the reporting requirements for flagged data met? | **X** | Yes | | No | JMM | Initials |
| Comments: No data was flagged during the February 2017 sampling event. | | | | | | |
| 11. Were laboratory blank samples free of target analyte contamination? | **X** | Yes | | No | JMM | Initials |
| Comments: Target analytes were not detected in blanks. | | | | | | |

## Appendix E - Data Validation
## ERM Analytical Data Validation Checklist (Continued)

| | | | | | | |
|---|---|---|---|---|---|---|
| 12. Were trip blank, field blank, and/or equipment rinse blank samples free of target analyte contamination? | **X** | Yes | | No | JMM | Initials |
| Comments: Trip blanks were free of analytes. | | | | | | |
| 13. Were instrument calibrations within method control limits? | **X** | Yes | | No | JMM | Initials |
| Comments: The initial calibrations were within control limits. | | | | | | |
| 14. Were surrogate recoveries within control limits? | **X** | Yes | | No | JMM | Initials |
| Comments: Surrogate recoveries were within laboratory QC limits. | | | | | | |
| 15. Were laboratory control sample recoveries within control limits? | **X** | Yes | | No | JMM | Initials |
| Comments: The LCS recoveries were within control limits. | | | | | | |
| 16. Were matrix spike recoveries within control limits? | **X** | Yes | | No | JMM | Initials |
| Comments: All matrix spike recoveries were within control limits | | | | | | |
| 17. Were duplicate RPDs and/or serial dilution %Ds within control limits? | **X** | Yes | | No | JMM | Initials |
| Comments: RPDs for MS/MSDs, laboratory duplicate samples and LCS/LCSDs met QC criteria for all target compounds/analytes for the samples validated. | | | | | | |
| 18. Were organic system performance criteria met? | **X** | Yes | | No | JMM | Initials |
| Comments: All GC/MS internal standards were within method criteria for the samples validated. | | | | | | |
| 19. Were internal standards within method criteria for GS/MS sample analyses? | **X** | Yes | | No | JMM | Initials |
| Comments: All GC/MS internal standards were within method criteria for the samples validated. | | | | | | |
| 20. Were inorganic system performance criteria met? | **NA** | Yes | **NA** | No | JMM | Initials |
| Comments: Inorganic analyses were not performed. | | | | | | |
| 21. Were blind field duplicates collected? If so, discuss the precision (RPD) of the results. | **X** | Yes | | No | JMM | Initials |
| Comments: RPD's exceeded the 30% advisory limit for variation between primary and duplicate for the samples as bolded in following page | | | | | | |
| 22. Were qualitative criteria for organic target analyte identification met? | **X** | Yes | | No | JMM | Initials |
| Comments: All qualitative criteria for organic target analyte identification were met. | | | | | | |
| 23. Were 100% of the EDD concentrations and reporting limits compared to the hardcopy data reports? | **NA** | Yes | **NA** | No | JMM | Initials |
| Comments: The EDD is not routinely reviewed as part of the data validation process. | | | | | | |

# Appendix E - Data Validation
# Field Duplicate Comparisons
# ACLC - Macon, Georgia
# February 21-28, 2017

| Parameter | MW-110D-20170223-01 | | DUP-04-20170223-01 | | RPD(%) |
|---|---|---|---|---|---|
| Benzene | 70 | ug/L | 63 | ug/L | 11 |
| Ethylbenzene | 150 | µg/L | 160 | µg/L | 6 |
| Xyenes, Total | 5.7 | ug/L | 6.0 | ug/L | 5 |
| Acenaphthene | 46 | µg/L | 55 | µg/L | 18 |
| Acenaphthylene | 1.9 | µg/L | 1.8 | µg/L | 5 |
| Anthracene | 6.2 | ug/L | 5.5 | ug/L | 12 |
| Benzo(a)anthracene | 0.20 | ug/L | 0.17 | ug/L | 16 |
| Chrysene | 0.16 | ug/L | 0.14 | ug/L | 13 |
| Fluoranthene | 4.5 | ug/L | 4.1 | ug/L | 9 |
| Fluorene | 15 | µg/L | 19 | µg/L | 24 |
| **Naphthalene** | **760** | **µg/L** | **1100** | **ug/L** | **37** |
| Phenanthrene | 26 | µg/L | 32 | µg/L | 21 |
| Pyrene | 5.6 | µg/L | 5.1 | µg/L | 9 |

| Parameter | MW-205D-20170224-01 | | DUP-05-20170224-01 | | RPD(%) |
|---|---|---|---|---|---|
| Benzene | 4300 | ug/L | 4300 | ug/L | 0 |
| Ethylbenzene | 860 | µg/L | 950 | µg/L | 10 |
| Toluene | 12 | µg/L | 14 | µg/L | 15 |
| **Xyenes, Total** | **580** | **ug/L** | **420** | **ug/L** | **32** |
| Acenaphthene | 120 | µg/L | 140 | µg/L | 15 |
| Acenaphthylene | 1.4 | µg/L | <1.0 | µg/L | NC |
| Anthracene | 5.3 | ug/L | 4.9 | ug/L | 8 |
| Fluoranthene | 1.6 | ug/L | 1.6 | ug/L | 0 |
| Fluorene | 29 | µg/L | 34 | µg/L | 16 |
| Naphthalene | 3400 | µg/L | 3700 | ug/L | 8 |
| Phenanthrene | 31 | µg/L | 37 | µg/L | 18 |
| Pyrene | 1.7 | µg/L | 1.5 | µg/L | 13 |

# Historical Data Summary (CD ONLY)

*Appendix F*

*Project No. 0366660*
*Atlanta Gas Light Company*

**Environmental Resources Management**
3200 Windy Hill Road SE, Suite 1500W
Atlanta, Georgia 30339
(678) 486-2700

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | AMW-1 (Abandoned) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 04/28/15 | 08/05/13 | 02/04/13 | 11/05/12 | 08/06/12 | 05/14/12 | 02/08/12 | 11/15/11 | 08/09/11 | 05/02/11 | 02/17/11 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.96 | 6.58 | 6.15 | 6.23 | 5.92 | 6.21 | 6.10 | 6.38 | 6.46 | 6.52 | 6.90 |
| Specific Conductance | µS/cm | N/A | N/A | 944 | 1371 | 581 | 524 | 605 | 584 | 496 | 593 | 597 | 655 | 589 |
| Temperature | °Celsius | N/A | N/A | 21.15 | 27.21 | 15.66 | 22.66 | 26.50 | 22.67 | 21.37 | 24.40 | 27.69 | 21.87 | 21.53 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.67 | 0.18 | 0.20 | 1.40 | 1.16 | 0.38 | 1.35 | 0.76 | 0.32 | 0.22 | 0.08 |
| ORP | mV | N/A | N/A | -42.5 | 160.5 | 129.5 | 25.0 | 36.0 | 25.9 | 54.4 | -68.2 | 126.9 | -364.1 | -490.3 |
| Turbidity | NTU | N/A | N/A | 27.5 | 7.41 | 4.97 | 10.38 | 284 | 17.4 | 23 | 864 | 790 | 234 | 74 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | < 0.050 | -- | -- | -- | **0.75** | -- | -- | -- | < 0.050 |
| Sulfate | mg/L | N/A | N/A | -- | -- | **95** | -- | -- | -- | **62** | -- | -- | -- | **23** |
| Sulfide | mg/L | N/A | N/A | -- | -- | < 1.0 | -- | -- | -- | **1.5** | -- | -- | -- | < 1.0 |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | 0.47 HF | -- | -- | -- | < 0.10 HF | -- | -- | -- | **2.2** HF |
| Total Iron | mg/L | N/A | N/A | -- | -- | **1.2** | -- | -- | -- | **4.2** | -- | -- | -- | **14** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | **120** | -- | -- | -- | **2.1** | -- | -- | -- | **0.67** |
| Methane | mg/L | N/A | N/A | -- | -- | **1.3** | -- | -- | -- | < 0.58 | -- | -- | -- | **430** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | **15** | -- | -- | -- | **5.5** | -- | -- | -- | **4.5** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | **5.1** | -- | -- | -- | **1.8** | -- | -- | -- | **1.5** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | **22** | **51** | **170** | **300** |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | **11** | **10** | **34** | **42** |
| Toluene | µg/L | 1,000* | 1,100 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 10 | < 10 |
| Total Xylenes | µg/L | 31,000 | 200,000 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **17** | **26** |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | < 10 | < 10 | < 0.23 | 0.28 | 1.1 | 1.7 | -- | -- | -- | -- | -- |
| Acenaphthylene | µg/L | 470 | 3,100 | < 10 | < 10 | < 0.23 | < 0.21 | < 0.19 | < 0.19 | -- | -- | -- | -- | -- |
| Anthracene | µg/L | 4,700 | 31,000 | < 10 | < 10 | < 0.23 | < 0.21 | < 0.19 | < 0.19 | -- | -- | -- | -- | -- |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | < 0.050 | < 0.20 | < 0.23 | < 0.21 | < 0.19 | < 0.19 | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | < 0.050 | < 0.20 | < 0.23 | < 0.21 | < 0.19 | < 0.19 | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | < 0.10 | < 0.20 | < 0.23 | < 0.21 | < 0.19 | < 0.19 | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 10 | < 10 | < 0.23 | < 0.21 | < 0.19 | < 0.19 | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 10 | < 10 | < 0.23 | < 0.21 | < 0.19 | < 0.19 | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | < 10 | < 10 | < 0.23 | < 0.21 | < 0.19 | < 0.19 | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | < 0.10 | < 0.20 | < 0.23 | < 0.21 | < 0.19 | < 0.19 | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | < 10 | < 10 | < 2.3 | < 2.1 | < 1.9 | < 1.9 | -- | -- | -- | -- | -- |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 10 | < 10 | < 0.23 | < 0.21 | < 0.19 | < 0.19 | -- | -- | -- | -- | -- |
| Fluorene | µg/L | 1,000* | 4,100 | < 10 | < 10 | < 0.23 | **0.65** | **0.59** | **0.33** | -- | -- | -- | -- | -- |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | < 0.050 | < 0.20 | < 0.23 | < 0.21 | < 0.19 | < 0.19 | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 10 | < 10 | < 2.3 | < 2.1 | < 1.9 | < 1.9 | -- | -- | -- | -- | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | < 10 | < 10 | < 2.3 | < 2.1 | < 1.9 | < 1.9 | -- | -- | -- | -- | -- |
| Naphthalene | µg/L | 20* | 20* | < 10 | < 10 | < 0.23 | < 0.21 | < 0.19 | < 0.19 | < 5.0 | < 5.0 | < 5.0 * | **62** | **110** |
| Phenanthrene | µg/L | 470 | 3,100 | < 10 | < 10 | < 0.23 | < 0.21 | < 0.19 | < 0.19 | -- | -- | -- | -- | -- |
| Phenol | µg/L | 9,390 | 61,000 | < 10 | < 10 | < 1.2 | < 1.1 | < 0.19 | < 0.19 | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | < 10 | < 10 | < 0.23 | 0.22 | 0.26 | < 0.96 | -- | -- | -- | -- | -- |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 400 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Arsenic | µg/L | 50* | 50* | < 50 | < 50 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Barium | µg/L | 2,000 | 7,200 | **59.6** | **105** | **75** | **95** | **120** | **10** | **94** | **230** | **140** | **190** | **170** |
| Beryllium | µg/L | 31 | 200 | < 10 | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5 | < 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | < 10 | **13** | < 10 | < 10 | 22 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 23 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Zinc | µg/L | 4,700 | 31,000 | < 20 | < 20 | < 20 | < 20 | **20** | **21** | -- | -- | -- | -- | -- |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- |
| Total Cyanide | µg/L | 310 | 2,000 | < 0.10 | **35** | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | AMW-2 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/21/17 | 08/23/16 | 04/27/15 | 08/05/13 | 02/04/13 | 11/05/12 | 08/06/12 | 05/14/12 | 02/07/12 | 11/15/11 | 08/09/11 | 05/02/11 | 02/16/11 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.48 | 6.24 | 5.92 | 6.52 | 6.30 | 5.96 | 5.36 | 6.00 | 5.99 | 6.02 | 5.74 | 5.84 | 5.98 |
| Specific Conductance | µS/cm | N/A | N/A | 202.37 | 258.2 | 309 | 352 | 401 | 502 | 492 | 403 | 388 | 544 | 717 | 507 | 414 |
| Temperature | °Celsius | N/A | N/A | 18.85 | 21.28 | 20.57 | 25.48 | 18.26 | 23.57 | 28.97 | 24.27 | 20.89 | 22.06 | 25.39 | 20.39 | 18.19 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 2.81 | 0.43 | 2.25 | 0.41 | 3.40 | 0.34 | 1.51 | 0.33 | 0.56 | 0.61 | 1.65 | 0.38 | 1.86 |
| ORP | mV | N/A | N/A | 111.74 | -22.0 | -39.3 | 130.9 | 106.6 | 52.9 | 48.6 | -8.3 | -47.9 | 150.8 | 147.0 | -55.1 | 61.1 |
| Turbidity | NTU | N/A | N/A | 2.33 | 4.45 | 3.42 | 0.99 | 5.90 | 4.41 | 6.39 | 1.81 | 20.8 | 9.77 | 290 | 8.31 | 9.70 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | **--** | **--** | **--** | **4.0** | **--** | -- | -- | **1.3** | -- | -- | -- | **4.9** |
| Sulfate | mg/L | N/A | N/A | -- | **--** | **--** | **--** | **60** | **--** | -- | -- | **65** | -- | -- | -- | **100** |
| Sulfide | mg/L | N/A | N/A | -- | **--** | **--** | **--** | < 1.0 | **--** | -- | -- | < 1.0 | -- | -- | -- | < 1.0 |
| Ferrous Iron | mg/L | N/A | N/A | -- | **--** | **--** | **--** | **2.3** HF | **--** | -- | -- | **21** HF | -- | -- | -- | **7.4** HF |
| Total Iron | mg/L | N/A | N/A | -- | **--** | **--** | **--** | **4.2** | **--** | -- | -- | **25** | -- | -- | -- | **8.2** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | **--** | **--** | **--** | **97** | **--** | -- | -- | **1.7** | -- | -- | -- | **1.2** |
| Methane | mg/L | N/A | N/A | -- | **--** | **--** | **--** | **17** | **--** | -- | -- | **39** | -- | -- | -- | **30** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | **--** | **--** | **--** | **18** | **--** | -- | -- | **4.9** | -- | -- | -- | **4.1** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | **--** | **--** | **--** | **6.2** | **--** | -- | -- | **1.5** | -- | -- | -- | **1.4** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | < 0.50 | <0.50 | < 10 | < 10 | **2.8** | **4.2** | **8.4** | **12** | -- | -- | -- | -- | -- |
| Acenaphthylene | µg/L | 470 | 3,100 | < 1.0 | <1.0 | < 10 | < 10 | **0.29** | **0.52** | **0.97** | **1.2** | -- | -- | -- | -- | -- |
| Anthracene | µg/L | 4,700 | 31,000 | < 0.050 | <0.050 | < 10 | < 10 | < 0.22 | < 0.22 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | **0.19** | <0.050 | < 0.050 | < 0.20 | < 0.22 | < 0.22 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | **0.12** | <0.050 | < 0.050 | < 0.20 | < 0.22 | < 0.22 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | **0.14** | <0.10 | < 0.10 | < 0.20 | < 0.22 | < 0.22 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | **0.15** | <0.10 | < 10 | < 10 | < 0.22 | < 0.22 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | **0.14** | <0.050 | < 10 | < 10 | < 0.22 | < 0.22 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | **0.20** | <0.050 | < 10 | < 10 | < 0.22 | < 0.22 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | **0.11** | <0.10 | < 0.10 | < 0.20 | < 0.22 | < 0.22 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | < 10 | <10 | < 10 | < 10 | < 2.2 | < 2.2 | < 2.0 | < 0.22 | -- | -- | -- | -- | -- |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 0.10 | <0.10 | < 10 | < 10 | < 0.22 | **0.38** | **0.49** | < 2.2 | -- | -- | -- | -- | -- |
| Fluorene | µg/L | 1,000* | 4,100 | < 0.10 | <0.10 | < 10 | < 10 | **0.74** | **1.1** | **2.6** | **0.33** | -- | -- | -- | -- | -- |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | **0.13** | <0.050 | < 0.050 | < 0.20 | < 0.22 | < 0.22 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 10 | <10 | < 10 | < 10 | < 2.2 | < 2.2 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | < 10 | <10 | < 10 | < 10 | < 2.2 | < 2.2 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- |
| Naphthalene | µg/L | 20* | 20* | < 0.50 | <0.50 | < 10 | < 10 | < 0.22 | < 0.22 | < 0.20 | < 0.22 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Phenanthrene | µg/L | 470 | 3,100 | < 0.050 | <0.050 | < 10 | < 10 | < 0.22 | < 0.22 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| Phenol | µg/L | 9,390 | 61,000 | < 10 | <10 | < 10 | < 10 | < 1.1 | < 1.1 | < 0.98 | < 1.1 | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | **0.052** | <0.050 | < 10 | < 10 | **0.25** | **0.87** | **0.73** | **1.4** | -- | -- | -- | -- | -- |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 400 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Barium | µg/L | 2,000 | 7,200 | -- | **104** | **111** | **125** | **76** | **66** | **64** | **51** | **48** | **61** | **39** | **54** | **52** |
| Beryllium | µg/L | 31 | 200 | -- | <10 | < 10 | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | **5.3** | **7.0** | **13.9** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 20 | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Zinc | µg/L | 4,700 | 31,000 | -- | **66.3** | **91.4** | < 20 | **245** | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Mercury | µg/L | 2* | 2* | -- | <0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- |
| Total Cyanide | µg/L | 310 | 2,000 | -- | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | AMW-3 (Abandoned) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/05/13 | 02/11/13 | 02/13 DUP | 11/05/12 | 08/06/12 | 05/15/12 | 05/12 DUP | 02/07/12 | 11/17/11 | 08/10/11 | 05/03/11 | 02/17/11 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.25 | 6.56 | 6.56 | 5.90 | 5.20 | 5.86 | 5.86 | 6.19 | 6.08 | 5.86 | 6.02 | 6.43 |
| Specific Conductance | µS/cm | N/A | N/A | 746 | 613 | 613 | 647 | 682 | 740 | 740 | 784 | 527 | 509 | 782 | 674 |
| Temperature | °Celsius | N/A | N/A | 25.67 | 19.33 | 19.33 | 22.73 | 25.72 | 24.84 | 24.84 | 19.26 | 23.02 | 24.46 | 19.79 | 18.59 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 1.06 | 4.73 | 4.73 | 0.90 | 1.72 | 0.28 | 0.28 | 4.50 | 0.51 | 0.93 | 3.83 | 2.68 |
| ORP | mV | N/A | N/A | 142.8 | 114.3 | 114.3 | 153.6 | 189.5 | 123.5 | 123.5 | -8.4 | 5.0 | 329.4 | -29.2 | 0.0 |
| Turbidity | NTU | N/A | N/A | 0.97 | 1.79 | 1.79 | 3.25 | 281 | 8.09 | 8.09 | 3.32 | 292 | >1000 | 13.2 | 8.42 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | **1.3** | **1.4** | -- | -- | -- | -- | **6.1** | -- | -- | -- | **5.4** |
| Sulfate | mg/L | N/A | N/A | -- | **150** | **150** | -- | -- | -- | -- | **280** | -- | -- | -- | **220** |
| Sulfide | mg/L | N/A | N/A | -- | < 1.0 | < 1.0 | -- | -- | -- | -- | **1.4** | -- | -- | -- | < 1.0 |
| Ferrous Iron | mg/L | N/A | N/A | -- | < 0.10 HF | < 0.10 HF | -- | -- | -- | -- | < 0.10 HF | -- | -- | -- | < 0.010 HF |
| Total Iron | mg/L | N/A | N/A | -- | < 0.10 | < 0.10 | -- | -- | -- | -- | < 0.10 | -- | -- | -- | **0.62** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | **61** | **66** | -- | -- | -- | -- | **1.0** | -- | -- | -- | **0.91** |
| Methane | mg/L | N/A | N/A | -- | < 0.58 | < 0.58 | -- | -- | -- | -- | < 0.58 | -- | -- | -- | **1.1** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | **5.0** | -- | -- | -- | **4.5** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | **8.9** | **8.7** | -- | -- | -- | -- | **1.8** | -- | -- | -- | **1.5** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | < 10 | < 0.19 | < 0.20 | < 0.23 | < 0.20 | < 0.23 | < 0.21 | -- | -- | -- | -- | -- |
| Acenaphthylene | µg/L | 470 | 3,100 | < 10 | < 0.19 | < 0.20 | < 0.23 | < 0.20 | < 0.23 | < 0.21 | -- | -- | -- | -- | -- |
| Anthracene | µg/L | 4,700 | 31,000 | < 10 | < 0.19 | < 0.20 | < 0.23 | < 0.20 | < 0.23 | < 0.21 | -- | -- | -- | -- | -- |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | < 0.20 | < 0.19 | < 0.20 | < 0.23 | < 0.20 | **0.28** | < 0.21 | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | < 0.20 | < 0.19 | < 0.20 | < 0.23 | < 0.20 | **0.25** | < 0.21 | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | < 0.20 | < 0.19 | < 0.20 | < 0.23 | < 0.20 | < 0.23 | < 0.21 | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 10 | < 0.19 | < 0.20 | < 0.23 | < 0.20 | < 0.23 | < 0.21 | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 10 | < 0.19 | < 0.20 | < 0.23 | < 0.20 | < 0.23 | < 0.21 | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | < 10 | < 0.19 | < 0.20 | < 0.23 | < 0.20 | **0.35** | < 0.21 | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | < 0.20 | < 0.19 | < 0.20 | < 0.23 | < 0.20 | < 0.23 | < 0.21 | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | < 10 | < 1.9 | < 2.0 | < 2.3 | < 2.0 | < 2.3 | < 2.1 | -- | -- | -- | -- | -- |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 10 | < 0.19 | < 0.20 | < 0.23 | < 0.20 | **0.27** | < 0.21 | -- | -- | -- | -- | -- |
| Fluorene | µg/L | 1,000* | 4,100 | < 10 | < 0.19 | < 0.20 | < 0.23 | < 0.20 | < 0.23 | < 0.21 | -- | -- | -- | -- | -- |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | < 0.20 | < 0.19 | < 0.20 | < 0.23 | < 0.20 | < 0.23 | < 0.21 | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 10 | < 1.9 | < 2.0 | < 2.3 | < 2.0 | < 2.3 | < 2.1 | -- | -- | -- | -- | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | < 10 | < 1.9 | < 2.0 | < 2.3 | < 2.0 | < 2.3 | < 2.1 | -- | -- | -- | -- | -- |
| Naphthalene | µg/L | 20* | 20* | < 10 | **0.59** | < 0.20 | < 0.23 | < 0.20 | < 0.23 | < 0.21 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Phenanthrene | µg/L | 470 | 3,100 | < 10 | < 0.19 | < 0.20 | < 0.23 | < 0.20 | < 0.23 | < 0.21 | -- | -- | -- | -- | -- |
| Phenol | µg/L | 9,390 | 61,000 | < 10 | < 0.97 | < 0.99 | < 1.2 | < 0.98 | < 1.1 | < 1.0 | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | < 10 | < 0.19 | < 0.20 | < 0.23 | < 0.20 | **0.58** | **0.22** | -- | -- | -- | -- | -- |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 400 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Arsenic | µg/L | 50* | 50* | < 50 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Barium | µg/L | 2,000 | 7,200 | **60.1** | **42** | **44** | **38** | **90** | **36** | **36** | **45** | **78** | **460** | **57** | **93** |
| Beryllium | µg/L | 31 | 200 | < 10.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10.0 | < 10 | < 10 | < 10 | **19** | < 10 | < 10 | < 10 | < 10 | **42** | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10.0 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | **320** | < 20 | < 20 |
| Lead | µg/L | 15* | 15* | < 10.0 | < 10 | < 10 | < 10 | **20** | < 10 | < 10 | < 10 | **25** | **560** | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 20.0 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Zinc | µg/L | 4,700 | 31,000 | < 20.0 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- |
| Total Cyanide | µg/L | 310 | 2,000 | **16** | < 10 | < 10 | **26** | **22** | **21** | **21** | < 10 | -- | -- | -- | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | AMW-4 (Abandoned) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/07/13 | 03/14/13 | 11/06/12 | 08/08/12 | 05/15/12 | 02/08/12 | 11/17/11 | 08/11/11 | 05/04/11 | 02/18/11 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.59 | 6.90 | 6.59 | 6.13 | 6.44 | 6.71 | 6.66 | 6.71 | 6.70 | 6.87 |
| Specific Conductance | µS/cm | N/A | N/A | 902 | 960 | 754 | 884 | 953 | 738 | 723 | 817 | 849 | 559 |
| Temperature | °Celsius | N/A | N/A | 24.10 | 17.61 | 22.32 | 25.18 | 23.58 | 18.59 | 24.48 | 23.32 | 18.06 | 19.26 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.65 | 2.91 | 2.62 | 0.33 | 0.78 | 1.86 | 1.00 | 0.23 | 0.52 | 0.50 |
| ORP | mV | N/A | N/A | -73.9 | 63.6 | -106.1 | -82.9 | 74.1 | -27.4 | -96.7 | 150.2 | -92.4 | -370.1 |
| Turbidity | NTU | N/A | N/A | 7.84 | 8.72 | 2087 | 271 | 103 | 211 | 123 | >1000 | 107 | >999 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | **14** | -- | -- | -- | **0.59** | -- | -- | -- | **9.6** |
| Sulfate | mg/L | N/A | N/A | -- | **138** | -- | -- | -- | **47** | -- | -- | -- | **55** |
| Sulfide | mg/L | N/A | N/A | -- | < 1.0 | -- | -- | -- | < 1.0 | -- | -- | -- | **1.5** |
| Ferrous Iron | mg/L | N/A | N/A | -- | < 0.10 HF | -- | -- | -- | < 0.10 HF | -- | -- | -- | < 0.010 HF |
| Total Iron | mg/L | N/A | N/A | -- | **0.26** | -- | -- | -- | **1.0** | -- | -- | -- | **8.0** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | **38** | -- | -- | -- | **1.5** | -- | -- | -- | **0.41** |
| Methane | mg/L | N/A | N/A | -- | **37** | -- | -- | -- | **82** | -- | -- | -- | **140** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | **16** | -- | -- | -- | **5.5** | -- | -- | -- | **4.7** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | **6.4** | -- | -- | -- | **1.7** | -- | -- | -- | **1.7** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | **1,000** | **5.1** | **5,400** | **1,800** | **1,300** | **720** | **4,900** | **5,000** | **3,200** | **1,700** |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 5.0 | < 2.0 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | **230** | <1.0 | **1200** | **430** | **300** | **140** | **640** | **450** | **890** | **290** |
| Toluene | µg/L | 1,000* | 1,100 | **190** | **1.6** | **4,400** | **1,200** | **630** | **610** | **4,200** | **4,100** | **3,000** | **1,800** |
| Total Xylenes | µg/L | 31,000 | 200,000 | **480** | **3.1** | **4,200** | **990** | **570** | **780** | **3,200** | **2,700** | **4,600** | **1,400** |
| Semivolatile Organic Compounds | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | < 10 | <0.19 | **34** | **23** | **27** | -- | -- | -- | -- | -- |
| Acenaphthylene | µg/L | 470 | 3,100 | < 10 | <0.19 | **54** | **42** | **35** | -- | -- | -- | -- | -- |
| Anthracene | µg/L | 4,700 | 31,000 | < 10 | <0.19 | < 0.10 | **4.0** | **1.9** | -- | -- | -- | -- | -- |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | < 0.20 | <0.19 | < 0.10 | < 2.1 | < 1.1 | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | < 0.20 | <0.19 | < 0.10 | < 2.1 | < 1.1 | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | < 0.20 | <0.19 | < 0.10 | < 2.1 | < 1.1 | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 10 | <0.19 | < 0.10 | < 2.1 | < 1.1 | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 10 | <0.19 | < 0.10 | < 2.1 | < 1.1 | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | < 10 | <0.19 | < 0.10 | < 2.1 | < 1.1 | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | < 0.20 | <0.19 | < 0.10 | < 2.1 | < 1.1 | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | < 10 | <1.9 | **130** | < 21 | < 11 | -- | -- | -- | -- | -- |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 10 | <0.19 | < 0.10 | **3.2** | < 1.1 | -- | -- | -- | -- | -- |
| Fluorene | µg/L | 1,000* | 4,100 | < 10 | <0.19 | **21** | **17** | **15** | -- | -- | -- | -- | -- |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | < 0.20 | <0.19 | < 0.10 | < 2.1 | < 1.1 | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 10 | <1.9 | < 100 | **29** | < 11 | -- | -- | -- | -- | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | < 10 | <1.9 | < 100 | < 21 | < 11 | -- | -- | -- | -- | -- |
| Naphthalene | µg/L | 20* | 20* | **150** | <0.19 | **1,800** | **690** D | **420** | **510** | **1,900** | **1,100** | **1,200** | **530** |
| Phenanthrene | µg/L | 470 | 3,100 | < 10 | <0.19 | **42** | **46** | **25** | -- | -- | -- | -- | -- |
| Phenol | µg/L | 9,390 | 61,000 | < 10 | <0.96 | **960** | **47** | **15** | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | < 10 | <0.19 | < 0.10 | **3.9** | **1.3** | -- | -- | -- | -- | -- |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 400 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Arsenic | µg/L | 50* | 50* | < 50 | < 20 | < 20 | **56** | < 20 | -- | -- | -- | -- | -- |
| Barium | µg/L | 2,000 | 7,200 | **127** | **130** | **340** | **1,100** | **170** | **250** | **320** | **620** | **170** | **120** |
| Beryllium | µg/L | 31 | 200 | < 10 | < 4.0 | < 4.0 | **9.9** | < 4.0 | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | **430** | < 10 | < 10 | < 10 | **22** | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10 | < 20 | < 20 | **310** | < 20 | < 20 | < 20 | **91** | < 20 | < 20 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | **400** | < 10 | < 10 | < 10 | **190** | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 20 | < 40 | < 40 | **120** | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Zinc | µg/L | 4,700 | 31,000 | < 20 | < 20 | < 20 | **440** | < 20 | -- | -- | -- | -- | -- |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- |
| Total Cyanide | µg/L | 310 | 2,000 | < 10 | < 10 | < 10 | **10** | < 10 | < 10 | < 10 | -- | -- | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
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mg/L - milligrams per liter
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N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

# Appendix F
## Historical Data Summary - Alluvial Groundwater Analytical Data
## November 2001 through February 2017
## Atlanta Gas Light Company
## Former Manufactured Gas Plant Site
## Macon, Georgia

| Parameter | Units | Type 2 RRS | Type 4 RRS | AMW-5 (Abandoned) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/07/13 | 03/13/13 | 11/06/12 | 08/07/12 | 05/15/12 | 02/08/12 | 11/17/11 | DUP 11/17 | 08/10/11 | 08/11 DUP | 05/04/11 | 02/22/11 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.35 | 6.39 | 6.27 | 6.31 | 6.38 | 6.20 | 6.52 | 6.52 | 6.41 | 6.41 | 6.46 | 6.62 |
| Specific Conductance | µS/cm | N/A | N/A | 646 | 433 | 490 | 520 | 582 | 354 | 479 | 479 | 536 | 536 | 526 | 383 |
| Temperature | °Celsius | N/A | N/A | 21.95 | 17.76 | 22.09 | 24.69 | 23.75 | 19.55 | 21.24 | 21.24 | 21.70 | 21.70 | 18.86 | 19.99 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.48 | 0.40 | 1.71 | 3.63 | 0.59 | 1.62 | 0.35 | 0.35 | 0.25 | 0.25 | 0.12 | 0.37 |
| ORP | mV | N/A | N/A | -90.7 | -225.5 | -73.9 | -21.1 | -77.9 | -19.9 | -93.5 | -93.5 | 151.8 | 151.8 | -100.8 | -356.3 |
| Turbidity | NTU | N/A | N/A | 4.46 | 8.82 | 5.10 | 2.84 | 1.45 | 1.48 | 9.86 | 9.86 | >1000 | >1000 | 36.9 | >999 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | < 0.050 | -- | -- | -- | < 0.050 | -- | -- | -- | -- | -- | < 0.050 |
| Sulfate | mg/L | N/A | N/A | -- | 6.0 | -- | -- | -- | < 5.0 | -- | -- | -- | -- | -- | < 5.0 |
| Sulfide | mg/L | N/A | N/A | -- | < 1.0 | -- | -- | -- | < 1.0 | -- | -- | -- | -- | -- | < 1.0 |
| Ferrous Iron | mg/L | N/A | N/A | -- | 0.58 HF | -- | -- | -- | 5.6 HF | -- | -- | -- | -- | -- | 4.1 HF |
| Total Iron | mg/L | N/A | N/A | -- | 14 | -- | -- | -- | 11 | -- | -- | -- | -- | -- | 22 |
| Carbon Dioxide | mg/L | N/A | N/A | -- | 100 | -- | -- | -- | 2.0 | -- | -- | -- | -- | -- | 0.92 |
| Methane | mg/L | N/A | N/A | -- | 620 | -- | -- | -- | 220 | -- | -- | -- | -- | -- | 490 |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | 19 | -- | -- | -- | 5.3 | -- | -- | -- | -- | -- | 3.0 |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | 5.1 | -- | -- | -- | 1.4 | -- | -- | -- | -- | -- | 1.0 |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | 840 | 540 | 910 | 390 | 680 | 640 | 520 | 610 | 890 | 960 | 720 | 900 |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 5.0 | < 10 | < 10 | < 10 | < 20 | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | 700 | 280 | 1,000 | 500 | 460 | 220 | 480 | 550 | 830 | 680 | 580 | 920 |
| Toluene | µg/L | 1,000* | 1,100 | 400 | 430 | 1,200 | 340 | 630 | 640 | 520 | 670 | 1,700 | 1,600 | 870 | 2,000 |
| Total Xylenes | µg/L | 31,000 | 200,000 | 1,300 | 2,200 | 4,100 | 1,400 | 2,300 | 2,400 | 1,500 | 1,700 | 3,600 | 2,900 | 3,000 | 4,000 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | 28 | 37 | 40 | 32 | 51 | -- | -- | -- | -- | -- | -- | -- |
| Acenaphthylene | µg/L | 470 | 3,100 | 33 | 40 | 43 | 21 | 48 | -- | -- | -- | -- | -- | -- | -- |
| Anthracene | µg/L | 4,700 | 31,000 | < 10 | 4.5 | < 20 | < 1.9 | < 23 | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | 1.2 | < 3.9 | < 20 | < 1.9 | < 23 | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | 0.56 | < 3.9 | < 20 | < 1.9 | < 23 | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | 1.3 | < 3.9 | < 20 | < 1.9 | < 23 | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 10 | < 3.9 | < 20 | < 1.9 | < 23 | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 10 | < 3.9 | < 20 | < 1.9 | < 23 | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | < 10 | < 3.9 | < 20 | < 1.9 | < 23 | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | 0.21 | < 3.9 | < 20 | < 1.9 | < 23 | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | 62 | < 39 | < 200 | 120 | < 230 | -- | -- | -- | -- | -- | -- | -- |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 10 | < 3.9 | < 20 | < 1.9 | < 23 | -- | -- | -- | -- | -- | -- | -- |
| Fluorene | µg/L | 1,000* | 4,100 | 14 | 22 | 26 | 17 | 28 | -- | -- | -- | -- | -- | -- | -- |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | 0.37 | < 3.9 | < 20 | < 1.9 | < 23 | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | 12 | < 39 | < 200 | < 19 | < 230 | -- | -- | -- | -- | -- | -- | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | 17 | < 39 | < 200 | 38 | < 230 | -- | -- | -- | -- | -- | -- | -- |
| Naphthalene | µg/L | 20* | 20* | 1,400 | 950 | 2,500 | 440 | 2,700 | 1,800 | 1,600 | 1,300 | 2,500 * | 2,600 | 3,600 | 2,900 |
| Phenanthrene | µg/L | 470 | 3,100 | 42 | 70 | 130 | 38 | 62 | -- | -- | -- | -- | -- | -- | -- |
| Phenol | µg/L | 9,390 | 61,000 | < 10 | < 20 | < 98 | < 9.5 | < 110 | -- | -- | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | < 10 | < 3.9 | < 20 | 2.1 | < 23 | -- | -- | -- | -- | -- | -- | -- |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 400 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- |
| Arsenic | µg/L | 50* | 50* | < 50 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- |
| Barium | µg/L | 2,000 | 7,200 | 318 | 240 | 520 | 150 | 220 | 330 | 330 | 270 | 460 | 470 | 290 | 400 |
| Beryllium | µg/L | 31 | 200 | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | 14 | < 10 | < 10 | < 10 | < 10 | < 10 | 12 | 44 | 27 | 12 |
| Copper | µg/L | 630 | 4,100 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | 22 | < 20 | < 20 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 33 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Zinc | µg/L | 4,700 | 31,000 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- |
| Total Cyanide | µg/L | 310 | 2,000 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | -- | -- | < 10 |

Notes:

**Analyte was detected above laboratory detection limit**

**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**

*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical

ft AMSL - feet Above Mean Sea Level

RRS - Risk Reduction Standard

SU - Stamdard Units

µS/cm - microsiemens per centimeter

µg/L - micrograms per liter

mg/L - milligrams per liter

mV - millivolts

NTU - nephelometric turbidity units

N/A - RRS are not applicable to this parameter

-- Not Analyzed

HF - Holding time of 15 minutes was exceeded

Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | AMW-6 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/21/17 | 08/22/16 | 08/05/13 | 02/12/13 | 11/05/12 | 08/06/12 | 05/14/12 | 02/09/12 | 11/18/11 | 08/08/11 | 05/03/11 | 02/17/11 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.45 | 5.66 | 7.23 | 5.97 | 5.62 | 5.79 | 5.71 | 5.89 | 6.20 | 5.65 | 5.94 | 6.02 |
| Specific Conductance | µS/cm | N/A | N/A | 599.4 | 527.5 | 602 | 492 | 516 | 541 | 499 | 426 | 507 | 597 | 736 | 441 |
| Temperature | °Celsius | N/A | N/A | 21.49 | 28.57 | 26.27 | 17.92 | 21.10 | 25.98 | 20.74 | 17.47 | 16.18 | 24.70 | 18.61 | 17.55 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 4.68 | 0.21 | 0.16 | 1.71 | 1.14 | 0.75 | 0.80 | 1.32 | 0.40 | 0.47 | 0.44 | 4.78 |
| ORP | mV | N/A | N/A | 106.8 | 176.7 | -5.6 | -35.7 | 4.0 | 48.2 | 65.4 | -6.5 | 0.1 | -16.1 | -39.8 | -2.6 |
| Turbidity | NTU | N/A | N/A | 9.2 | 1.51 | 6.01 | 5.67 | 1291 | 9.7 | 9.27 | 9.08 | 8.94 | 4.22 | 23.8 | 121 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | -- | < 0.050 | -- | -- | -- | < 0.050 | -- | -- | -- | < 0.050 |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | **140** | -- | -- | -- | **120** | -- | -- | -- | **130** |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | < 1.0 | -- | -- | -- | < 1.0 | -- | -- | -- | < 1.0 |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | **12** HF | -- | -- | -- | **5.1** HF | -- | -- | -- | **9.7** HF |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | **13** | -- | -- | -- | **6.0** | -- | -- | -- | **16** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | **140** | -- | -- | -- | **2.6** | -- | -- | -- | **2.1** |
| Methane | mg/L | N/A | N/A | -- | -- | -- | **23** | -- | -- | -- | **20** | -- | -- | -- | **15** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | **4.6** | -- | -- | -- | **3.0** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | **7.4** | -- | -- | -- | **1.4** | -- | -- | -- | **1.0** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | <5.0 | <5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | <0.50 | < 10 | **1.0** | **0.84** | **0.43** | **0.85** | -- | -- | -- | -- | -- |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | <1.0 | < 10 | < 0.20 | < 0.21 | < 0.23 | < 0.22 | -- | -- | -- | -- | -- |
| Anthracene | µg/L | 4,700 | 31,000 | <0.050 | <0.050 | < 10 | < 0.20 | < 0.21 | < 0.23 | < 0.22 | -- | -- | -- | -- | -- |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | **0.019** | <0.050 | < 0.20 | < 0.20 | < 0.21 | < 0.23 | **0.24** | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | **0.12** | <0.050 | < 0.20 | < 0.20 | < 0.21 | < 0.23 | **0.22** | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | **0.12** | <0.10 | < 0.20 | < 0.20 | < 0.21 | < 0.23 | **0.39** | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | **0.15** | <0.10 | < 10 | < 0.20 | < 0.21 | < 0.23 | < 0.22 | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | **0.14** | <0.050 | < 10 | < 0.20 | < 0.21 | < 0.23 | < 0.22 | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | **0.20** | <0.050 | < 10 | < 0.20 | < 0.21 | < 0.23 | **0.26** | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | **0.11** | <0.10 | < 0.20 | < 0.20 | < 0.21 | < 0.23 | < 0.22 | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | <10 | <10 | < 10 | < 2.0 | < 2.1 | < 2.3 | < 2.2 | -- | -- | -- | -- | -- |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 10 | < 0.20 | < 0.21 | < 0.23 | **0.44** | -- | -- | -- | -- | -- |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 10 | < 0.20 | < 0.21 | < 0.23 | < 0.22 | -- | -- | -- | -- | -- |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | 0.13 | <0.050 | < 0.20 | < 0.20 | < 0.21 | < 0.23 | < 0.22 | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 10 | < 2.0 | < 2.1 | < 2.3 | < 2.2 | -- | -- | -- | -- | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 10 | < 2.0 | < 2.1 | < 2.3 | < 2.2 | -- | -- | -- | -- | -- |
| Naphthalene | µg/L | 20* | 20* | <0.50 | <0.50 | < 10 | < 0.20 | < 0.21 | < 0.23 | < 0.22 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | <0.050 | < 10 | < 0.20 | < 0.21 | < 0.23 | < 0.22 | -- | -- | -- | -- | -- |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | < 1.0 | < 1.0 | < 1.1 | < 1.1 | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | **0.052** | <0.050 | < 10 | < 0.20 | **0.23** | < 0.23 | **0.48** | -- | -- | -- | -- | -- |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 400 | -- | < 20 | < 20.0 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50.0 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Barium | µg/L | 2,000 | 7,200 | -- | **39.3** | **36.6** | **63** | **60** | **54** | **51** | **62** | **71** | **74** | **66** | **81** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | AMW-7 (Abandoned) | | | | | | | | | | AMW-8 (Abandoned) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/07/13 | 03/14/13 | 11/07/12 | 8/7/2012 | 05/16/12 | 02/08/12 | 11/17/11 | 08/09/11 | 05/04/11 | 02/22/11 | 08/07/13 | 03/13/13 | 11/07/12 | 8/7/2012 | 05/16/12 | 02/09/12 | 11/18/11 | 08/09/11 | 08/11 DUP | 05/04/11 | 05/11 DUP | 02/22/11 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.81 | 6.35 | 6.21 | 6.15 | 6.27 | 6.10 | 6.22 | 6.19 | 6.18 | 6.37 | 7.12 | 6.66 | 6.31 | 6.21 | 6.47 | 6.44 | 6.50 | 6.43 | 6.43 | 6.48 | 6.48 | 6.56 |
| Specific Conductance | µS/cm | N/A | N/A | 469 | 439 | 364 | 493 | 399 | 292 | 326 | 333 | 468 | 256 | 1,096 | 804 | 510 | 575 | 971 | 1,389 | 566 | 661 | 661 | 899 | 899 | 810 |
| Temperature | °Celsius | N/A | N/A | 24.13 | 16.90 | 17.93 | 27.64 | 22.42 | 18.00 | 19.63 | 22.44 | 17.68 | 17.44 | 23.13 | 16.52 | 17.04 | 22.86 | 21.58 | 17.35 | 20.69 | 27.16 | 27.16 | 17.70 | 17.70 | 18.23 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.59 | 1.14 | 7.13 | 3.99 | 1.58 | 5.50 | 0.53 | 0.41 | 0.31 | 0.78 | 0.18 | 3.39 | 0.50 | 2.68 | 0.41 | 0.94 | 0.58 | 0.16 | 0.16 | 0.52 | 0.52 | 0.29 |
| ORP | mV | N/A | N/A | -43.9 | 34.9 | -45.2 | 5.0 | -100.3 | 16.0 | -74.5 | 142.5 | -97.3 | -243.5 | -56.7 | 159.1 | -49.0 | -7.7 | -73.9 | -40.7 | -108.1 | 138.7 | 138.7 | -433.9 | -433.9 | -279.2 |
| Turbidity | NTU | N/A | N/A | 1.72 | 6.82 | 10 | 161 | 22.3 | 57.3 | 511 | >1000 | 452 | >999 | 1.09 | 5.03 | 101 | 83.3 | 9.2 | 9.82 | 308 | >1000 | >1000 | 7.06 | 7.06 | 381 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | **0.19** | -- | -- | -- | **0.47** | -- | -- | -- | **0.22** | -- | **0.28** | -- | -- | -- | **0.23** | -- | -- | -- | -- | -- | **1.0** |
| Sulfate | mg/L | N/A | N/A | -- | **78** | -- | -- | -- | **27** | -- | -- | -- | **18** | -- | **120** | -- | -- | -- | **200** | -- | -- | -- | -- | -- | **95** |
| Sulfide | mg/L | N/A | N/A | -- | **1.1** | -- | -- | -- | **1.6** | -- | -- | -- | **3.1** | -- | < 1.0 | -- | -- | -- | < 1.0 | -- | -- | -- | -- | -- | **5.3** |
| Ferrous Iron | mg/L | N/A | N/A | -- | **1.1** HF | -- | -- | -- | < 0.10 HF | -- | -- | -- | **1.4** HF | -- | < 0.10 HF | -- | -- | -- | **2.5** HF | -- | -- | -- | -- | -- | < 0.010 HF |
| Total Iron | mg/L | N/A | N/A | -- | **2.3** | -- | -- | -- | **1.0** | -- | -- | -- | **13** | -- | **1.1** | -- | -- | -- | **4.1** | -- | -- | -- | -- | -- | **18** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | **61** | -- | -- | -- | **1.2** | -- | -- | -- | **0.74** | -- | **71** | -- | -- | -- | **2.6** | -- | -- | -- | -- | -- | **1.1** |
| Methane | mg/L | N/A | N/A | -- | **19** | -- | -- | -- | **1.2** | -- | -- | -- | **100** | -- | < 0.58 | -- | -- | -- | **24** | -- | -- | -- | -- | -- | **12** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | **19** | -- | -- | -- | **4.7** | -- | -- | -- | **4.2** | -- | **17** | -- | -- | -- | **5.2** | -- | -- | -- | -- | -- | **3.9** |
| Dissolved Oxyger | mg/L | N/A | N/A | -- | **6.0** | -- | -- | -- | **1.6** | -- | -- | -- | **1.5** | -- | **6.9** | -- | -- | -- | **1.5** | -- | -- | -- | -- | -- | **1.3** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | **770** | **180** | **3,300** | **870** | **1,800** | **8.6** | **3,600** | **6,000** | **3,800** | **2,300** | < 5.0 | < 1.0 | **780** | **620** | **110** | **14** | **590** | **600** | **530** | < 50 | <25 | < 50 |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 5.0 | <10 | < 50 | < 50 | < 25 | -- | -- | -- | -- | -- | < 5.0 | < 2.0 | < 100 | < 20 | < 5.0 | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | **160** | **21** | **1,000** | **330** | **730** | < 5.0 | **580** | < 500 | 660 | < 500 | < 5.0 | < 1.0 | **1,500** | **810** | **380** | **44** | **950** | **760** | **670** | **130** | **130** | **450** |
| Toluene | µg/L | 1,000* | 1,100 | **1,500** | **400** | **10,000** | **2,800** | **5,000** | **25** | **7,700** | **13,000** | **9,300** | **5,700** | < 5.0 | < 1.0 | **4,600** | **3,700** D | **590** | **39** | **2,600** | **2,400** | **2,600** | **240** | **240** | **580** |
| Total Xylenes | µg/L | 31,000 | 200,000 | **690** | **370** | **5,200** | **1,800** | **2,600** | **20** | **3,800** | **3,700** | **4,900** | **2,400** | < 5.0 | < 2.0 | **5,100** | **2,200** | **780** | **120** | **3,100** | **2,500** | **2,300** | **1,400** | **1,300** | **3,300** |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | < 10 | **2.0** | **28** | **21** | **28** | -- | -- | -- | -- | -- | < 10 | < 0.20 | **32** | **27** | **14** | -- | -- | -- | -- | -- | -- | -- |
| Acenaphthylene | µg/L | 470 | 3,100 | **12** | **5.7** | **99** | **69** | **100** | -- | -- | -- | -- | -- | < 10 | < 0.20 | **48** | **41** | **19** | -- | -- | -- | -- | -- | -- | -- |
| Anthracene | µg/L | 4,700 | 31,000 | < 10 | **0.30** | **2.8** | < 1.9 | **2.1** | -- | -- | -- | -- | -- | < 10 | **0.36** | **4.2** | < 2.0 | < 2.2 | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | < 0.20 | < 0.20 | < 2.3 | < 1.9 | < 2.1 | -- | -- | -- | -- | -- | < 0.20 | **0.21** | < 2.4 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | < 0.20 | < 0.20 | < 2.3 | < 1.9 | < 2.1 | -- | -- | -- | -- | -- | < 0.20 | < 0.20 | < 2.4 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | < 0.20 | < 0.20 | < 2.3 | < 1.9 | < 2.1 | -- | -- | -- | -- | -- | < 0.20 | < 0.20 | < 2.4 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 10 | < 0.20 | < 2.3 | < 1.9 | < 2.1 | -- | -- | -- | -- | -- | < 10 | < 0.20 | < 2.4 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 10 | < 0.20 | < 2.3 | < 1.9 | < 2.1 | -- | -- | -- | -- | -- | < 10 | < 0.20 | < 2.4 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | < 10 | < 0.20 | < 2.3 | < 1.9 | < 2.1 | -- | -- | -- | -- | -- | < 10 | **0.25** | < 2.4 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | < 0.20 | < 0.20 | < 2.3 | < 1.9 | < 2.1 | -- | -- | -- | -- | -- | < 0.20 | < 0.20 | < 2.4 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | **69** | **32** | **540** | **350** | **460** | -- | -- | -- | -- | -- | < 10 | < 2.0 | **38** | **30** | < 22 | -- | -- | -- | -- | -- | -- | -- |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 10 | <0.20 | **2.3** | **2.2** | < 2.1 | -- | -- | -- | -- | -- | < 10 | **0.30** | **4.4** | **3.9** | < 2.2 | -- | -- | -- | -- | -- | -- | -- |
| Fluorene | µg/L | 1,000* | 4,100 | < 10 | **1.5** | **20** | **16** | **18** | -- | -- | -- | -- | -- | < 10 | < 0.20 | **21** | **19** | **7.3** | -- | -- | -- | -- | -- | -- | -- |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | < 0.20 | <0.2 | < 2.3 | < 1.9 | < 2.1 | -- | -- | -- | -- | -- | < 0.20 | < 0.20 | < 2.4 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | **40** | **42** | < 23 | **75** | **300** | -- | -- | -- | -- | -- | < 10 | < 2.0 | < 24 | < 20 | < 22 | -- | -- | -- | -- | -- | -- | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | **62** | **28** | **300** | **150** | **500** | -- | -- | -- | -- | -- | < 10 | < 2.0 | < 24 | < 20 | < 22 | -- | -- | -- | -- | -- | -- | -- |
| Naphthalene | µg/L | 20* | 20* | **260** | **1.8** | **1,800** | **380** | **1,100** | **6.3** | **1,100** | **740 *** | **1,100** | **1,300** | < 10 | < 0.20 | **2,100** | **1,600** | **650** | **170** | **1,100** | **1,700** | **1,400** | **680** | **700** | **1,800** |
| Phenanthrene | µg/L | 470 | 3,100 | < 10 | **0.73** | **28** | **23** | **19** | -- | -- | -- | -- | -- | < 10 | **0.54** | **52** | **46** | **20** | -- | -- | -- | -- | -- | -- | -- |
| Phenol | µg/L | 9,390 | 61,000 | **30** | **37** | **130** | **73** | **390** | -- | -- | -- | -- | -- | < 10 | < 0.99 | < 12 | < 9.9 | < 11 | -- | -- | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | < 10 | <0.20 | **3.1** | **3.1** | **2.6** | -- | -- | -- | -- | -- | < 10 | **0.35** | **5.3** | **5.7** | < 2.2 | -- | -- | -- | -- | -- | -- | -- |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 400 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | < 20.0 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- |
| Arsenic | µg/L | 50* | 50* | < 50 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | < 50.0 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- |
| Barium | µg/L | 2,000 | 7,200 | **52.5** | **29** | **55** | **76** | **35** | **36** | **44** | **53** | **69** | **46** | **59.2** | **41** | **140** | **89** | **59** | **87** | **130** | **170** | **95** | **74** | **76** | **92** |
| Beryllium | µg/L | 31 | 200 | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | **10** | < 10 | < 10 | < 10 | < 10 | < 10 | **18** | < 10 | < 10 | < 10 | < 10 | **12** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | **34** | < 20 | < 20 | < 20 | < 20 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | **13** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **12** | **17** | < 10 | < 10 | **23** | **10** | **20** | < 10 | < 10 | **12** |
| Nickel | µg/L | 100 | 2,000 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Zinc | µg/L | 4,700 | 31,000 | < 20 | < 20 | **20** | **29** | < 20 | -- | -- | -- | -- | -- | < 20 | < 20 | < 20 | 23 | < 20 | -- | -- | -- | -- | -- | -- | -- |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- |
| Total Cyanide | | 310 | 2,000 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | 11 | < 10 | < 10 | < 10 | < 10 | **11** | -- | -- | -- | -- | -- | < 10 |

Notes:
**Analyte was detected above laboratory detection limi**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well locatior**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | AMW-9 (Destroyed) | | | | | | | | | | | AMW-10 (abandoned) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 04/28/15 | 08/06/13 | 03/13/13 | 11/06/12 | 08/06/12 | 05/14/12 | 02/09/12 | 11/18/11 | 08/08/11 | 05/04/11 | 02/22/11 | 08/07/13 | 02/12/13 | 11/07/12 | 08/08/12 | 05/16/12 | 02/14/12 | 11/18/11 | 08/11/11 | 05/04/11 | 02/23/11 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 4.64 | 4.51 | 4.92 | 4.58 | 5.07 | 4.71 | 5.33 | 4.91 | 4.48 | 5.05 | 5.59 | 6.41 | 6.35 | 6.18 | 6.09 | 6.21 | 5.92 | 6.38 | 6.20 | 6.24 | 6.44 |
| Specific Conductance | µS/cm | N/A | N/A | 374 | 341 | 317 | 371 | 414 | 398 | 353 | 378 | 474 | 405 | 364 | 726 | 628 | 528 | 676 | 716 | 561 | 541 | 651 | 569 | 378 |
| Temperature | °Celsius | N/A | N/A | 16.87 | 19.93 | 17.56 | 16.78 | 23.04 | 23.64 | 16.88 | 18.80 | 23.01 | 18.63 | 17.36 | 22.53 | 19.54 | 16.98 | 23.79 | 24.20 | 18.49 | 15.13 | 20.61 | 21.39 | 20.51 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.75 | 1.27 | 1.06 | 1.36 | 1.76 | 1.52 | 5.18 | 0.50 | 0.49 | 0.28 | 2.73 | 0.15 | 1.79 | 2.38 | 0.53 | 0.43 | 2.70 | 0.30 | 0.26 | 0.62 | 2.63 |
| ORP | mV | N/A | N/A | -24.7 | 212.2 | 1.5 | 237.0 | 125.1 | 167.1 | 40.8 | 210.1 | 357.7 | -420.6 | 160.1 | -2.5 | -58.9 | -71.2 | -40.7 | -66.0 | -40.7 | -75.4 | 162.3 | -54.3 | -92.3 |
| Turbidity | NTU | N/A | N/A | 461 | 230 | >4000 | 37.3 | 34.6 | 51.1 | 34.2 | 306 | 125 | 652 | 273 | 3.03 | 51.3 | 3.02 | 131 | 7.75 | 18.0 | 6.05 | 233 | 5.12 | >999 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | < 0.050 | -- | -- | -- | < 0.050 | -- | -- | -- | < 0.050 | -- | < 0.050 | -- | -- | -- | < 0.050 | -- | -- | -- | < 0.050 |
| Sulfate | mg/L | N/A | N/A | -- | -- | 91 | -- | -- | -- | 110 | -- | -- | -- | 83 | -- | 40 | -- | -- | -- | 110 | -- | -- | -- | 62 |
| Sulfide | mg/L | N/A | N/A | -- | -- | 1.0 | -- | -- | -- | < 1.0 | -- | -- | -- | < 1.0 | -- | < 1.0 | -- | -- | -- | 1.2 | -- | -- | -- | < 1.0 |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | < 0.10 HF | -- | -- | -- | 0.23 HF | -- | -- | -- | 1 HF | -- | 36 HF | -- | -- | -- | 16 HF | -- | -- | -- | 0.36 HF |
| Total Iron | mg/L | N/A | N/A | -- | -- | 14 | -- | -- | -- | 1.6 | -- | -- | -- | 1.4 | -- | 59 | -- | -- | -- | 21 | -- | -- | -- | 8.9 |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | 110 | -- | -- | -- | 2.5 | -- | -- | -- | 1.5 | -- | 200 | -- | -- | -- | 3200 | -- | -- | -- | 1.1 |
| Methane | mg/L | N/A | N/A | -- | -- | 1.7 | -- | -- | -- | 1.3 | -- | -- | -- | 14 | -- | 250 | -- | -- | -- | < 0.58 | -- | -- | -- | 35 |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | 16 | -- | -- | -- | 6.6 | -- | -- | -- | 4.7 | -- | -- | -- | -- | -- | 5200 | -- | -- | -- | 4.1 |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | 9.4 | -- | -- | -- | 2.3 | -- | -- | -- | 1.7 | -- | 3.0 | -- | -- | -- | 1500 | -- | -- | -- | 1.4 |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | < 5.0 | < 5.0 | < 1.0 | 3.6 | 2.7 | < 5.0 | < 5.0 | 20 | 11 | 22 | < 5.0 | < 5.0 | 390 | 410 | 670 | 180 | 250 | 170 | 240 | 180 | 110 |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | -- | -- | -- | -- | -- | < 5.0 | < 20 | < 20 | < 20 | < 25 | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | 1,000 | 760 | 1,200 | 370 | 290 | 450 | 520 | 410 | 210 |
| Toluene | µg/L | 1,000* | 1,100 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | 20 | 17 | 20 | < 25 | < 25 | 25 | 11 | 13 | < 10 |
| Total Xylenes | µg/L | 31,000 | 200,000 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | 480 | 410 | 440 | 190 | 540 | 300 | 390 | 490 | 200 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | < 10 | < 10 | < 0.19 | < 0.22 | < 0.22 | < 0.21 | -- | -- | -- | -- | -- | < 10 | 38 | 52 | 38 | 18 | -- | -- | -- | -- | -- |
| Acenaphthylene | µg/L | 470 | 3,100 | < 10 | < 10 | < 0.19 | < 0.22 | < 0.22 | 0.21 | -- | -- | -- | -- | -- | < 10 | 15 | 13 | 15 | 3.9 | -- | -- | -- | -- | -- |
| Anthracene | µg/L | 4,700 | 31,000 | < 10 | < 10 | < 0.19 | < 0.22 | < 0.22 | 0.29 | -- | -- | -- | -- | -- | < 10 | 2.2 | < 1.9 | 2.4 | 0.53 | -- | -- | -- | -- | -- |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | < 0.050 | < 0.20 | 0.20 | 0.22 | < 0.22 | 1.8 | -- | -- | -- | -- | -- | < 0.20 | < 2.0 | < 1.9 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | < 0.050 | 0.29 | 0.24 | 0.29 | < 0.22 | 2.0 | -- | -- | -- | -- | -- | < 0.20 | < 2.0 | < 1.9 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | < 0.10 | 0.64 | 0.39 | 0.58 | < 0.22 | 3.2 | -- | -- | -- | -- | -- | < 0.20 | < 2.0 | < 1.9 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 10 | < 10 | 0.39 | 0.43 | 0.22 | 2.1 | -- | -- | -- | -- | -- | < 10 | < 2.0 | < 1.9 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 10 | < 10 | 0.37 | 0.31 | < 0.22 | < 0.21 | -- | -- | -- | -- | -- | < 10 | < 2.0 | < 1.9 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | < 10 | < 10 | 0.26 | 0.35 | < 0.22 | 1.9 | -- | -- | -- | -- | -- | < 10 | < 2.0 | < 1.9 | < 2.0 | 0.35 | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | < 0.10 | < 0.20 | < 0.19 | < 0.22 | < 0.22 | < 0.21 | -- | -- | -- | -- | -- | < 0.20 | < 2.0 | < 1.9 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | < 10 | < 10 | < 1.9 | < 2.2 | < 2.2 | < 2.1 | -- | -- | -- | -- | -- | < 10 | < 20 | < 19 | < 20 | 4.1 | -- | -- | -- | -- | -- |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 10 | < 10 | 0.31 | 0.34 | < 0.22 | 2.9 | -- | -- | -- | -- | -- | < 10 | < 2.0 | < 1.9 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- |
| Fluorene | µg/L | 1,000* | 4,100 | < 10 | < 10 | 0.48 | 0.61 | < 0.22 | 0.23 | -- | -- | -- | -- | -- | < 10 | 17 | 20 | 16 | 6.1 | -- | -- | -- | -- | -- |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | < 0.050 | 0.44 | 0.34 | 0.31 | < 0.22 | 1.5 | -- | -- | -- | -- | -- | < 0.20 | < 2.0 | < 1.9 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 10 | < 10 | < 1.9 | < 2.2 | < 2.2 | < 2.1 | -- | -- | -- | -- | -- | < 10 | < 20 | < 19 | < 20 | < 2.3 | -- | -- | -- | -- | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | < 10 | < 10 | < 1.9 | < 2.2 | < 2.2 | < 2.1 | -- | -- | -- | -- | -- | < 10 | < 20 | < 19 | < 20 | < 2.3 | -- | -- | -- | -- | -- |
| Naphthalene | µg/L | 20* | 20* | < 10 | < 10 | < 0.19 | < 0.22 | < 0.22 | 1.1 | 7.1 | < 5.0 | < 5.0 * | < 5.0 | < 5.0 | < 10 | 390 | 690 | 460 | 200 | 510 | 520 | 590 * | 690 | 300 |
| Phenanthrene | µg/L | 470 | 3,100 | < 10 | < 10 | 1.3 | 0.95 | 0.22 | 1.4 | -- | -- | -- | -- | -- | < 10 | 36 | 31 | 37 | 8.8 | -- | -- | -- | -- | -- |
| Phenol | µg/L | 9,390 | 61,000 | < 10 | < 10 | 0.97 | < 1.1 | < 1.1 | < 1.1 | -- | -- | -- | -- | -- | < 10 | 11 | < 9.7 | 23 | 12 | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | < 10 | < 10 | 0.34 | 0.39 | < 0.22 | 3.3 | -- | -- | -- | -- | -- | < 10 | < 2.0 | < 1.9 | < 2.0 | 0.23 | -- | -- | -- | -- | -- |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 400 | < 20 | < 20.0 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | < 20.0 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Arsenic | µg/L | 50* | 50* | < 50 | < 50.0 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | < 50.0 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Barium | µg/L | 2,000 | 7,200 | 34.5 | 44.9 | 83 | 44 | 40 | 36 | 35 | 97 | 96 | 1,400 | 46 | 42.3 | 440 | 450 | 810 | 240 | 300 | 220 | 600 | 370 | 170 |
| Beryllium | µg/L | 31 | 200 | < 10 | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | < 10.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | 11 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 390 | < 10 | < 10.0 | < 10 | < 10 | 34 | < 10 | < 10 | 10 | 90 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | 750 | < 20 | < 10.0 | < 20 | < 20 | 20 | < 20 | < 20 | 20 | < 20 | < 20 | < 20 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | 20 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 1,200 | < 10 | < 10.0 | < 10 | < 10 | 20 | < 10 | < 10 | 10 | 120 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 20.0 | < 20.0 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | 200 | < 40 | < 20.0 | < 40 | < 40 | < 40 | < 40 | < 40 | 40 | < 40 | < 40 | < 40 |
| Zinc | µg/L | 4,700 | 31,000 | < 20.0 | 64.7 | 98 | 100 | 110 | 100 | -- | -- | -- | -- | -- | < 20.0 | 32 | < 20 | 32 | < 20 | -- | -- | -- | -- | -- |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- |
| Total Cyanide | µg/L | 310 | 2,000 | < 10 | < 10 | < 10 | 16 | 24 | < 10 | < 10 | -- | -- | -- | < 10 | < 10 | < 10 | 28 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | AMW-11 | | | | AMW-12 | | | | | AMW-13 | | | | AMW-14 | | | AMW-15 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2/22/2017 | 08/22/16 | 04/28/15 | 08/06/13 | 2/21/2017 | 08/23/16 | 8/16 DUP | 04/28/15 | 08/06/13 | 02/22/17 | 08/23/16 | 04/28/15 | 08/06/13 | 02/21/17 | 08/23/16 | 04/29/15 | 02/23/17 | DUP-2 | 08/24/16 | 04/29/15 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.12 | 6.04 | 5.99 | 7.06 | 5.65 | 5.60 | | 5.41 | 6.06 | 5.71 | 5.53 | 5.41 | 6.75 | 6.38 | 6.01 | 6.18 | 5.71 | | 5.70 | 6.02 |
| Specific Conductance | µS/cm | N/A | N/A | 655.0 | 625.1 | 581 | 861 | 356.8 | 373.4 | | 389 | 292 | 117.30 | 341.9 | 415 | 646 | 258.3 | 318.4 | 373 | 175.7 | | 185.5 | 158 |
| Temperature | °Celsius | N/A | N/A | 21.24 | 30.86 | 19.31 | 26.81 | 21.05 | 25.53 | | 19.61 | 26.11 | 23.77 | 26.88 | 22.22 | 27.72 | 23.21 | 28.35 | 18.46 | 22.21 | | 26.88 | 17.72 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.32 | 0.23 | 2.05 | 0.27 | 3.27 | 1.94 | | 2.44 | 0.60 | 1.64 | 0.70 | 1.75 | 0.41 | 5.88 | 0.31 | 1.26 | 1.08 | | 0.61 | 7.96 |
| ORP | mV | N/A | N/A | 67.60 | 99.1 | -30.4 | 1.5 | 137.5 | 189.5 | | -31.4 | 146.4 | 191.20 | 435.7 | -28.3 | 83.7 | 113.8 | -13.7 | -27.1 | 128.7 | | 29.9 | 39.0 |
| Turbidity | NTU | N/A | N/A | 3.11 | 3.01 | 9.91 | 1.38 | 1.00 | 7.80 | | 1.4 | 0.98 | 1.75 | 9.85 | 9.61 | 13.7 | 7.88 | 7.70 | 5.58 | 6.85 | | 41.30 | 24.1 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | <5.0 | <5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | <5.0 | **63** | < 5.0 | **78** | **80** | 120 | 57 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | < 5.0 | <5.0 | <5.0 | <5.0 | < 5.0 |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | **14** | **110** | < 5.0 | **14** | **17** | **28** | **9.3** |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | <5.0 | **11** | < 5.0 | <5.0 | <5.0 | **7** | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | **16** | **100** | < 5.0 | **10** | **12** | **27** | **15** |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | <0.50 | < 10 | < 10 | <0.50 | <0.50 | <0.50 | < 10 | < 10 | <0.50 | <0.50 | < 10 | < 10 | **0.71** | **2.4** | < 10 | **11** | **10** | **15** | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | <1.0 | < 10 | < 10 | <1.0 | <1.0 | <1.0 | < 10 | < 10 | <1.0 | <1.0 | < 10 | < 10 | <1.0 | **2.5** | < 10 | **1.9** | <100 | **4.2** | < 10 |
| Anthracene | µg/L | 4,700 | 31,000 | **0.066** | <0.050 | < 10 | < 10 | **0.053** | <0.050 | <0.050 | < 10 | < 10 | <0.050 | <0.050 | < 10 | < 10 | <0.050 | **2.6** | < 10 | **0.49** | <5.0 | **0.81** | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | <0.050 | < 0.20 | <0.050 | <0.050 | <0.050 | <0.050 | < 0.20 | <0.050 | <0.050 | <0.050 | < 0.20 | <0.050 | **0.07** | < 0.050 | <0.050 | <5.0 | <0.050 | < 0.050 |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | < 0.050 | < 0.20 | <0.050 | <0.050 | <0.050 | < 0.050 | < 0.20 | <0.050 | <0.050 | < 0.050 | < 0.20 | <0.050 | <0.050 | < 0.050 | <0.050 | <5.0 | <0.050 | < 0.050 |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | < 0.10 | < 0.20 | <0.10 | <0.10 | <0.10 | < 0.10 | < 0.20 | <0.10 | <0.10 | < 0.10 | < 0.20 | <0.10 | <0.10 | < 0.10 | <0.10 | <10 | <0.10 | < 0.10 |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | < 10 | < 10 | <0.10 | <0.10 | <0.10 | < 10 | < 10 | <0.10 | <0.10 | < 10 | < 10 | <0.10 | <0.10 | < 10 | <0.10 | <10 | <0.10 | < 10 |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | < 10 | < 10 | <0.050 | <0.050 | <0.050 | < 10 | < 10 | <0.050 | <0.050 | < 10 | < 10 | <0.050 | <0.050 | < 10 | <0.050 | <5.0 | <0.050 | < 10 |
| Chrysene | µg/L | 117 | 392 | <0.050 | <0.050 | < 10 | < 10 | <0.050 | <0.050 | <0.050 | < 10 | < 10 | <0.050 | <0.050 | < 10 | < 10 | <0.050 | <0.050 | < 10 | <0.050 | <5.0 | <0.050 | < 10 |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | < 0.10 | < 0.20 | <0.10 | <0.10 | <0.10 | < 0.10 | < 0.20 | <0.10 | <0.10 | < 0.10 | < 0.20 | <0.10 | <0.10 | < 0.10 | <0.10 | <10 | <0.10 | < 0.10 |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | <10 | <10 | < 10 | < 10 | <10 | <10 | <10 | < 10 | < 10 | <10 | <10 | < 10 | < 10 | <10 | <10 | < 10 | <10 | <10 | <10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 10 | < 10 | <0.10 | <0.10 | <0.10 | < 10 | < 10 | <0.10 | <0.10 | < 10 | < 10 | <0.10 | **0.98** | < 10 | **0.29** | <10 | **0.44** | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 10 | < 10 | <0.10 | <0.10 | <0.10 | < 10 | < 10 | <0.10 | <0.10 | < 10 | < 10 | **0.28** | **1.1** | < 10 | **4.0** | **4.0** | **5.4** | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.20 | <0.050 | <0.050 | <0.050 | < 0.050 | < 0.20 | <0.050 | <0.050 | < 0.050 | < 0.20 | <0.050 | <0.050 | < 0.050 | <0.050 | <5.0 | <0.050 | < 0.050 |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 10 | < 10 | <10 | <10 | <10 | < 10 | < 10 | <10 | <10 | < 10 | < 10 | <10 | <10 | < 10 | <10 | <10 | <10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 10 | < 10 | <10 | <10 | <10 | < 10 | < 10 | <10 | <10 | < 10 | < 10 | <10 | <10 | < 10 | <10 | <10 | <10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | <0.50 | < 10 | < 10 | <0.50 | <0.50 | <0.50 | < 10 | < 10 | <0.50 | <0.50 | < 10 | < 10 | **18** | **40** | < 10 | **12** | **11** | **28** | **20** |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | <0.050 | < 10 | < 10 | <0.050 | <0.050 | <0.050 | < 10 | < 10 | <0.050 | <0.050 | < 10 | < 10 | **0.30** | **2.8** | < 10 | **3.2** | <5.0 | **8.0** | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | < 10 | <10 | <10 | <10 | < 10 | < 10 | <10 | <10 | < 10 | < 10 | <10 | <10 | < 10 | <10 | <10 | <10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | <0.050 | <0.050 | < 10 | < 10 | <0.050 | <0.050 | <0.050 | < 10 | < 10 | <0.050 | <0.050 | < 10 | < 10 | <0.050 | **0.99** | < 10 | **0.20** | <5.0 | **0.39** | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 400 | -- | < 20 | < 20 | < 20 | -- | < 20 | < 20 | < 20 | < 20 | -- | < 20 | < 20 | < 20 | -- | < 20 | < 20 | -- | -- | < 20 | < 20 |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | -- | < 50 | < 50 | < 50 | < 50 | -- | < 50 | < 50 | < 50 | -- | < 50 | < 50 | -- | -- | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | **47.4** | **42.3** | **53.6** | -- | **38.8** | **39.7** | **42.8** | **38.5** | -- | **45** | **48.8** | **93.9** | -- | **201** | **92.5** | -- | -- | **164** | **15.8** |
| Beryllium | µg/L | 31 | 200 | -- | <0.0100 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | -- | < 10 | < 10 | -- | -- | < 10 | < 10 |
| Cadmium | µg/L | 7.8 | 51 | -- | <0.0050 | < 5.0 | < 5.0 | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | < 5.0 | < 5.0 | < 5.0 | -- | < 5.0 | < 5.0 | -- | -- | < 5.0 | < 5.0 |
| Chromium | µg/L | 100 | 310 | -- | **23.2** | **17.7** | < 10 | -- | **38.4** | **39.2** | **15.7** | < 10 | -- | < 10 | < 10 | < 10 | -- | < 10 | < 10 | -- | -- | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | -- | < 10 | < 10 | -- | -- | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | -- | < 10 | < 10 | -- | -- | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 20 | < 20 | < 20 | -- | < 20 | < 20 | < 20 | < 20 | -- | < 20 | < 20 | < 20 | -- | < 20 | < 20 | -- | -- | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | < 20 | < 20. | -- | < 20 | < 20 | < 20 | < 20 | -- | < 20 | < 20 | < 20 | -- | < 20 | < 20 | -- | -- | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | < 0.20 | < 0.20 | < 0.20 | -- | < 0.20 | < 0.20 | -- | -- | < 0.20 | < 0.20 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | <10 | **15** | **45** | -- | < 10.0 | < 10.0 | < 10.0 | < 10 | -- | < 10 | < 10 | < 10 | -- | < 10 | < 10 | -- | -- | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-07 | | | | | MW-08 | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/06/13 | 08/13 DUP | 02/08/13 | 08/11/09 | 03/05/04 | 02/22/17 | 08/25/16 | 04/05/16 | 04/27/15 | 08/05/13 | 02/04/13 | 02/08/12 | 02/17/11 | 02/23/10 | 08/11/09 | 12/12/02 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.12 | | 5.86 | 6.59 | 5.72 | 6.44 | 5.73 | 6.29 | 5.95 | 5.08 | 5.55 | 5.51 | 2.19 | 6.02 | 5.79 | 6.10 |
| Specific Conductance | µS/cm | N/A | N/A | 185 | | 191 | 230 | 171 | 214.10 | 240.2 | 300 | 271 | 419 | 273 | 262 | 198 | 339 | 481 | 289 |
| Temperature | °Celsius | N/A | N/A | 24.16 | | 15.37 | 25.85 | 18.88 | 20.65 | 25.60 | 20.84 | 19.59 | 25.97 | 20.01 | 21.22 | 17.64 | 17.89 | 23.98 | 23.37 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 4.35 | | 6.27 | 5.75 | 2.10 | 6.44 | 0.79 | 5.56 | 3.85 | 3.29 | 2.10 | 2.23 | 2.00 | 3.43 | 2.96 | 0.24 |
| ORP | mV | N/A | N/A | -25.1 | | 130.5 | -122.4 | 97.0 | 106.6 | 29.0 | 73.5 | 59.2 | 34.6 | 186.2 | 73.2 | 5.7 | 73.4 | -179.9 | -8.2 |
| Turbidity | NTU | N/A | N/A | 8.62 | | 2.97 | 1.82 | 12.9 | 5.15 | 0.76 | 7.76 | 1.01 | 0.21 | 6.62 | 5.2 | 78.3 | 4.31 | 1.50 | 1.64 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **0.894** |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | **1.3** | **0.45** | -- | -- | -- | -- | -- | -- | **0.26** | **0.38** | **0.065** | **0.091** | < 0.050 | < 0.0500 |
| Sulfate | mg/L | N/A | N/A | -- | -- | **33** | **59** | -- | -- | -- | -- | -- | -- | **60** | **55** | **35** | **64** | **92** | **27.5** |
| Sulfide | mg/L | N/A | N/A | -- | -- | < 1.0 | < 1.0 | -- | -- | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.00 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **0.169** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | **0.218** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **0.175** |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | < 0.10 HF | < 0.01 HF | -- | -- | -- | -- | -- | -- | **1.3** HF | **0.40** HF | **0.19** HF | **0.29** | **2.8** | **4.86** |
| Total Iron | mg/L | N/A | N/A | -- | -- | **19** | **0.16** | **1.21** | -- | -- | -- | -- | -- | **1.8** | **0.79** | **1.2** | **0.99** | **3.1** | **4.82** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | **120** | **0.37** | -- | -- | -- | -- | -- | -- | **110** | **1800** | **1.2** | **1.1** | **0.77** | **120** |
| Methane | mg/L | N/A | N/A | -- | -- | < 0.58 | <0.19 | -- | -- | -- | -- | -- | -- | **9.3** | **1.7** | **3.3** | **12** | **3.7** | **100** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | **4.4** | -- | -- | -- | -- | -- | -- | **17** | **5300** | **3.9** | **4.2** | **4.7** | **16** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | **6.5** | **1.6** | -- | -- | -- | -- | -- | -- | **5.2** | **1700** | **1.4** | **1.5** | **1.7** | **7.5** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9 | < 5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 5.0 | < 5.0 | < 2.0 | -- | -- | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | < 5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | < 5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | < 5.0 | < 5.0 | < 2.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | < 10 | < 10 | **16** | -- | < 10 | <0.50 | <0.50 | < 0.50 | < 10 | < 10 | **1.3** | -- | -- | -- | -- | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | < 10 | < 10 | **13** | -- | < 10 | <1.0 | <1.0 | < 1.0 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | < 10 |
| Anthracene | µg/L | 4,700 | 31, 000 | < 10 | < 10 | < 0.20 | -- | < 10 | <0.050 | <0.050 | < 0.050 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | < 0.20 | < 0.20 | < 0.20 | -- | -- | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.19 | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | < 0.20 | < 0.20 | < 0.20 | -- | -- | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.19 | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | < 0.20 | < 0.20 | < 0.20 | -- | -- | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.19 | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 10 | < 10 | < 0.20 | -- | -- | <0.10 | <0.10 | < 0.10 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 10 | < 10 | < 0.20 | -- | -- | <0.050 | <0.050 | < 0.050 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | < 10 | < 10 | < 0.20 | -- | -- | <0.050 | <0.050 | < 0.050 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | < 0.20 | < 0.20 | < 0.20 | -- | -- | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.19 | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | < 10 | < 10 | < 2.0 | -- | < 10 | <10 | <10 | < 10 | < 10 | < 10 | < 1.9 | -- | -- | -- | -- | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 10 | < 10 | **1.6** | -- | < 10 | <0.10 | <0.10 | < 0.10 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | < 10 | < 10 | **6.0** | -- | < 10 | <0.10 | <0.10 | < 0.10 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | < 0.20 | < 0.20 | < 0.20 | -- | -- | <0.050 | <0.050 | 0.10 | < 0.050 | < 0.20 | < 0.19 | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 10 | < 10 | < 2.0 | -- | < 10 | <10 | <10 | < 10 | < 10 | < 10 | < 1.9 | -- | -- | -- | -- | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | < 10 | < 10 | < 2.0 | -- | < 10 | <10 | <10 | < 10 | < 10 | < 10 | < 1.9 | -- | -- | -- | -- | < 10 |
| Naphthalene | µg/L | 20* | 20* | < 10 | < 10 | **7.8** | < 9.8 | < 10 | <0.50 | <0.50 | < 0.50 | < 10 | < 10 | < 0.19 | < 5.0 | < 9.4 | < 9.4 | < 11 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | < 10 | < 10 | **0.48** | -- | < 10 | <0.050 | <0.050 | < 0.050 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | < 10 | < 10 | < 0.99 | -- | < 10 | <10 | <10 | < 10 | < 10 | < 10 | < 0.97 | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | < 10 | < 10 | **4.7** | -- | < 10 | **0.16** | **0.16** | < 0.050 | < 10 | < 10 | 0.29 | -- | -- | -- | -- | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20 | < 20 | < 20 | -- | < 40 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | < 40 |
| Arsenic | µg/L | 50* | 50* | < 50 | < 50 | < 20 | -- | < 50 | -- | < 50 | < 50 | < 50 | < 50 | < 20 | -- | -- | -- | -- | < 50 |
| Barium | µg/L | 2,000 | 7,200 | **31.2** | **31.4** | **100** | **59** | **39.6** | -- | **59.5** | **48.6** | **72.5** | **61.6** | **66** | **69** | **58** | **64** | **0.11** | **56** |
| Beryllium | µg/L | 31 | 200 | < 10 | < 10 | < 4.0 | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 4.0 | -- | -- | -- | -- | -- |
| Cadmium | mg/L | 7.8 | 51 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10 | < 10 | < 20 | < 20 | < 10 | -- | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 10 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 20 | < 20 | < 40 | < 40 | < 20 | -- | < 20 | < 20 | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | < 20 | < 20 | < 20 | -- | < 20 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | < 20 |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | -- | < 0.5 | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-09 (Abandoned) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/06/13 | 02/07/13 | 11/07/12 | 08/09/12 | 08/12 DUP | 05/16/12 | 02/07/12 | 11/16/11 | 08/11/11 | 05/05/11 | 02/23/11 | 11/09/10 | 08/10/10 | 05/10/10 | 02/23/10 | 08/13/09 | 06/08/06 | 03/10/06 | 12/22/05 | 09/29/05 | 03/15/05 | 12/16/04 | 10/01/04 | 06/09/04 | 03/04/04 | 12/18/03 | 09/09/03 | 06/11/03 | 03/11/03 | 12/11/02 | 09/17/02 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.35 | 6.16 | 6.10 | 5.97 | 5.97 | -- | 6.22 | 4.91 | 6.09 | 5.99 | 6.13 | 6.04 | 5.95 | 5.72 | 6.03 | 6.02 | 6.61 | 6.44 | 6.16 | 6.45 | 6.47 | 6.36 | 6.04 | 6.52 | 6.43 | 6.39 | 5.37 | 6.6 | 6.19 | 6.23 | 6.24 |
| Specific Conductance | µS/cm | N/A | N/A | 495 | 467 | 476 | 445 | 445 | -- | 419 | 378 | 518 | 523 | 468 | 479 | 495 | 480 | 482 | 486 | 536 | 494 | 292 | 402 | 431 | 493 | 314 | 561 | 408 | 424 | 477 | 501 | 577 | 399 | 454 |
| Temperature | °Celsius | N/A | N/A | 23.01 | 12.14 | 20.94 | 25.47 | 25.47 | -- | 17.89 | 18.80 | 27.19 | 20.47 | 20.42 | 26.10 | 25.96 | 20.73 | 17.67 | 25.96 | 23.30 | 18.72 | 19.88 | 24.43 | 19.15 | 23.02 | 24.92 | 21.32 | 18.77 | 20.72 | 23.76 | 22.88 | 18.72 | 21.69 | 26.69 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.67 | 0.14 | 0.78 | 0.60 | 0.60 | -- | 4.04 | 0.50 | 0.22 | 0.16 | 0.09 | 0.08 | 0.09 | 0.43 | 0.60 | 2.15 | 0.28 | 0.44 | 0.77 | 0.27 | 2.66 | 1.68 | 0.84 | 0.11 | 0.65 | 0.26 | 0.29 | 0.10 | 0.04 | 0.18 | 0.12 |
| ORP | mV | N/A | N/A | -29.2 | -50.10 | -73.3 | -21.10 | -21.1 | -- | -30.2 | 210.1 | 130.5 | -97.4 | -62.6 | -65.3 | -64.9 | -57.2 | -55.3 | -11.5 | -92.2 | -72.2 | 9.5 | -26.3 | -88.4 | -81.9 | 43.4 | -108.7 | -3.1 | -143.3 | -87.8 | -94 | -63.7 | -73.4 | -60.6 |
| Turbidity | NTU | N/A | N/A | 1.77 | 1.06 | 6.24 | 4.38 | 4.38 | -- | 9.85 | 306 | 666 | 1.95 | 0.41 | 3.47 | 5.34 | 8.51 | 15.1 | 2.5 | 2.74 | 3.0 | 3.54 | 4.27 | 1.17 | 2.08 | 0.05 | 0.70 | 2.75 | 2.20 | 3.29 | 1.1 | 2.8 | 0.10 | 3.75 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.57 | 0.61 | < 0.20 | 0.56 | 0.78 | 0.39 | 0.83 | 0.429 | 0.289 | 0.274 | 0.280 |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | < 0.050 | -- | -- | -- | -- | 6.4 | -- | -- | -- | < 0.050 | -- | -- | -- | < 0.050 | <0.25 | -- | -- | -- | -- | < 0.500 | < 0.0500 | 0.0687 | < 0.0500 | < 0.500 | < 0.0500 | < 0.0500 | < 0.500 | < 0.0500 | < 0.0500 | 0.059 |
| Sulfate | mg/L | N/A | N/A | -- | < 5.0 | -- | -- | -- | -- | 100 | -- | -- | -- | < 5.0 | -- | -- | -- | < 5.0 | 9.0 | -- | -- | -- | -- | 1.29 | 3.08 | 35.2 | 2.63 | 9.23 | 24.0 | 2.17 | 14.5 | 83 | 13.3 | 12.6 |
| Sulfide | mg/L | N/A | N/A | -- | < 0.010 | -- | -- | -- | -- | 1.70 | -- | -- | -- | < 1.0 | -- | -- | -- | < 1.0 | < 1.0 | -- | -- | -- | -- | < 1.0 | 1.2 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.00 | < 1.00 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.693 | 0.646 | 0.131 | 0.804 | 0.684 | 0.655 | 0.792 | 0.81 | 0.916 | 0.450 | 0.685 |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.696 | 0.656 | 0.114 | 0.783 | 0.712 | 0.668 | 0.804 | 0.831 | 0.938 | 0.462 | 0.573 |
| Ferrous Iron | mg/L | N/A | N/A | -- | 16 HF | -- | -- | -- | -- | < 10 HF | -- | -- | -- | 8.2 HF | -- | -- | -- | 26 | 13 | -- | -- | -- | -- | 20.2 | 17.0 | 1.0 | 46.5 | 28.3 | 10.7 | 32.8 | 14.1 | 12.8 | 18.6 | 16.9 |
| Total Iron | mg/L | N/A | N/A | -- | 44 | -- | -- | -- | -- | < 10 | -- | -- | -- | 39 | -- | -- | -- | 45 | 37 | -- | -- | -- | -- | 29.0 | 28.2 | 0.793 | 34.9 | 25.3 | 16.8 | 35.0 | 25.9 | 11.9 | 18.3 | 17.7 |
| Carbon Dioxide | mg/L | N/A | N/A | -- | 170 | -- | -- | -- | -- | 3.3 | -- | -- | -- | 2.7 | -- | -- | -- | 2.9 | 2.3 | -- | -- | -- | -- | 110 | 130 | 140 | 120 | 130 | 130 | 120 | 140 | 160 | 140 | 160 |
| Methane | mg/L | N/A | N/A | -- | 1300 | -- | -- | -- | -- | 1300 | -- | -- | -- | 1500 | -- | -- | -- | 1400 | 1200 | -- | -- | -- | -- | 2,500 | 2,200 | 130 | 2,200 | 1,600 | 570 | 1,800 | 1,700 | 810 | 1,800 | 2,200 |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | 4.4 | -- | -- | -- | 3.9 | -- | -- | -- | 3.3 | 4.0 | -- | -- | -- | -- | 19 | 17 | 16 | 15 | 21 | 17 | 14 | 15 | 19 | 15 | 16 |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | 2.9 | -- | -- | -- | -- | 1.5 | -- | -- | -- | 1.2 | -- | -- | -- | 0.95 | 1.2 | -- | -- | -- | -- | 1.8 | 0.81 | 1.2 | 0.46 | 0.95 | 1.1 | 0.53 | 0.58 | 0.72 | 6.0 | 4.3 |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | 1,300 | 1,300 | 1,300 | 640 | 1,300 D | 1300 | 980 | 29 | 930 | 1,200 | 880 | 910 | 1,000 | 1,100 | 1,000 | 940 | 900 | 980 | < 5.0 | 600 | 600 | 830 | 11 | 1,100 | 440 | 60 | 410 | 470 | 120 | 830 | 1,100 |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 5.0 | < 20 | < 50 | < 50 | < 2.0 | < 250 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | 2,800 | 2,200 | 2,500 | 1,300 | 2,700 D | 2,600 | 2,100 | 170 | 1,800 | 2,900 | 2,100 | -- | -- | -- | 2,200 | 2,500 | 2,000 | 2,300 | 13 | 1,700 | 1,400 | 1,800 | 18 | 2,900 | 890 | 120 | 390 | 940 | 300 | 1,800 | 2,200 |
| Toluene | µg/L | 1,000* | 1,100 | 790 | 500 | 580 | 290 | 590 D | 580 | 480 | < 5.0 | 510 | 680 | 450 | -- | -- | -- | 600 | 460 | 1,400 | 1,500 | < 5.0 | 560 | 640 | 1,200 | < 5.0 | 1,100 | 290 | 25 | 480 | 500 | 23 | 780 | 970 |
| Total Xylenes | µg/L | 31,000 | 200,000 | 5,300 | 3,800 | 4,600 | 2,400 | 4,900 D | 4,500 | 3,800 | 82 | 2,600 | 4,300 | 3,800 | -- | -- | -- | 3,700 | 3,300 | 4,200 | 4,800 | 7.4 | 2,800 | 1,900 | 3,500 | 18 | 4,100 | 490 | 89 | 1,600 | 980 | 136 | 1,000 | 3,600 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | < 10 | 29 | 45 | 36 | 33 | 33 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 70 | 64 | < 10 | 87 | 74 | 26 | 93 | 64 | 21 | 45 | 33 |
| Acenaphthylene | µg/L | 470 | 3,100 | 52 | 40 | 68 | 52 | 49 | 47 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 36 | 51 | < 10 | 47 | 18 | < 10 | 61 | 22 | < 10 | 29 | 30 |
| Anthracene | µg/L | 4,700 | 31,000 | < 10 | 2.4 | 4.2 | 3.4 | 3.9 | 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | 0.47 | < 2.4 | < 1.9 | < 1.9 | < 1.9 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | 0.45 | < 2.4 | < 1.9 | < 1.9 | < 1.9 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | 0.44 | < 2.4 | < 1.9 | < 1.9 | < 1.9 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 10 | < 2.4 | < 1.9 | < 1.9 | < 1.9 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 10 | < 2.4 | < 1.9 | < 1.9 | < 1.9 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | < 10 | < 2.4 | < 1.9 | < 1.9 | < 1.9 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | 0.22 | < 2.4 | < 1.9 | < 1.9 | < 1.9 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | 52 | 180 | 210 | 180 | 170 | 140 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 15 | 22 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 15 | 15 |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 10 | < 2.4 | 2.0 | < 1.9 | < 1.9 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | < 10 | 20 | 30 | 25 | 25 | 22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 26 | 24 | < 10 | 31 | 23 | < 10 | 38 | 23 | < 10 | 15 | 15 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | 0.35 | < 2.4 | < 1.9 | < 1.9 | < 1.9 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 10 | < 24 | < 19 | 58 | 56 | 72 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | < 10 | < 24 | < 19 | < 19 | < 19 | < 21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | 2,400 | 1,400 | 4,900 | 2,000 D | 2,000 D | 2,500 | 3,700 | 300 | 2,100 | 4,300 | 3,800 | 4,000 | 4,500 | 3,100 | 2,000 | 3,000 | 1,000 | 1,400 | 17 | 1,300 | 1,300 | 2,200 | 42 | 2,500 | 910 | 180 | 210 | 820 | 290 | 890 | 730 |
| Phenanthrene | µg/L | 470 | 3,100 | 67 | 45 | 83 | 64 | 73 | 46 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 89 | 91 | < 10 | 120 | 84 | 50 | 120 | 91 | 21 | 63 | 43 |
| Phenol | µg/L | 9,390 | 61,000 | < 10 | 20 | < 9.7 | 13 | 13 | 26 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | < 10 | < 2.4 | 1.9 | 2.1 | 2.2 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | < 50 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | 893 | 790 | 840 | 770 | 760 | 1,300 | 36 | 91 | 820 | 700 | 620 | -- | -- | -- | 550 | 360 | 211 | 210 | 59.9 | 167 | 155 | 160 | 54.7 | 152 | 111 | 97.8 | 165 | 122 | 71.6 | 113 | 133 |
| Beryllium | µg/L | 31 | 200 | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | < 10 | < 10 | 44 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | < 10 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10 | < 20 | < 20 | < 20 | < 20 | 85 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | < 20 | < 20 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | < 10 | < 10 | 110 | < 10 | < 10 | 13 | < 10 | < 10 | -- | -- | -- | < 10 | < 10 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | 20.5 | < 40 | < 40 | < 40 | < 40 | 44 | < 40 | < 40 | < 40 | < 40 | < 40 | -- | -- | -- | < 40 | < 40 | < 20.0 | < 20.0 | < 20.0 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | < 20 | < 20 | 28 | 49 | 49 | 2,900 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | 200 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | -- | -- | -- | < 10 | 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-10 | | | | MW-11 | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/24/16 | 04/07/16 | 02/06/13 | 09/17/02 | 02/07/13 | 02/08/12 | 02/17/11 | 02/23/10 | 08/12/09 | 03/15/05 | 12/15/04 | 09/30/04 | 06/08/04 | 6/04 DUP | 03/03/04 | 12/17/03 | 09/09/03 | 06/11/03 | 03/11/03 | 12/09/02 | 09/17/02 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.83 | 6.06 | 5.65 | 5.72 | 5.59 | 5.32 | 5.49 | 5.43 | 5.96 | 5.43 | 5.37 | 5.33 | 5.64 | 5.64 | 5.45 | 5.52 | 5.50 | 5.56 | 5.40 | 5.35 | 5.38 |
| Specific Conductance | µS/cm | N/A | N/A | 325.9 | 200 | 287 | 350 | 293 | 322 | 304 | 474 | 330 | 278 | 314 | 324 | 314 | 314 | 273 | 305 | 301 | 300 | 294 | 276 | 294 |
| Temperature | °Celsius | N/A | N/A | 26.56 | 19.02 | 20.56 | 23.11 | 17.27 | 19.4 | 16.77 | 12.92 | 28.79 | 19.03 | 23.03 | 28.66 | 24.53 | 24.53 | 18.37 | 22.95 | 27.51 | 23.95 | 19.14 | 23.37 | 29.30 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.09 | 1.87 | 2.33 | 0.23 | 2.94 | 0.67 | 0.84 | 0.49 | 2.48 | 2.08 | 4.11 | 0.35 | 0.63 | 0.63 | 0.38 | 0.16 | 0.23 | 0.25 | 0.21 | 0.46 | 0.07 |
| ORP | mV | N/A | N/A | 20.7 | 80 | 159.8 | 40.1 | 187.8 | 71.1 | 44.7 | 20.43 | 75.4 | 157.7 | 242.5 | 158.6 | 148.7 | 148.7 | 107.8 | 190.8 | 21.4 | 156.3 | 227.6 | 273.3 | 194.4 |
| Turbidity | NTU | N/A | N/A | 1.44 | 23.9 | 1.79 | 2.11 | 4.02 | 7.76 | 0.65 | 0.57 | 0.00 | 0.00 | 4.3 | 0.00 | 0.89 | 0.89 | 0.23 | 0.00 | 0.00 | 0.00 | 2.4 | 0.00 | 0.16 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | < 0.200 | -- | -- | -- | -- | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.200 | < 0.200 | < 0.200 | < 0.20 |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | **0.46** | **0.207** | **1.1** | **0.83** | **0.59** | **0.15** | < 1.0 | **1.80** | **1.07** | **1.50** | **1.05** | **1.1** | **2.14** | **1.27** | **1.44** | **0.934** | **1.83** | **0.896** | **1.03** |
| Sulfate | mg/L | N/A | N/A | -- | -- | **72** | **65.0** | **95** | **91** | **99** | **120** | **91** | **77.2** | **70.9** | **83.5** | **85.9** | **78.1** | **78.5** | **77.9** | **79.5** | **49.7** | **65.5** | **72.9** | **65.5** |
| Sulfide | mg/L | N/A | N/A | -- | -- | < 1.0 | < 1.00 | < 1.0 | 1.6 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.00 | < 1.00 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | **0.0226** | -- | -- | -- | -- | -- | **0.326** | **0.243** | **0.293** | **0.335** | **0.333** | **0.401** | **0.310** | **0.397** | **0.456** | **0.422** | **0.318** | **0.337** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | **0.0392** | -- | -- | -- | -- | -- | **0.327** | **0.262** | **0.295** | **0.339** | **0.341** | **0.427** | **0.320** | **0.405** | **0.473** | **0.431** | **0.311** | **0.33** |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | < 0.10 HF | < 0.200 HF | < 0.10 HF | 0.17 HF | 0.15 HF | < 0.010 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | 0.2 | < 0.1 | < 0.100 | < 0.200 | < 0.200 |
| Total Iron | mg/L | N/A | N/A | -- | -- | < 0.10 | **0.735** | < 0.10 | 0.13 | < 0.010 | < 0.010 | < 0.1 | < 0.1 | **0.119** | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.100 | < 0.100 | 0.108 | < 0.100 | < 0.100 | < 0.100 |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | **130** | ** | **130** | **2.4** | **1.8** | **1.8** | **1.3** | **160** | **180** | **180** | **170** | **170** | **170** | **170** | **130** | **190** | **180** | ** | **170** |
| Methane | mg/L | N/A | N/A | -- | -- | < 0.58 | ** | < 0.58 | < 0.58 | 77 | 77 | <0.19 | **0.36** | **0.88** | **2.3** | **0.45** | **0.64** | **0.52** | **1.1** | **0.62** | **3.0** | **0.54** | ** | **0.58** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | ** | -- | **5.2** | **4.6** | **4.6** | **4.1** | **22** | **15** | **14** | **14** | **18** | **18** | **17** | **14** | **14** | **17** | ** | **15** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | **8.5** | ** | **5.8** | **1.6** | **1.6** | **1.6** | **1.4** | **2.9** | **2.4** | **1.5** | **1.2** | **2.1** | **1.6** | **2.1** | **2.6** | **1.3** | **1.2** | ** | **7.1** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9.0 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1700 | <5.0 | < 5.0 | < 2.0 | -- | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | < 5.0 | < 2.0 | < 5.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | < 0.50 | < 0.20 | < 10 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | < 1.0 | < 0.20 | < 10 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31, 000 | <0.050 | < 0.050 | < 0.20 | < 10 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | < 0.050 | < 0.20 | -- | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | < 0.050 | < 0.20 | -- | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | < 0.10 | < 0.20 | -- | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | < 0.10 | < 0.20 | -- | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | < 0.050 | < 0.20 | -- | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | < 0.050 | < 0.20 | -- | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | < 0.10 | < 0.20 | -- | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | <10 | < 10 | < 2.0 | < 10 | < 2.0 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | < 0.10 | < 0.20 | < 10 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | < 0.10 | < 0.20 | < 10 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | < 0.050 | < 0.20 | -- | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | < 10 | < 2.0 | < 10 | < 2.0 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | < 10 | < 2.0 | < 10 | < 2.0 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | < 0.50 | < 0.20 | < 10 | 0.50 | < 5.0 | < 5.0 | <9.9 | <9.4 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | < 0.050 | < 0.20 | < 10 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | < 10 | < 0.98 | < 10 | < 0.98 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | <0.050 | < 0.050 | < 0.20 | < 10 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20 | < 20 | < 20 | < 40 | < 20 | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | < 50 | < 50.0 | < 20 | < 50 | < 20 | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | **60.8** | **86.1** | **47** | **79.8** | **31** | **30** | **33** | **42** | **36** | **35.7** | **38.8** | **39.7** | **37.8** | **37.8** | **38.8** | **42** | **42.7** | **43.4** | **41.8** | **43** | **46** |
| Beryllium | mg/L | 31 | 200 | < 10 | < 10 | < 4.0 | -- | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | < 5.0 | -- | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10 | < 10 | < 20 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 20 | < 20 | < 40 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | < 0.5 | < 0.20 | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 20 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

# Appendix F
## Historical Data Summary - Alluvial Groundwater Analytical Data
## November 2001 through February 2017
## Atlanta Gas Light Company
## Former Manufactured Gas Plant Site
## Macon, Georgia

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-12R | | | | | | | | MW-12 | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/24/17 | 08/24/16 | 04/06/16 | 02/06/13 | 02/09/12 | 02/15/11 | 2/11 DUP | 02/23/10 | 08/12/09 | 06/06/06 | 03/08/06 | 12/21/05 | 09/29/05 | 03/25/05 | 12/14/04 | 10/04/04 | 06/09/04 | 03/03/04 | 12/17/03 | 09/09/03 | 06/10/03 | 03/12/03 | 12/10/02 | 09/18/02 | 11/06/01 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 3.88 | 4.03 | 3.86 | 4.05 | 4.03 | 4.10 | 4.10 | 4.15 | 6.01 | 3.63 | 3.61 | 3.71 | 3.70 | 5.13 | 3.52 | 3.26 | 4.33 | 3.71 | 3.75 | 3.75 | 3.66 | 3.82 | 4.61 | 4.44 | 5.62 |
| Specific Conductance | µS/cm | N/A | N/A | 684.0 | 674.6 | 0.688 | 642 | 649 | 567 | 567 | 584 | 468 | 630 | 667 | 630 | 723 | 497 | 752 | 817 | 690 | 887 | 1492 | 1280 | 1196 | 968 | 617 | 964 | 788 |
| Temperature | °Celsius | N/A | N/A | 20.48 | 24.29 | 21.55 | 19.63 | 17.49 | 17.92 | 17.92 | 17.34 | 24.75 | 23.54 | 19.1 | 21.44 | 26.97 | 19.23 | 22.21 | 26.29 | 22.34 | 18.30 | 21.64 | 25.68 | 22.44 | 18.90 | 22.56 | 27.83 | 25.85 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.17 | 0.14 | 0.25 | 1.24 | 1.26 | 4.12 | 4.12 | 0.70 | 4.13 | 0.20 | 0.42 | 0.83 | 0.26 | 0.52 | 2.61 | 0.67 | 0.60 | 0.88 | 0.24 | 0.21 | 0.40 | 0.11 | 0.22 | 0.06 | 0.22 |
| ORP | mV | N/A | N/A | 220.9 | 228.3 | 291.7 | 295.4 | 54.2 | 239.0 | 239.0 | 312.1 | -77.1 | 357.7 | 361.1 | 364.6 | 278.0 | 333.2 | 347.0 | 338.2 | 283 | 262.9 | 275.9 | 296 | 309.2 | 287.1 | 211.9 | 208.7 | 11.0 |
| Turbidity | NTU | N/A | N/A | 1.79 | 2.15 | 6.91 | 4.15 | 8.55 | 2.26 | 2.26 | 1.85 | 7.54 | 4.97 | 4.59 | 0.00# | 4.82 | 4.61 | 2.99 | 2.17 | 0.73 | 1.26 | 0.24 | 2.03 | 0.25 | 0.90 | 0.00 | 7.60 | 8.42 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **4.75** | **5.17** | **6.35** | **5.65** | **8.25** | **8.37** | **13.3** | **10.3** | **8.26** | **5.57** | **8.64** | **7.23** |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | -- | **0.64** | **0.40** | **0.52** | **0.51** | **0.44** | < 0.050 | -- | -- | -- | -- | **0.503** | **1.79** | **4.80** | < 0.5 | **2.99** | **1.04** | < 0.0500 | < 0.0500 | **0.101** | < 0.050 | **0.075** | < 0.050 |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | **290** | **270** | **260** | **250** | **230** | -- | -- | -- | -- | -- | **227** | **161** | **164** | **134** | **517** | **487** | **607** | **378** | **481** | **301** | **457** | **281** |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | **130** | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.00 | < 1.00 | < 1.00 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **0.889** | **0.953** | **1.10** | **0.923** | **1.06** | **1.25** | **1.60** | **1.44** | **1.44** | **0.950** | **1.36** | **0.974** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **0.820** | **0.965** | **1.06** | **0.891** | **1.43** | **1.19** | **1.62** | **1.44** | **1.46** | **0.945** | **1.22** | **1.01** |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | **14** HF | **15** HF | **12** HF | **12** HF | **9.3** | **36** | -- | -- | -- | -- | **10.1** | **9.4** | **8.9** | **34** | **25.0** | **30.1** | **67.6** | **1.5** | **47.1** | **35.5** | **38.0** | **21.4** |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | **15** | **17** | **13** | **13** | **9.8** | **41** | -- | -- | -- | -- | **10.2** | **10.6** | **11.3** | **25.2** | **29.1** | **31.0** | **68.4** | **46.3** | **49.5** | **25.5** | **43.9** | **79.6** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | **110** | **2.2** | **1.3** | **1.3** | **2.4** | **0.85** | -- | -- | -- | -- | **180** | **160** | **150** | **170** | **170** | **120** | **130** | **180** | **200** | **210** | **180** | **160** |
| Methane | mg/L | N/A | N/A | -- | -- | -- | **51** | **79** | **31** | **34** | **36** | **1.7** | -- | -- | -- | -- | **14** | **6.9** | **4.3** | **25** | **10** | **16** | **7.6** | **21** | **43** | **82** | **33** | **40** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | **5.6** | **3.7** | **4.3** | **3.9** | **4.4** | -- | -- | -- | -- | **26** | **16** | **15** | **15** | **20** | **18** | **13** | **14** | **18** | **15** | **22** | **11** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | **6.3** | **1.8** | **1.4** | **1.5** | **1.3** | **1.5** | -- | -- | -- | -- | **4.6** | **1.6** | **2.3** | **0.81** | **1.1** | **1.5** | **2.4** | **0.81** | **0.72** | **7.2** | **8.2** | **0.98** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9.0 | <5.0 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **5.9** | **31** |
| Carbon Disulfide | µg/L | 329 | 1700.0 | <5.0 | <5.0 | < 5.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **12** |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | < 5.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | **6.8** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | <0.50 | < 0.50 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | <1.0 | < 1.0 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31, 000 | **0.072** | **0.16** | **0.066** | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | < 0.050 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | < 0.10 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | < 0.10 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | < 0.050 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | <0.050 | < 0.050 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | < 0.10 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | <10 | <10 | < 10 | < 1.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 0.10 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 0.10 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 10 | < 1.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 10 | < 1.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.050 | **1.1** | < 0.50 | < 0.19 | **5.5** | < 5.0 | < 5.0 | **33** | <9.8 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **26** | **24** |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | <0.050 | < 0.050 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | < 0.97 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | **0.18** | **1.2** | **0.17** | **0.47** | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | < 20 | < 20 | < 10 | **12** | **15** | **15** | **20** | **40** | < 20 | < 20 | **22.1** | < 20 | < 20 | < 20 | 21.0 | < 20 | < 20 | < 20 | **24.8** | < 20 | < 20 | < 20 | **35** | **31** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | < 10 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | **21.1** | **30.5** | **32.9** | **29.3** | **14.5** | **34.2** | **39.8** | < 10 | **39.9** | **21.8** | **40.5** | **55.2** | **26** | < 10 | **18** | < 10 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 14.7 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | <20 | **38.9** | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 20 | 24.2 | 24.5 | < 20 | < 20 | **28.8** | **38.4** | < 20 | **44.5** | **25.3** | **36.8** | **41** | **32** | < 20 | < 10 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | <20 | **12.1** | **76** | -- | -- | -- | -- | -- | -- | -- | -- | -- | **111** | **183** | **246** | **74.2** | **320** | **149** | **215** | **254** | **187** | **51** | **107** | **26** |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | **0.54** | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10 | < 10 | **74** | **73** | **66** | **66** | **46** | < 10 | < 10 | < 10 | < 10 | **12** | < 10 | < 10 | **44** | **18** | **39** | **21** | **33** | **10** | **27** | **19** | **30** | **19** |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-12IR | | | | | | | | | | | | | | | | | | MW-12I (continued) | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/24/17 | 08/24/16 | 08/06/13 | 02/05/13 | 11/06/12 | 08/08/12 | 08/12 DUP | 05/15/12 | 02/09/12 | 11/15/11 | 08/09/11 | 05/03/11 | 05/11 DUP | 02/15/11 | 11/10/10 | 08/10/10 | 05/10/10 | 02/24/10 | 08/14/09 | 06/07/06 | 06/06 DUP | 03/09/06 | 12/21/05 | 09/29/05 | 09/05 DUP | 03/16/05 | 03/05 DUP | 12/16/04 | 10/04/04 | 10/04 DUP | 06/09/04 | 03/04/04 | 12/17/03 | 09/09/03 | 06/10/03 | 03/12/03 | 12/10/02 | 09/18/02 | 11/07/01 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.58 | 5.60 | 5.69 | 5.75 | 5.56 | 5.16 | 5.16 | 6.06 | 5.52 | 5.64 | 5.65 | 5.48 | 5.48 | 5.56 | 5.47 | 5.65 | 5.51 | 5.78 | 5.98 | 5.81 | 5.81 | 5.65 | 5.59 | 5.49 | 5.49 | 5.56 | 5.56 | 5.49 | 5.59 | 5.59 | 6.08 | 5.81 | 5.83 | 5.81 | 5.92 | 5.86 | 5.79 | 5.89 | 5.88 |
| Specific Conductance | µS/cm | N/A | N/A | 625.7 | 613.2 | 634 | 605 | 584 | 593 | 593 | 595 | 564 | 559 | 561 | 532 | 532 | 479 | 497 | 516 | 505 | 506 | 391 | 460 | 460 | 395 | 359 | 407 | 407 | 381 | 381 | 413 | 388 | 388 | 463 | 472 | 750 | 517 | 458 | 482 | 513 | 546 | 482 |
| Temperature | °Celsius | N/A | N/A | 21.62 | 22.28 | 24.30 | 21.06 | 19.07 | 22.92 | 22.92 | 24.91 | 18.92 | 24.05 | 24.57 | 23.52 | 23.52 | 19.85 | 23.72 | 25.71 | 20.70 | 13.52 | 27.54 | 21.93 | 21.93 | 21.10 | 21.98 | 24.39 | 24.39 | 20.77 | 20.77 | 23.84 | 24.82 | 24.82 | 21.57 | 21.05 | 23.16 | 24.52 | 21.94 | 21.34 | 23.53 | 25.2 | 24.37 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.22 | 0.10 | 0.76 | 0.42 | 0.34 | 0.21 | 0.21 | 0.59 | 0.21 | 0.22 | 0.16 | 0.23 | 0.23 | 1.29 | 0.19 | 2.7 | 0.39 | 7.04 | 6.61 | 0.19 | 0.19 | 0.25 | 0.28 | 0.15 | 0.15 | 0.80 | 0.80 | 3.06 | 2.22 | 2.22 | 0.56 | 0.28 | 0.26 | 0.26 | 0.06 | 0.09 | 0.38 | 0.05 | 0.25 |
| ORP | mV | N/A | N/A | 83.4 | 59.2 | 91.6 | 66.8 | 101.6 | 66.5 | 66.5 | 31.2 | 72.6 | 81.7 | 212.4 | -405.7 | -405.7 | 78.3 | 93.6 | -37.9 | 98 | 64.6 | -105.3 | -71.9 | -71.9 | -28.3 | -94.2 | -99.7 | -99.7 | 113.3 | 113.3 | 89.9 | 37.1 | 37.1 | 18.7 | 77.6 | -65.2 | 13.7 | -18.5 | 11.7 | 20.4 | 21 | -36.7 |
| Turbidity | NTU | N/A | N/A | 9.20 | 7.50 | 9.20 | 9.09 | 0.29 | 1.72 | 1.72 | 8.53 | 9.59 | 4.6 | 9.21 | 9.60 | 9.60 | 9.26 | 0.49 | 5.72 | 9.83 | 50.7 | 8.81 | 0.42 | 0.42 | 4.2 | 0.00[a] | 1.10 | 1.10 | 1.09 | 1.09 | 0.96 | 0.73 | 0.73 | 1.96 | 4.95 | -- | 1.10 | 26.1 | 4.3 | 3.2 | 1.5 | 6.8 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **2.14** | **2.44** | **3.01** | **2.57** | -- | **2.44** | **2.78** | **2.94** | **3.41** | **3.09** | **2.72** | **2.51** | **2.86** | **2.86** |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | -- | < 0.050 | -- | -- | -- | -- | < 0.050 | -- | -- | -- | -- | < 0.050 | -- | -- | -- | < 0.050 | < 0.050 | -- | -- | -- | -- | -- | -- | **0.186** | **0.139** | **0.209** | **0.0732** | -- | < 0.5 | < 0.500 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.0500 | 0.314 |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | **210** | -- | -- | -- | -- | **190** | -- | -- | -- | -- | **160** | -- | -- | -- | **140** | **110** | -- | -- | -- | -- | -- | -- | **102** | **103** | **93.8** | **112** | -- | **248** | **134** | **126** | **193** | **110** | **124** | **112** | **140** | **232** |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | < 1.0 | -- | -- | -- | -- | < 1.0 | -- | -- | -- | -- | < 1.0 | -- | -- | -- | < 1.0 | < 1.0 | -- | -- | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.00 | < 1.00 | < 1.00 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **1.36** | **1.40** | **1.39** | **1.22** | -- | **1.47** | **1.44** | **1.49** | **1.28** | **1.32** | **1.55** | **1.84** | **1.76** | **1.69** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **1.46** | **1.46** | **1.34** | **1.19** | **1.26** | **1.44** | **1.53** | **1.46** | **1.22** | **1.39** | **1.61** | **1.67** | **1.62** | **1.75** |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | **14** HF | -- | -- | -- | -- | **11** HF | -- | -- | -- | -- | **9.2** HF | -- | -- | -- | **7.5** | **4.6** | -- | -- | -- | -- | -- | -- | **10.6** | **10.5** | **7.9** | **7.0** | -- | **30.2** | **27.1** | **19.6** | **25.7** | **15.6** | **24.4** | **37.3** | **27.6** | **25.7** |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | **14** | -- | -- | -- | -- | **14** | -- | -- | -- | -- | **12** | -- | -- | -- | **32** | **4.6** | -- | -- | -- | -- | -- | -- | **9.58** | **9.39** | **9.36** | **6.72** | **7.33** | **24.7** | **25.0** | **24.4** | **24.0** | **67** | **25.7** | **27.5** | **27.9** | **31.4** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | **100** | -- | -- | -- | -- | **2.3** | -- | -- | -- | -- | **1.4** | -- | -- | -- | **1.6** | **0.24** | -- | -- | -- | -- | -- | -- | **200** | **200** | **200** | **190** | -- | **170** | **44** | **160** | **38** | **170** | **180** | **170** | **160** | **160** |
| Methane | mg/L | N/A | N/A | -- | -- | -- | **120** | -- | -- | -- | -- | **240** | -- | -- | -- | -- | **56** | -- | -- | -- | **65** | **0.3** | -- | -- | -- | -- | -- | -- | **48** | **15** | **82** | **63** | -- | **33** | **3,000** | **39** | **0.91** | **67** | **90** | **69** | **54** | **62** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | **18** | -- | -- | -- | -- | **5.3** | -- | -- | -- | -- | **4.6** | -- | -- | -- | **3.4** | **4.5** | -- | -- | -- | -- | -- | -- | **25** | **23** | **15** | **9.2** | -- | **19** | **21** | **18** | **12** | **14** | **17** | **16** | **16** | **12** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | **6.3** | -- | -- | -- | -- | **1.6** | -- | -- | -- | -- | **1.6** | -- | -- | -- | **1.2** | **1.7** | -- | -- | -- | -- | -- | -- | **5.2** | **5.6** | **1.4** | **7.4** | -- | **0.97** | **0.85** | **1.2** | **2.9** | **0.60** | **0.93** | **6.7** | **6.0** | **0.74** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | <5.0 | <5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | **1.4** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **140** | **140** | **180** | **460** | **630** | **590** | **26** | **24** | **69** | **21** | **23** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 | **7.1** | **6.8** | **6.3** | **15** | **23** | **24** | < 5.0 | < 5.0 | **6.2** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 | < 5.0 | **5.0** | **5.9** | **16** | **22** | **22** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 | **44** | **44** | **37** | **82** | **110** | **110** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | **1.6** | **6.8** | < 10 | **14** | **7.9** | **15** | **14** | **8.4** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **18** | **18** | < 10 | **15** | **16** | **24** | **22** | **37** | **23** | **17** | **20** | **33** | **27** | **64** |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | **4.4** | < 10 | **14** | **7.8** | **16** | **15** | **8.5** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **52** | **50** | < 10 | **43** | **46** | **71** | **66** | **90** | **60** | **52** | **66** | **100** | **75** | **22** |
| Anthracene | µg/L | 4,700 | 31,000 | **0.24** | **0.43** | < 10 | **0.66** | **0.67** | **0.8** | **0.8** | **0.61** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | **0.26** | **0.60** | **0.47** | **0.62** | **0.58** | **0.72** | **0.72** | **0.38** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | **0.072** | < 0.20 | < 0.19 | < 0.23 | < 0.19 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | < 0.20 | < 0.19 | < 0.23 | < 0.19 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | < 10 | < 0.19 | < 0.23 | < 0.19 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | < 10 | < 0.19 | < 0.23 | < 0.19 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | **0.17** | **0.41** | < 10 | **0.5** | **0.49** | **0.56** | **0.59** | **0.34** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | < 0.20 | < 0.19 | < 0.23 | < 0.19 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | <10 | <10 | < 10 | < 1.9 | < 2.3 | < 1.9 | < 1.9 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | **3.1** | **7.5** | < 10 | **11** | **9.5** | **11** | **10** | **6.3** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **13** | < 10 | < 10 | < 10 | 12 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | **3.6** | **9.5** | **14** | **27** | **20** | **34** | **33** | **20** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **40** | **39** | < 10 | **35** | **38** | **48** | **46** | **69** | **46** | **36** | **43** | **65** | **51** | **41** |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.20 | < 0.19 | < 0.23 | < 0.19 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 10 | < 1.9 | < 2.3 | < 1.9 | < 1.9 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 10 | < 1.9 | < 2.3 | < 1.9 | < 1.9 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | **7.9** | <0.50 | < 10 | **3.4** | **0.25** | **0.49** | **0.46** | **6.7** | **18** | < 5.0 | < 5.0 | **15** | **14** | **6.3** | **9.1** | < 5.0 | **80** | < 9.8 | < 9.4 | **530** | **580** | **440** | **710** | **810** | **910** | **63** | **66** | < 10 | **57** | **59** | **18** | < 10 | **25** | < 10 | **39** | **46** | **52** | **24** | **22** |
| Phenanthrene | µg/L | 470 | 3,100 | **0.25** | **0.36** | < 10 | **0.97** | **1.1** | **1.2** | **1.1** | **1.2** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **14** | **13** | < 10 | **11** | **12** | **14** | **14** | **20** | < 10 | **11** | **15** | **24** | **15** | **15** |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | < 0.97 | < 1.2 | < 0.97 | < 0.96 | < 1.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | **4.2** | **8.7** | < 10 | **14** | **13** | **15** | **15** | **9.3** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | **10** | **11** | **13** | **15** | < 10 | < 10 | **12** | **15** | **11** | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | <0.0200 | < 20.0 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | -- | <0.0500 | < 50.0 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | < 20 | **31.7** | **23** | **25** | **27** | **27** | **25** | **26** | **32** | **30** | **26** | **26** | **27** | -- | -- | -- | **100** | **64** | **164** | **159** | **172** | **206** | **216** | **204** | **69.9** | **69.5** | **85.5** | **77.5** | **82.8** | **68.6** | **70.0** | **74.8** | **487** | **74.9** | **80.6** | **76** | **72** | **81** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | **11** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 10 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | < 20 | < 20 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **12.3** | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 20 | < 40 | < 40 | < 40 | < 40 | -- | -- | -- | < 40 | < 40 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | **27.6** | **21** | **21** | **24** | **23** | **20** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 20 | < 20 | **21.9** | **27.6** | **25.5** | < 20 | **25.1** | < 20 | **41.2** | **96.2** | **23** | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | -- | <0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 | 0.05 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | **35** | **16** | **28** | **74** | **14** | **16** | **12** | **18** | -- | -- | -- | -- | **13** | -- | -- | -- | < 10 | **18** | **14** | **13** | **12** | **12** | < 10 | < 10 | < 10 | < 10 | **21** | **11** | **12** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Leve
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-14 | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/24/17 | 08/25/16 | 02/05/13 | 02/15/12 | 02/22/11 | 02/23/10 | 08/11/09 | 06/06/06 | 03/09/06 | 12/21/05 | 09/30/05 | 3/1505 | 12/14/04 | 10/01/04 | 06/08/04 | 03/03/04 | 12/16/03 | 09/08/03 | 06/11/03 | 03/11/03 | 12/10/02 | 09/17/02 | 11/08/01 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.21 | 6.13 | 6.08 | 6.18 | 6.27 | 6.14 | 6.3 | 6.20 | 6.32 | 6.38 | 6.25 | 6.33 | 7.28 | 6.20 | 6.33 | 6.32 | 6.46 | 6.34 | 6.4 | 6.43 | 6.28 | 6.14 | 6.32 |
| Specific Conductance | µS/cm | N/A | N/A | 158.90 | 236.8 | 212 | 184 | 177 | 179 | 241 | 229 | 210 | 198 | 288 | 200 | 258 | 252 | 296 | 172 | 236 | 289 | 269 | 243 | 376 | 380 | 502 |
| Temperature | °Celsius | N/A | N/A | 22.09 | 24.99 | 17.04 | 19.74 | 17.87 | 15.20 | 30.97 | 22.75 | 18.28 | 18.88 | 26.47 | 17.93 | 19.33 | 26.73 | 23.39 | 15.66 | 19.42 | 26.43 | 22.86 | 17.15 | 20.85 | 26.37 | 24.36 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 5.24 | 0.74 | 3.22 | 2.77 | 3.62 | 3.82 | 4.81 | 0.33 | 0.99 | 3.74 | 0.68 | 3.71 | 0.57 | 1.32 | 1.34 | 4.42 | 4.35 | 1.03 | 1.8 | 2.66 | 1.39 | 0.55 | 0.24 |
| ORP | mV | N/A | N/A | 131.10 | 64.8 | 230.1 | -36.6 | 6.3 | 108 | 53.9 | 82.1 | 79.1 | 144.3 | 25.9 | 141.0 | 120.5 | 108.9 | 91.2 | 108.2 | 117.6 | 3.4 | 37.2 | 201.0 | 79.9 | 168.9 | -23.5 |
| Turbidity | NTU | N/A | N/A | 15.7 | 4.01 | 1.86 | 23.70 | 41.7 | 9.27 | 9.09 | 4.89 | 9.68 | 10.56 | 4.96 | 9.53 | 3.15 | 7.5 | 5.40 | 21.6 | -- | 4.02 | 15.4 | 17.9 | 11.4 | 12.8 | 8.89 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 | **0.22** | < 0.20 | **0.38** | < 0.20 | < 0.20 | **0.33** | < 0.200 | < 0.200 | **1.92** | **1.09** | **3.59** |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | **0.81** | **0.18** | **0.23** | **1.0** | **0.086** | -- | -- | -- | -- | **0.266** | < 0.0500 | **0.121** | < 0.0500 | **1.17** | **1.42** | **0.596** | **0.779** | **1.63** | **0.469** | **1.35** | < 0.500 |
| Sulfate | mg/L | N/A | N/A | -- | -- | **21** | **71** | **20** | **19** | **22** | -- | -- | -- | -- | **20.8** | **18.0** | **22.3** | **16.5** | **22.0** | **22.4** | **24.7** | **17.9** | **25.1** | **36.2** | **64.5** | **25.8** |
| Sulfide | mg/L | N/A | N/A | -- | -- | < 1.0 | **1.4** | < 1.0 | < 1.0 | < 1.0 | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **0.0534** | **0.0996** | **0.126** | **0.355** | **0.0168** | **0.367** | **0.140** | **0.128** | < 0.0050 | **0.922** | **0.368** | **3.02** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **0.0787** | **0.107** | **0.136** | **0.417** | **0.0308** | **0.551** | **0.174** | **0.231** | **0.643** | **1.13** | **0.347** | **3.08** |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | < 0.10 HF | **3.5** HF | < 0.010 HF | < 0.010 | < 0.010 | -- | -- | -- | -- | < 0.1 | **0.1** | **0.1** | **0.2** | < 0.1 | < 0.1 | **0.1** | **0.1** | < 0.100 | **1.60** | **0.206** | **3.47** |
| Total Iron | mg/L | N/A | N/A | -- | -- | < 0.10 | **4.2** | **1.0** | **0.59** | **0.57** | -- | -- | -- | -- | **0.380** | **0.307** | **0.320** | **0.351** | **0.74** | **0.795** | **0.333** | **1.68** | **3.87** | **6.75** | **1.39** | **3.06** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | **54** | **1.7** | **0.47** | **0.50** | **0.46** | -- | -- | -- | -- | **53** | **85** | **75** | **78** | **46** | **50** | **64** | **82** | **60** | **84** | **66** | **120** |
| Methane | mg/L | N/A | N/A | -- | -- | **1.8** | **9.7** | **7.9** | <0.19 | **1.5** | -- | -- | -- | -- | **22** | **230** | **48** | **5.4** | **0.95** | **3.9** | **2.4** | **10** | **3.5** | **40** | **11** | **87** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | **20** | **5.4** | **4.6** | **4.1** | **4.5** | -- | -- | -- | -- | **23** | **20** | **16** | **18** | **20** | **18** | **14** | **14** | **17** | **17** | **14** | **13** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | **8.6** | **1.7** | **1.6** | **1.5** | **1.6** | -- | -- | -- | -- | **4.7** | **3.5** | **3.0** | **2.8** | **4.9** | **5.9** | **2.2** | **1.5** | **3.7** | **8.4** | **5.6** | **2.0** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9.0 | <5.0 | <5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Naphthalene | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | **4.1** | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | **4.0** | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31, 000 | <0.050 | **0.12** | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | **0.14** | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | <0.050 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | <10 | <10 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | **0.38** | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | **1.9** | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | <0.50 | < 0.22 | < 5.0 | < 5.0 | < 10 | <9.4 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | **0.051** | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 1.1 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | <0.050 | **0.84** | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | -- | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | **112** | **90** | **120** | **89** | **83** | **140** | **112** | **98.1** | **356** | **156** | **97.8** | **119** | **114** | **142** | **83.2** | **106** | **121** | **120** | **117** | **171** | **180** | **325** |
| Beryllium | µg/L | 31 | 200 | -- | <10 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | <5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **17.6** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 10 | < 10 | **44.7** | < 10 | **1,640** | **617** | **10.2** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **88.8** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 20 | < 20 | < 20.0 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | **297** | **126** | < 20 | **22.6** | < 20 | < 20 | < 20 | **24.3** | **47** | **36** | < 20 | **37** |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **12** | < 10 | < 10 | **43** | **52** | **120** |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 2 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-14I | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/23/17 | 08/25/16 | 04/05/16 | 02/04/13 | 02/15/12 | 02/22/11 | 02/23/10 | 08/11/09 | 06/06/06 | 03/09/06 | 12/21/05 | 09/28/05 | 03/15/05 | 12/15/04 | 09/30/04 | 07/15/04 | 06/09/04 | 03/03/04 | 12/16/03 | 09/08/03 | 06/11/03 | 03/11/03 | 03/03 DUP | 12/10/02 | 09/17/02 | 11/08/01 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.93 | 6.24 | 6.52 | 6.69 | 5.83 | 5.87 | 6.18 | 5.95 | 6.24 | 6.17 | 6.11 | 6.31 | 6.15 | 7.39 | 6.15 | -- | 6.10 | 6.11 | 6.2 | 5.15 | 6.38 | 6.27 | 6.27 | 6.08 | 6.13 | 6.17 |
| Specific Conductance | µS/cm | N/A | N/A | 298.50 | 514.8 | 0.4 | 269 | 250 | 278 | 315 | 423 | 448 | 416 | 401 | 432 | 399 | 417 | 467 | -- | 463 | 393 | 436 | 421 | 421 | 453 | 453 | 429 | 464 | 461 |
| Temperature | °Celsius | N/A | N/A | 21.24 | 24.83 | 19.77 | 19.53 | 19.58 | 20.67 | 18.22 | 26.35 | 23.02 | 20.43 | 22.05 | 23.40 | 20.69 | 22.48 | 24.15 | -- | 20.95 | 19.96 | 21.57 | 23.43 | 20.86 | 20.58 | 20.58 | 22.27 | 23.47 | 22.61 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.11 | 0.19 | 0.21 | 0.32 | 0.85 | 0.39 | 1.46 | 5.67 | 0.20 | 0.40 | 0.42 | 0.55 | 1.71 | 0.19 | 0.28 | -- | 0.21 | 0.57 | 0.22 | 0.34 | 0.03 | 0.09 | 0.09 | 0.06 | 0.16 | 0.19 |
| ORP | mV | N/A | N/A | 56.60 | -27.7 | 4.9 | -56.4 | 41.2 | -9.5 | 27 | -9.9 | -37.3 | -8.2 | -13.6 | -5.9 | -13.4 | -148.1 | -59.1 | -- | -86.6 | 58.0 | -109.2 | -79.3 | -151.8 | *** | *** | -43.2 | -49.9 | -79.4 |
| Turbidity | NTU | N/A | N/A | 2.32 | 2.89 | 24.9 | 3.62 | 8.23 | 8.27 | 1.52 | 1.41 | 0.33 | 1.46 | 2.54 | 0.50 | 1.52 | 2.82 | 0.65 | -- | 0.40 | 2.83 | -- | 1.49 | 9.72 | 4.92 | 4.92 | 2.30 | 1.31 | 9.50 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **11.7** | **12.0** | **11.5** | -- | **10.6** | **12.8** | **11.6** | **11.4** | **11.1** | **12** | **12.2** | **10.5** | **12.2** | **11.2** |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | -- | < 0.050 | **0.18** | < 0.050 | 0.097 | < 0.050 | -- | -- | -- | -- | < 0.500 | < 0.0500 | < 0.0500 | -- | < 0.5 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.0500 | **0.297** |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | **44** | **18** | **54** | **32** | **41** | -- | -- | -- | -- | **47.3** | **39.5** | **39.6** | -- | **73.7** | **49.0** | **47.7** | **32.0** | **17.2** | **36.9** | **39.6** | **43.2** | **40.5** | **31.5** |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.00 | < 1.00 | < 1.00 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **1.62** | **1.53** | **1.78** | -- | **1.5** | **1.57** | **1.77** | **1.92** | **1.81** | **1.76** | **1.7** | **1.63** | **1.66** | **1.35** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **1.55** | **1.56** | **1.78** | -- | **1.51** | **1.52** | **1.64** | **1.95** | **1.80** | **1.77** | **1.87** | **1.55** | **1.64** | **1.88** |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | **6.4** HF | < 0.10 HF | **3.4** HF | **7.5** | **6.8** | -- | -- | -- | -- | **17.7** | **12.2** | **13.5** | -- | **16.7** | **6.2** | **6.5** | **12.6** | **13.0** | **12.2** | **13.4** | **14.5** | **14.1** | **11.1** |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | **7.8** | **0.20** | **3.9** | **8.6** | **16** | -- | -- | -- | -- | **8.89** | **11.4** | **12.5** | -- | **11.6** | **7.15** | **10.4** | **12.7** | **14.9** | **11.7** | **12.3** | **9.94** | **11.4** | **12.9** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | **87** | **830** | **1.0** | **1.5** | **1.3** | -- | -- | -- | -- | **160** | **170** | **160** | -- | **180** | **160** | **140** | **96** | **160** | **170** | **200** | **170** | **180** | **150** |
| Methane | mg/L | N/A | N/A | -- | -- | -- | **74** | **2.4** | **14** | **82** | **69** | -- | -- | -- | -- | **320** | **430** | **420** | -- | **400** | **44** | **340** | **550** | **610** | **470** | **700** | **520** | **650** | **280** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | **18** | **5100** | **4.2** | **3.1** | **4.1** | -- | -- | -- | -- | **26** | **15** | **16** | -- | **15** | **17** | **20** | **14** | **14** | **18** | **16** | **16** | **17** | **13** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | **5.0** | **1800** | **1.4** | **1.0** | **1.4** | -- | -- | -- | -- | **4.2** | **1.1** | **1.2** | -- | **0.44** | **0.89** | **3.6** | **0.53** | **0.66** | **2.9** | **0.55** | **6.6** | **6.4** | **0.79** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9.0 | <5.0 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **8.2** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | < 5.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **16** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **10** | **7.7** | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Naphthalene | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | < 5.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **5.3** | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | **1.9** | **4.1** | **4.4** | **3.4** | -- | -- | -- | -- | -- | -- | -- | -- | **38** | **48** | **43** | < 5.0 | **24** | **20** | **29** | **38** | **57** | **33** J | **37** J | **35** | **36** | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | **1.8** | **4.0** | **3.3** | **1.2** | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **41** |
| Anthracene | µg/L | 4,700 | 31, 000 | <0.050 | **0.12** | **0.056** | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.392 | <0.050 | **0.14** | < 0.050 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | < 0.10 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | < 0.10 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 12 | 39 | <0.050 | <0.050 | < 0.050 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | <0.050 | < 0.050 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.392 | <0.10 | <0.10 | < 0.10 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | <10 | <10 | < 10 | < 1.9 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | **0.11** | **0.38** | **0.11** | **0.48** | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | **0.77** | <0.10 | **1.60** | **0.89** | -- | -- | -- | -- | -- | -- | -- | -- | **11** | **14** | **11** | < 10 | < 10 | < 10 | < 10 | < 10 | **12** | < 10 | < 10 | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | **1.9** | < 0.050 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 10 | < 1.9 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 10 | < 1.9 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | <0.50 | < 0.50 | < 0.19 | < 5.0 | < 5.0 | < 10 | <9.9 | < 10 | **80** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **23** | **19** | **21** | **58** | **48** | **24** |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | **0.051** | < 0.050 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | **1.2** | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | **0.29** | **0.84** | **0.27** | **0.93** | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | **112** | **129** | **71** | **180** | **180** | **300** | **220** | **276** | **281** | **287** | **301** | **296** | **292** | **339** | **292** | **292** | **277** | **292** | **369** | **343** | **379** | **404** | **314** | **314** | **394** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | **20.9** | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **14** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 2 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/23/17 | 08/25/16 | 04/06/16 | 4/16 DUP | 08/12/15 | 02/17/15 | 02/06/13 | 02/13 DUP | 02/14/12 | 02/12 DUP | 02/23/11 | 02/25/10 | 08/12/09 | 06/06/06 | 03/08/06 | 12/21/05 | 09/28/05 | 03/16/05 | 12/14/04 | 09/30/04 | 06/08/04 | 03/03/04 | 12/16/03 | 09/09/03 | 06/10/03 | 03/12/03 | 12/10/02 | 09/19/02 | 11/06/01 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.11 | 5.68 | 5.45 | | 5.71 | 5.09 | 4.64 | | 4.92 | | 5.37 | 5.56 | 5.40 | 5.74 | 6.06 | 5.74 | 5.69 | 6.20 | 5.84 | 6.16 | 5.95 | 5.98 | 5.69 | 5.77 | 6.05 | 6.11 | 5.80 | 5.99 | 5.98 |
| Specific Conductance | µS/cm | N/A | N/A | 979.90 | 811.3 | 400 | | 880 | 851 | 1044 | | 938 | | 485 | 774 | 987 | 915 | 781 | 795 | 1165 | 568 | 828 | 650 | 1,022 | 1,000 | 1532 | 952 | 717 | 891 | 754 | 934 | 976 |
| Temperature | °Celsius | N/A | N/A | 18.47 | 26.16 | 20.45 | | 24.28 | 14.83 | 16.01 | | 15.57 | | 14.96 | 11.36 | 23.86 | 21.23 | 17.58 | 19.02 | 25.54 | 16.39 | 20.03 | 25.08 | 21.11 | 16.63 | 20.66 | 24.33 | 21.06 | 16.85 | 20.10 | 24.28 | 22.16 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.23 | 0.24 | 0.33 | | 0.18 | 0.66 | 0.47 | | 0.39 | | 1.13 | 0.59 | 3.07 | 0.24 | 0.52 | 0.79 | 0.28 | 1.20 | 2.97 | 0.76 | 1.04 | 0.69 | 0.18 | 0.24 | 0.34 | 0.58 | 1.79 | 0.10 | 1.5 |
| ORP | mV | N/A | N/A | 180.00 | 24.1 | 116.5 | | -18.3 | 99.7 | 301.1 | | 73.2 | | 210.3 | 154.4 | -187 | 192.3 | 157.2 | 220.8 | -18.1 | 219.9 | 233.5 | 47.9 | 122.3 | 106.1 | 69.1 | 31.2 | 118.1 | 250.3 | 87.4 | 6.00 | 30.0 |
| Turbidity | NTU | N/A | N/A | 1.23 | 3.40 | 11.10 | | 3.28 | 8.81 | 1.34 | | 3.95 | | 4.67 | 9.82 | 0.46 | 0.23 | 1.66 | 4.98 | 1.36 | 4.90 | 2.6 | 1.11 | 1.06 | 1.49 | -- | 4.45 | 6.53 | 17.7 | 1.82 | 1.50 | 9.02 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 | **15.7** | **1.54** | **25.6** | **5.97** | **27.8** | **25.8** | **8.15** | **2.62** | **28.4** | **37.9** | **36.0** |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **31** | **30** | **21** | **22** | **4.8** | **6.9** | **6.4** | -- | -- | -- | -- | **13.6** | **10.3** | **6.93** | **33.6** | **35.2** | **45.2** | **58.8** | **38.9** | **45.9** | **17.7** | **0.0654** | **0.515** |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **370** | **370** | **310** | **310** | **310** | **330** | **350** | -- | -- | -- | -- | **124** | **4.83** | **95.8** | **248** | **240** | **153** | **116** | **71.9** | **100** | **201** | **263** | **281** |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | 1.00 | < 1.00 | < 1.00 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **1.58** | **2.86** | **0.592** | **3.95** | **2.54** | **3.54** | **4.23** | **2.93** | **1.53** | **5.52** | **6.86** | **7.35** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **1.40** | **2.89** | **0.692** | **3.99** | **2.66** | **3.54** | **4.32** | **3.01** | **1.55** | **5.42** | **6.05** | **7.30** |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | 0.13 HF | 0.28 HF | < 0.10 HF | 0.11 HF | < 0.010 HF | < 0.010 | < 0.010 | -- | -- | -- | -- | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.100 | **12.7** | **22.0** | **21.7** |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **0.18** | **0.18** | **0.16** | **0.18** | **0.12** | **0.50** | < 0.010 | -- | -- | -- | -- | **0.213** | **0.230** | **0.159** | **0.166** | **0.293** | **0.104** | **0.338** | **0.781** | **1.89** | **9.12** | **21.4** | **19.9** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **110** | **99** | **2.7** | **2.8** | **1.7** | **1.4** | **1.2** | -- | -- | -- | -- | **140** | **140** | **120** | **180** | **160** | **170** | **170** | **210** | **120** | **190** | **250** | **200** |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **2.4** | **2.2** | **1.8** | **2.1** | <0.58 | 0.58 | <0.19 | -- | -- | -- | -- | **0.77** | **1.1** | **3.2** | **1.4** | **0.62** | **1.5** | **2.2** | **2.4** | **1.4** | **35** | **93** | **330** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **5.1** | **5.3** | **3.8** | **4.1** | **4.3** | -- | -- | -- | -- | **26** | **21** | **17** | **17** | **18** | **15** | **14** | **14** | **16** | **16** | **16** | **12** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **6.6** | **7.2** | **1.6** | **1.7** | **1.3** | **1.3** | **1.6** | -- | -- | -- | -- | **6.8** | **2.6** | **4.4** | **0.97** | **1.6** | **1.1** | **1.8** | **1.3** | **3.6** | **7.5** | **5.5** | **1.8** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1700.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | <0.50 | < 0.50 | < 0.50 | < 0.50 | < 10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | <1.0 | < 1.0 | < 1.0 | < 1.0 | < 10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31, 000 | **0.074** | **0.14** | < 0.050 | < 0.050 | **0.11** | < 10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | **0.13** | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | **0.14** | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | **0.12** | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | **0.16** | < 0.10 | < 0.10 | < 0.10 | < 10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | **0.14** | < 0.050 | < 0.050 | < 0.050 | < 10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | **0.15** | < 0.050 | < 0.050 | < 0.050 | < 10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | <10 | **0.13** | < 10 | < 10 | < 10 | < 10 | < 2.1 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | **0.15** | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 2.1 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 2.1 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | <0.50 | < 0.50 | < 0.50 | < 0.50 | < 10 | < 0.21 | < 0.21 | < 5.0 | < 5.0 | < 5.0 | <9.8 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 1.1 | < 1.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | <0.050 | **0.055** | < 0.050 | < 0.050 | < 0.050 | < 10 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | **31.7** | **31.5** | **32.6** | **33.6** | **50** | **16** | **16** | **19** | **18** | **41** | **49** | **35** | **21.8** | **33.7** | **28.5** | **38.7** | **84.7** | **38.3** | **87.3** | **35.4** | **80.8** | **48.7** | **74.6** | **105** | **119** | **34** | **34** | **35** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | **23.9** | **50.0** | **50.6** | < 20.0 | **297** | **320** | **330** | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | **14.1** | **14** | **12** | **11.3** | **108** | **120** | **120** | **130** | **130** | **65** | **110** | **150** | **167** | **315** | **121** | **282** | **199** | **355** | **216** | **236** | **403** | **173** | **189** | **51** | **248** | **181** | **276** | **227** |

Notes:
**Analyte was detected above laboratory detection limit**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-21 | | | | | MW-23 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/27/17 | 08/25/16 | 04/06/16 | 04/30/15 | 07/12/06 | 02/13/12 | 02/24/11 | 03/05/04 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.37 | 5.96 | 5.92 | 5.99 | -- | 6.07 | 6.16 | 6.20 |
| Specific Conductance | µS/cm | N/A | N/A | 263.6 | 160.22 | 95 | 58 | -- | 287 | 272 | 347 |
| Temperature | °Celsius | N/A | N/A | 17.37 | 23.20 | 17.35 | 16.44 | -- | 19.25 | 16.63 | 20.76 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 1.78 | 3.06 | 0.19 | 0.98 | -- | 6.32 | 1.42 | 1.86 |
| ORP | mV | N/A | N/A | 80.4 | 12 | 5.7 | -44.1 | -- | 0.5 | 9.1 | 42.5 |
| Turbidity | NTU | N/A | N/A | 2.65 | 16.6 | 6.8 | 14.1 | -- | 3.89 | 0.56 | 10.65 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **0.85** | **0.75** | -- |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **36** | **35** | -- |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | < 1.0 | < 1.0 | -- |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | < 0.005 |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | < 0.10 HF | < 0.010 HF | -- |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | < 0.10 | < 0.010 | **0.171** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **1.6** | **1.0** | -- |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | -- | < 0.58 | <0.58 | -- |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **5.0** | **4.4** | -- |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **1.6** | **1.5** | -- |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Naphthalene | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | <0.50 | < 0.50 | < 10 | < 10 | -- | -- | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | <1.0 | < 1.0 | < 10 | < 10 | -- | -- | < 10 |
| Anthracene | µg/L | 4,700 | 31, 000 | <0.050 | <0.050 | < 0.050 | < 10 | < 10 | -- | -- | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | < 0.10 | < 10 | < 10 | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | < 0.050 | < 10 | < 10 | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | <0.050 | < 0.050 | < 10 | < 0.050 | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | -- | -- | -- |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | <10 | < 10 | < 10 | -- | -- | -- | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 0.10 | < 10 | < 10 | -- | -- | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 0.10 | < 10 | < 10 | -- | -- | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 10 | < 10 | -- | -- | -- | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 10 | < 10 | -- | -- | -- | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | <0.50 | < 0.50 | < 10 | < 10 | < 5.0 | < 5.0 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | <0.050 | < 0.050 | < 10 | < 10 | -- | -- | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | < 10 | -- | -- | -- | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | <0.050 | <0.050 | < 0.050 | < 10 | < 10 | -- | -- | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | <0.0200 | < 20 | < 20 | < 20 | -- | -- | < 40 |
| Arsenic | µg/L | 50* | 50* | -- | <0.0500 | < 50 | < 50 | < 50 | -- | -- | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | **0.158** | **96.8** | **75.6** | 73 | 74 | 67 | 71.8 |
| Beryllium | µg/L | 31 | 200 | -- | <0.0100 | < 10 | < 10 | < 10 | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | **0.0055** | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | <0.0100 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | **0.0143** | < 10 | < 10 | < 10 | < 20 | < 20 | < 10 |
| Lead | µg/L | 15* | 15* | -- | <0.0100 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | <0.0200 | < 20 | < 20 | < 20 | < 40 | < 40 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | **0.134** | **165** | < 20 | < 20 | -- | -- | < 20 |
| Mercury | µg/L | 2* | 2* | -- | <0.00020 | < 0.20 | < 0.20 | < 0.20 | -- | -- | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | <0.010 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-25 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 04/28/15 | 02/04/13 | 02/07/12 | 02/16/11 | 02/23/10 | 08/13/09 | 06/12/03 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.16 | 4.48 | 5.35 | 5.45 | 5.44 | 5.08 | 5.33 |
| Specific Conductance | µS/cm | N/A | N/A | 409 | 342 | 391 | 331 | 398 | 346 | 334 |
| Temperature | °Celsius | N/A | N/A | 20.52 | 21.08 | 18.99 | 19.16 | 15.26 | 23.74 | 21.73 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.66 | 0.44 | 1.01 | 0.88 | 3.33 | 6.63 | 0.25 |
| ORP | mV | N/A | N/A | -31.1 | 523.5 | 79.2 | 447.3 | 175.9 | -76.5 | 213.5 |
| Turbidity | NTU | N/A | N/A | 1.3 | 6.39 | 1.85 | 0.80 | 8.42 | 2.82 | 7.09 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | < 0.200 |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | **6.3** | < 5.0 | **4.0** | **3.3** | **2.1** | **2.38** |
| Sulfate | mg/L | N/A | N/A | -- | **89** | < 5.0 | **96** | **110** | **95** | **85.1** |
| Sulfide | mg/L | N/A | N/A | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **0.0591** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **0.059** |
| Ferrous Iron | mg/L | N/A | N/A | -- | **0.11** HF | **37** HF | < 0.010 HF | < 0.010 | < 0.1 | < 0.1 |
| Total Iron | mg/L | N/A | N/A | -- | **0.15** | **45** | < 0.010 | **0.24** | < 0.1 | < 0.1 |
| Carbon Dioxide | mg/L | N/A | N/A | -- | **170** | **4.2** | **0.96** | **2.1** | **0.74** | **230** |
| Methane | mg/L | N/A | N/A | -- | < 0.58 | < 0.58 | < 0.58 | < 0.19 | **0.21** | **0.60** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | **16** | **4.1** | **4.7** | **3.7** | **4.2** | **14** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | **5.2** | **0.96** | **1.6** | **1.3** | **1.5** | **1.3** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 5.0 | < 2.0 | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | < 5.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | < 10 | < 0.20 | -- | -- | -- | -- | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | < 10 | < 0.20 | -- | -- | -- | -- | < 10 |
| Anthracene | µg/L | 4,700 | 31,000 | < 10 | < 0.20 | -- | -- | -- | -- | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | < 0.050 | < 0.20 | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | < 0.050 | < 0.20 | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | < 0.10 | < 0.20 | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 10 | < 0.20 | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 10 | < 0.20 | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | < 10 | < 0.20 | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | < 0.10 | < 0.20 | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | < 10 | < 2.0 | -- | -- | -- | -- | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 10 | < 0.20 | -- | -- | -- | -- | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | < 10 | < 0.20 | -- | -- | -- | -- | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | < 0.050 | < 0.20 | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 10 | < 2.0 | -- | -- | -- | -- | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | < 10 | < 2.0 | -- | -- | -- | -- | < 10 |
| Naphthalene | µg/L | 20* | 20* | < 10 | < 0.20 | < 5.0 | < 5.0 | <9.5 | < 10 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | < 10 | 0.43 | -- | -- | -- | -- | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | < 10 | < 0.99 | -- | -- | -- | -- | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | < 10 | < 0.20 | -- | -- | -- | -- | < 10 |
| **Inorganic Constituents** | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20 | < 20 | -- | -- | -- | -- | < 40 |
| Arsenic | µg/L | 50* | 50* | < 50 | < 20 | -- | -- | -- | -- | < 50 |
| Barium | µg/L | 2,000 | 7,200 | **33.6** | **32** | **820** | **33** | **40** | **32** | **33** |
| Beryllium | µg/L | 31 | 200 | < 10 | < 4.0 | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 10 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | **47** | **59** | -- | -- | -- | -- | **28** |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | -- | -- | -- | -- | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-26 | | MW-28 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/23/16 | 02/05/13 | 8/24/2016 | 04/05/16 | 02/07/13 | 03/05/04 | 03/04 DUP |
| **Field Groundwater Quality Parameters** | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.01 | 6.41 | 6.07 | 6.30 | 6.28 | 6.73 | 6.73 |
| Specific Conductance | µS/cm | N/A | N/A | 283.7 | 642 | 257.5 | 148 | 240 | 412 | 412 |
| Temperature | °Celsius | N/A | N/A | 22.81 | 14.36 | 33.48 | 21.42 | 16.97 | 17.56 | 17.56 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.18 | 0.65 | 0.14 | 2.16 | 1.96 | 0.42 | 0.42 |
| ORP | mV | N/A | N/A | 21.0 | -28.2 | -61.6 | 42.1 | 14.0 | -125.5 | -125.5 |
| Turbidity | NTU | N/A | N/A | 5.25 | 2.02 | 1.31 | 48.4 | 8.27 | 20.2 | 20.2 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | < 0.050 | -- | -- | **0.12** | -- | -- |
| Sulfate | mg/L | N/A | N/A | -- | **200** | -- | -- | **15** | -- | -- |
| Sulfide | mg/L | N/A | N/A | -- | **4.5** | -- | -- | < 1.0 | -- | -- |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **6.11** | **6.14** |
| Ferrous Iron | mg/L | N/A | N/A | -- | **34** HF | -- | -- | **9.2** HF | -- | -- |
| Total Iron | mg/L | N/A | N/A | -- | **50** | -- | -- | **10** | **34.3** | **35.6** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | **170** | -- | -- | **72.0** | -- | -- |
| Methane | mg/L | N/A | N/A | -- | **32** | -- | -- | **82** | -- | -- |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | **18** | -- | -- | -- | -- | -- |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | **2.0** | -- | -- | **6.6** | -- | -- |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9 | <5.0 | < 1.0 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | < 2.0 | <5.0 | < 5.0 | < 2.0 | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | < 1.0 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | < 1.0 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 |
| Naphthalene | µg/L | 31,000 | 200,000 | <5.0 | < 2.0 | <5.0 | < 5.0 | < 2.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | < 2.0 | <0.50 | < 0.50 | < 0.19 | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | < 2.0 | <1.0 | < 1.0 | < 0.19 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31, 000 | <0.050 | < 2.0 | <0.050 | < 0.050 | < 0.19 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | < 2.0 | <0.050 | < 0.050 | < 0.19 | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | < 2.0 | <0.050 | < 0.050 | < 0.19 | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | < 2.0 | <0.10 | < 0.10 | < 0.19 | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | < 2.0 | <0.10 | < 0.10 | < 0.19 | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | < 2.0 | <0.050 | < 0.050 | < 0.19 | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | < 2.0 | <0.050 | < 0.050 | < 0.19 | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | < 2.0 | <0.10 | < 0.10 | < 0.19 | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | <10 | < 20 | <10 | < 10 | < 1.9 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | < 2.0 | <0.10 | < 0.10 | < 0.19 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | < 2.0 | <0.10 | < 0.10 | < 0.19 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | < 2.0 | <0.050 | < 0.050 | < 0.19 | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | < 20 | <10 | < 10 | < 1.9 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | < 20 | <10 | < 10 | < 1.9 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | < 2.0 | <0.50 | < 0.50 | < 0.19 | < 10 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | < 2.0 | 0.053 | < 0.050 | < 0.19 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | < 9.9 | <10 | < 10 | < 0.97 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | <0.050 | < 2.0 | <0.050 | < 0.050 | < 0.19 | < 10 | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20 | < 20 | < 20 | < 20 | < 20 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | < 50 | < 20 | < 50 | < 20 | < 20 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | **48.7** | **120** | **8.07** | **64.9** | **82** | **115** | **115** |
| Beryllium | µg/L | 31 | 200 | < 10.0 | < 4.0 | <10 | < 10.0 | < 4.0 | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | <5.0 | < 5.0 | < 5.0 | **40.3** | < 5.0 | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10 | < 20 | < 20 | < 10 | < 20 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 20 | < 40 | < 40 | < 20 | < 40 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-101 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/23/17 | 08/25/16 | 04/07/16 | 4/16 DUP | 08/13/15 | 02/18/15 | 08/07/13 | 08/13 DUP | 02/07/13 | 02/13 DUP | 11/07/12 | 11/12 DUP | 08/09/12 | 05/16/12 | 05/12 DUP | 02/09/12 | 02/12 DUP | 11/16/11 | 11/11 DUP | 08/10/11 | 08/11 DUP | 05/04/11 | 02/24/11 | 11/10/10 | 11/10 DUP | 08/10/10 | 05/11/10 | 05/11 DUP | 02/25/10 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.05 | 5.94 | 6.10 | | 5.87 | 5.38 | 5.56 | | 5.08 | | 6.23 | | 6.11 | 6.17 | | 5.6 | | 5.84 | | 6.54 | | 4.84 | 6.15 | 6.29 | | 6.01 | 6.12 | | 5.92 |
| Specific Conductance | µS/cm | N/A | N/A | 366.20 | 370.8 | 400 | | 534 | 490 | 498 | | 814 | | 1049 | | 1125 | 976 | | 828 | | 997 | | 1.185 | | 404 | 696 | 954 | | 958 | 948 | | 720 |
| Temperature | °Celsius | N/A | N/A | 20.08 | 26.25 | 21.77 | | 27.35 | 13.50 | 23.36 | | 14.94 | | 21.1 | | 25.58 | 23.62 | | 17.07 | | 26.14 | | 23.85 | | 20.26 | 17.84 | 23.54 | | 28.39 | 18.57 | | 12.69 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.08 | 0.38 | 0.16 | | 0.19 | 1.57 | 0.41 | | 0.78 | | 0.59 | | 0.66 | 0.81 | | 2.89 | | 0.61 | | 1.19 | | 0.89 | 1.29 | 0.21 | | 0.30 | 0.68 | | 0.95 |
| ORP | mV | N/A | N/A | 98.3 | 21.4 | 17.3 | | -23.1 | 125.0 | -123.0 | | 200.8 | | 3.6 | | -6.1 | 28.2 | | 4.3 | | 29.4 | | -73.3 | | 173.2 | -19.8 | -79.4 | | -3.3 | -21.0 | | 47.7 |
| Turbidity | NTU | N/A | N/A | 3.65 | 6.43 | 23 | | 4.65 | 9.50 | 7.07 | | 1.05 | | 18.9 | | 3.80 | 3.16 | | 8.35 | | 155 | | 4.02 | | 2.44 | 9.98 | 3.3 | | 3.14 | 5.17 | | 91.30 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **69** | **69** | -- | -- | -- | -- | -- | **69** | **72** | -- | -- | -- | -- | -- | **3.4** | -- | -- | -- | -- | -- | **6.6** |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **120** | **120** | -- | -- | -- | -- | -- | **170** | **160** | -- | -- | -- | -- | -- | **280** | -- | -- | -- | -- | -- | **210** |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | < 1.0 | < 1.0 | -- | -- | -- | -- | -- | < 1.0 | < 1.0 | -- | -- | -- | -- | -- | **5.9** | -- | -- | -- | -- | -- | < 1.0 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **5.5** HF | **5.6** HF | -- | -- | -- | -- | -- | **2.8** HF | **2.4** HF | -- | -- | -- | -- | -- | **10** HF | -- | -- | -- | -- | -- | **5.6** |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **5.6** | **5.5** | -- | -- | -- | -- | -- | **3.2** | **3.1** | -- | -- | -- | -- | -- | **12** | -- | -- | -- | -- | -- | **14** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **76** | **69** | -- | -- | -- | -- | -- | **1.3** | **1.3** | -- | -- | -- | -- | -- | **0.62** | -- | -- | -- | -- | -- | **1.3** |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **3.5** | **3.4** | -- | -- | -- | -- | -- | **10** | **11** | -- | -- | -- | -- | -- | **61** | -- | -- | -- | -- | -- | **1400** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **5.8** | **4.9** | -- | -- | -- | -- | -- | **4.7** | -- | -- | -- | -- | -- | **3.7** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **7.2** | **12** | -- | -- | -- | -- | -- | **2.3** | **1.5** | -- | -- | -- | -- | -- | **1.5** | -- | -- | -- | -- | -- | **1.2** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | <5.0 | <5.0 | **6.5** | **6.3** | < 5.0 | **49** | < 5.0 | < 5.0 | **25** | **20** | **27** | **26** | **51** | **43** | **44** | **25** | **26** | **24** | **20** | **65** | **74** | **19** | **120** | **150** | **150** | **130** | **140** | **130** | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **9.6** | **5.9** | **5.0** | **5.6** | **12** | **8.7** | **8.3** | **11** | **9.9** | **7.9** | **6.9** | <25 | <25 | **6.7** | **61** | -- | -- | -- | -- | -- | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | **6.9** | < 5.0 | < 5.0 | **14** | **9.3** | < 1.0 | < 1.0 | < 1.0 | **15** | **15** | **6.4** | **6.1** | < 5.0 | < 5.0 | <25 | <25 | **7.8** | **64** | -- | -- | -- | -- | -- | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | **18** | < 5.0 | < 5.0 | **18** | **12** | < 2.0 | < 2.0 | **9.9** | **32** | **31** | **9.6** | **8.3** | < 5.0 | < 5.0 | <25 | <25 | **12** | **88** | -- | -- | -- | -- | -- | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | **1.4** | **4.1** | **3.7** | **3.9** | **11** | < 10 | < 10 | < 10 | **11** | **7.0** | **17** | **16** | **19** | **18** | **26** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | **1.4** | **1.3** | **1.3** | **5.2** | < 10 | < 10 | < 10 | **3.8** | **2.2** | **4.7** | **4.4** | **6.8** | **7.1** | **9.4** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Anthracene | µg/L | 4,700 | 31,000 | **0.22** | **0.43** | **0.25** | **0.25** | **0.78** | < 10 | < 10 | < 10 | **0.77** | **0.40** | **0.81** | **0.97** | < 0.20 | **0.65** | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | 0.070 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | 0.11 | < 0.10 | < 0.10 | < 10 | < 10 | < 10 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | 0.085 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | <0.050 | 0.054 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | 0.16 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluoranthene | µg/L | 1,000* | 4,100 | **0.12** | **0.73** | **0.31** | **0.3** | **1.2** | < 10 | < 10 | < 10 | **0.59** | **0.34** | **1.3** | **1.4** | **1.5** | 0.55 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluorene | µg/L | 1,000* | 4,100 | **1.7** | **2.1** | **2.7** | **2.8** | **9.5** | < 10 | < 10 | < 10 | **13** | **8.1** | **12** | **13** | **22** | 15 | 22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | **0.11** | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Naphthalene | µg/L | 20* | 20* | **43** | <0.50 | **12** | **14** | < 0.50 | **310** | < 10 | < 10 | **290** | **180** | **4.1** | **3.2** | **170** D | **490** | **410** | **120** | **100** | **14** | **16** | **1100** | **1300** | **160** | **1700** | **1100** | **840** | **1900** | **770** | **990** | <9.4 |
| Phenanthrene | µg/L | 470 | 3,100 | **1.0** | **0.062** | **0.35** | **0.35** | **0.28** | < 10 | < 10 | < 10 | **5.4** | **3.1** | **8.7** | **9.5** | **16** | **4.8** | **7.4** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **1.4** | < 0.99 | < 0.99 | < 0.99 | < 0.98 | **0.99** | < 11 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | **0.084** | **0.51** | **0.21** | **0.22** | **0.92** | < 10 | < 10 | < 10 | **0.44** | **0.35** | **1.1** | **1.1** | **1.1** | **0.38** | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Barium | µg/L | 2,000 | 7,200 | -- | **39.4** | **86.1** | **88.6** | **45.3** | **76.7** | **126** | **132** | **150** | **150** | **20** | **18** | **20** | **82** | **79** | **270** | **290** | **33** | **38** | **22** | **22** | **47** | **35** | -- | -- | -- | -- | -- | **74** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | -- | -- | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | < 20 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | -- | -- | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | -- | -- | -- | -- | -- | < 40 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | < 20 | < 20 | < 20 | **26.3** | **78.5** | **50.6** | **190** | **180** | < 20 | < 20 | < 20 | **53** | **53** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Cyanide | µg/L | 310 | 2,000 | -- | **66** | **13** | < 10 | **39** | **30** | **40** | **21** | **110** | **110** | **230** | **190** | **160** | **55** | **100** | **83** | **60** | -- | -- | -- | -- | -- | **140** | -- | -- | -- | -- | -- | **71** |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-101 (Continued) | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/13/09 | 06/08/06 | 03/10/06 | 12/22/05 | 09/30/05 | 03/14/05 | 03/05 DUP | 12/15/04 | 12/04 DUP | 10/01/04 | 10/04 DUP | 06/10/04 | 03/04/04 | 03/04 DUP | 12/16/03 | 12/03 DUP | 09/09/03 | 09/03 DUP | 06/10/03 | 06/03 DUP | 03/12/03 | 12/11/02 | 09/19/02 | 09/02 DUP |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.4 | 6.45 | 6.45 | 6.48 | 6.65 | 6.42 | 6.42 | 6.38 | 6.38 | 6.37 | 6.37 | 6.81 | 6.81 | 6.81 | 6.46 | 6.46 | 6.61 | 6.61 | 6.68 | 6.68 | 6.57 | 6.35 | 6.36 | 6.36 |
| Specific Conductance | µS/cm | N/A | N/A | 1191 | 634 | 772 | 732 | 756 | 664 | 664 | 793 | 793 | 820 | 820 | 841 | 740 | 740 | 1,114 | 1,114 | 610 | 610 | 591 | 591 | 743 | 726 | 757 | 757 |
| Temperature | °Celsius | N/A | N/A | 31.69 | 21.71 | 18.15 | 20.96 | 26.36 | 18.04 | 18.04 | 22.48 | 22.48 | 25.85 | 25.85 | 21.74 | 18.65 | 18.65 | 22.16 | 22.16 | 25.38 | 25.38 | 21.86 | 21.86 | 20.03 | 22.88 | 27.31 | 27.31 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 5.37 | 0.13 | 0.30 | 0.37 | 0.06 | 2.61 | 2.61 | 1.58 | 1.58 | 0.34 | 0.34 | 0.74 | 0.38 | 0.38 | 0.22 | 0.82 | 0.15 | 0.15 | 0.02 | 0.02 | 0.10 | 0.06 | 0.02 | 0.02 |
| ORP | mV | N/A | N/A | -85.3 | -75.9 | -75.0 | -99.9 | -99.1 | -70.9 | -70.9 | -103.1 | -103.1 | -101.4 | -101.4 | -85.2 | -147.3 | -147.3 | -161.2 | -161.2 | -125.8 | -125.8 | -128 | -128 | -96.1 | -87.3 | -88.6 | -88.6 |
| Turbidity | NTU | N/A | N/A | 3.79 | 1.79 | 4.36 | 3.60 | 4.34 | 2.90 | 2.90 | 5.1 | 5.1 | 0.68 | 0.68 | 1.80 | 4.64 | 4.64 | -- | -- | 3.59 | 3.59 | 13.9 | 13.9 | 7.95 | 31.7 | 10.5 | 10.5 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **24.5** | **23.6** | **23.1** | **20.2** | **21.4** | **23.2** | **22.4** | **19.2** | **22.2** | **19.9** | **22.8** | **21.4** | **21.4** | **22.8** | **22.4** | **27.9** | **29.8** | **35.8** | **33.7** |
| Nitrogen, Nitrate | mg/L | N/A | N/A | **6.5** | -- | -- | -- | -- | **0.514** | **0.478** | **0.337** | **0.341** | **1.31** | **1.01** | < 0.5 | < 0.500 | < 0.0500 | **0.0384** | **0.0686** | **0.306** | **0.330** | < 0.500 | < 0.500 | 0.224 | 0.113 | < 0.0500 | < 0.0500 |
| Sulfate | mg/L | N/A | N/A | **340** | -- | -- | -- | -- | **75.1** | **73.9** | **121** | **124** | **130** | **131** | **212** | **111** | **118** | **79.0** | **75.5** | **50.2** | **36.8** | **25.1** | **24.1** | **35.1** | **40.3** | **48.8** | **48.2** |
| Sulfide | mg/L | N/A | N/A | < 1.0 | -- | -- | -- | -- | < 1.0 | < 1.0 | **1.0** | **1.0** | **2.9** | **4.5** | **5.8** | **2.8** | **2.4** | **2.8** | **3.0** | < 1.0 | **2.3** | < 1.0 | < 1.0 | < 1.0 | < 1.00 | < 1.00 | < 1.00 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **1.68** | **1.68** | **1.44** | **1.45** | **1.46** | **1.49** | **1.64** | **1.63** | **1.62** | **1.47** | **1.48** | **1.38** | **1.33** | **1.53** | **1.56** | **2.35** | **1.89** | **2.12** | **2.15** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **1.72** | **1.65** | **1.47** | **1.51** | **1.45** | **1.42** | **1.72** | **1.7** | **1.79** | **1.53** | **1.55** | **1.42** | **1.44** | **1.67** | **1.69** | **2.34** | **2.07** | **1.94** | **1.99** |
| Ferrous Iron | mg/L | N/A | N/A | **14** | -- | -- | -- | -- | **37.5** | **37.4** | **31.9** | **32.8** | **21.5** | **22.3** | **11.7** | **59.4** | **31.3** | **20.2** | **19.5** | **29.1** | **29.8** | **16.0** | **15.0** | **34.9** | **34.0** | **28.6** | **27.7** |
| Total Iron | mg/L | N/A | N/A | **28** | -- | -- | -- | -- | **36.5** | **35.4** | **29.6** | **29.8** | **30.0** | **29.5** | **42.7** | **36.2** | **37.6** | **34.0** | **34.8** | **30.9** | **31.2** | **34.0** | **34.4** | **36.7** | **35.5** | **31.4** | **33** |
| Carbon Dioxide | mg/L | N/A | N/A | **0.41** | -- | -- | -- | -- | **160** | **170** | **150** | **140** | **120** | **110** | **75** | **99** | **98** | **100** | **100** | **110** | **110** | **120** | **120** | **180** | **220** | **200** | **220** |
| Methane | mg/L | N/A | N/A | **0.49** | -- | -- | -- | -- | **170** | **150** | **210** | **300** | **190** | **200** | **250** | **300** | **280** | **340** | **390** | **230** | **54** | **390** | **400** | **390** | **280** | **250** | **300** |
| Dissolved Nitrogen | mg/L | N/A | N/A | **4.8** | -- | -- | -- | -- | **25** | **25** | **18** | **19** | **16** | **15** | **17** | **23** | **21** | **14** | **16** | **15** | **13** | **15** | **14** | **20** | **14** | **12** | **14** |
| Dissolved Oxygen | mg/L | N/A | N/A | **1.7** | -- | -- | -- | -- | **2.5** | **2.9** | **1.8** | **0.68** | **0.60** | **0.53** | **0.55** | **0.89** | **0.87** | **0.67** | **0.22** | **1.5** | **1.8** | **0.59** | **0.54** | **0.58** | **5.0** | **2.6** | **3.1** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9 | **27** | < 5.0 | < 5.0 | < 5.0 | 7.0 | < 5.0 | < 5.0 | **41** | **40** | **440** | **440** | **1,200** | **160** | **150** | **100** | **97** | **350** | **330** | **51** | **51** | **48** | **77** | **100** | **100** |
| Ethylbenzene | µg/L | 700* | 2,300 | < 10 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **5.1** | < 5.0 | **71** | **74** | **250** | **25** | **24** | **11** | **11** | **30** | **27** | **15** | **15** | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | < 10 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **130** | **130** | **670** | **17** | **16** | < 5.0 | **5.7** | **22** | **19** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Naphthalene | µg/L | 31,000 | 200,000 | **19** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **82** | **91** | **400** | **20** | **19** | **8.6** | **8.7** | **39** | **36** | **11** | **11** | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **12** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 2-Methylphenol | µg/L | 780 | 5,100 | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **23** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **39** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Acenaphthene | µg/L | 2,000* | 6,100 | -- | -- | -- | -- | -- | **27** | **26** | **29** | **30** | **26** | **26** | **45** | **30** | **32** | **32** | **34** | **32** | **31** | **26** | **25** | **31** | **31** | **23** | **26** |
| Acenaphthylene | µg/L | 470 | 3,100 | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **14** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31, 000 | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | -- | -- | -- | -- | -- | **21** | **21** | **15** | **15** | < 10 | < 10 | < 10 | < 10 | < 10 | **14** | **15** | **14** | < 10 | **20** | **20** | **32** | **32** | **33** | **34** |
| Naphthalene | µg/L | 20* | 20* | **450** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **10** | **11** | **700** | **850** | **3,600** | **400** | **450** | **160** | **170** | **390** | **420** | **340** | **370** | < 10 | **49** | **130** | **64** |
| Phenanthrene | µg/L | 470 | 3,100 | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **49** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | -- | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | **76** | **79.7** | **101** | **81.1** | **84.0** | **72.3** | **70.3** | **68.7** | **68.2** | **74.9** | **73.6** | **88** | **109** | **114** | **110** | **110** | **108** | **109** | **91.1** | **91.7** | **99** | **124** | **111** | **117** |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 20 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Mercury | µg/L | 2* | 2* | -- | -- | -- | -- | -- | < 0.2 | < 0.2 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Nickel | µg/L | 100 | 2,000 | < 40 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | -- | -- | -- | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | 20 | < 20 | < 20 |
| Total Cyanide | µg/L | 310 | 2,000 | **130** | **67** | **77** | **15** | **58** | **81** | **86** | **112** | **114** | **55** | **50** | **107** | **64** | **71** | **98** | **97** | **50** | **52** | **19** | **24** | **43** | **55** | **97** | **84** |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-102 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/27/17 | 08/25/16 | 04/06/16 | 08/11/15 | 02/18/15 | 08/06/13 | 02/05/13 | 11/06/12 | 08/07/12 | 05/15/12 | 02/13/12 | 11/15/11 | 08/10/11 | 05/04/11 | 02/24/11 | 11/10/10 | 08/10/10 | 05/11/10 | 02/25/10 | 08/12/09 | 06/06/06 | 03/08/06 | 12/20/05 | 09/28/05 | 03/16/05 | 12/14/04 | 09/30/04 | 06/08/04 | 03/03/04 | 12/16/03 | 09/10/03 | 06/10/03 | 03/12/03 | 12/11/02*** | 09/19/02 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.56 | 5.72 | 5.95 | 5.89 | 6.49 | 5.93 | 6.54 | 6.53 | 5.5 | 5.95 | 6.54 | 5.77 | 6.08 | 6.07 | 6.41 | 6.06 | 6.25 | 6.61 | 6.66 | 5.93 | 5.93 | 6.20 | 6.64 | 6.17 | 6.34 | 6.24 | 6.79 | 6.33 | 6.34 | 6.3 | 6.4 | 6.69 | 6.98 | NM | 6.34 |
| Specific Conductance | µS/cm | N/A | N/A | 760.7 | 876.0 | 300 | 888 | 451 | 706 | 824 | 575 | 645 | 739 | 711 | 594 | 472 | 414 | 322 | 253 | 300 | 320 | 246 | 749 | 302 | 341 | 312 | 277 | 308 | 358 | 361 | 463 | 450 | 705 | 561 | 525 | 616 | NM | 799 |
| Temperature | °Celsius | N/A | N/A | 17.27 | 25.40 | 16.08 | 27.50 | 13.84 | 24.87 | 20.69 | 20.89 | 26.12 | 23.47 | 16.77 | 23.72 | 27.53 | 20.58 | 16.6 | 22.19 | 25.33 | 19.87 | 12.47 | 30.10 | 22.76 | 17.74 | 19.58 | 26.38 | 15.74 | 20.28 | 26.12 | 22.74 | 16.35 | 20.69 | 25.3 | 22.39 | 17.59 | NM | 25.75 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.97 | 0.42 | 0.26 | 0.98 | 5.83 | 1.71 | 0.51 | 1.75 | 0.81 | 2.20 | 1.56 | 0.97 | 0.92 | 0.90 | 2.03 | 0.50 | 3.0 | 0.8 | 5.85 | 2.69 | 0.29 | 0.59 | 0.44 | 0.20 | 0.63 | 3.14 | 1.28 | 8.10[a] | 0.55 | 0.23 | 0.40 | 0.06 | 0.12 | NM | 0.50 |
| ORP | mV | N/A | N/A | 109.0 | 94.1 | 59.0 | -15.6 | 81.0 | -114.2 | 151.3 | 76.5 | 160.4 | 88.4 | 58.1 | 191.3 | 79.1 | 123.5 | 142.8 | 69.7 | 55.8 | 22.4 | 88 | -160.1 | 45.1 | 135.2 | -30.9 | -77.8 | -59.1 | 16.9 | -100.2 | 52.2 | 56.4 | -62.9 | -75.5 | -206.5 | -124.5 | NM | 2.4 |
| Turbidity | NTU | N/A | N/A | 0.71 | 1.60 | 9.22 | 9.62 | 9.52 | 2.24 | 0.42 | 6.17 | 16.4 | 4.62 | 2.04 | 41.1 | 11.6 | 4.76 | 5.05 | 0.12 | 2.42 | 7.12 | 5.21 | 3.45 | 0.21 | 0.02 | 1.58 | 2.71 | 2.50 | 2.2 | 0.2 | 109.2 | 1.96 | -- | 1.87 | 5.15 | 4.65 | NM | 18.0 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **0.59** | **0.32** | **1.07** | **1.84** | **1.95** | **1.72** | **4.71** | **3.80** | **5.21** | **8.85** | **14.5** |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **0.13** | -- | -- | -- | **0.26** | -- | -- | -- | **0.064** | -- | -- | -- | **7.4** | **0.81** | -- | -- | -- | -- | **0.134** | **0.459** | **0.517** | **0.43** | **5.51** | **0.412** | < 0.0500 | < 0.500 | < 0.0500 | **2.47** | **0.114** |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **350** | -- | -- | -- | **220** | -- | -- | -- | **66** | -- | -- | -- | **29** | **220** | -- | -- | -- | -- | **51.5** | **4.83** | **30.4** | **81.7** | **78.3** | **50.0** | **104** | **71.9** | **94.1** | **183** | **105** |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | < 1.0 | -- | -- | -- | < 1.0 | -- | -- | -- | < 1.0 | -- | -- | -- | < 1.0 | < 1.0 | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.00 | < 1.00 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **2.66** | **1.75** | **0.778** | **0.827** | **1.84** | **0.255** | **1.72** | **1.43** | **1.74** | **1.22** | **1.14** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **2.59** | **1.82** | **0.826** | **0.651** | **2.03** | **0.223** | **1.74** | **1.41** | **1.92** | **1.24** | **0.968** |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | < 0.10 HF | -- | -- | -- | < 0.10 HF | -- | -- | -- | < 0.010 HF | -- | -- | -- | **0.12** | < 0.010 | -- | -- | -- | -- | **3.0** | **0.6** | **1.1** | **0.2** | **2.6** | **0.4** | **15.2** | **9.4** | **9.02** | **0.133** | **3.72** |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **0.11** | -- | -- | -- | < 0.10 | -- | -- | -- | **0.13** | -- | -- | -- | **0.6** | **0.57** | -- | -- | -- | -- | **2.60** | **0.915** | **1.24** | **10.2** | **3.79** | **0.515** | **15.8** | **8.97** | **7.93** | **4.94** | **6.83** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **37** | -- | -- | -- | **0.97** | -- | -- | -- | **0.78** | -- | -- | -- | **0.45** | **1.1** | -- | -- | -- | -- | **100** | **83** | **49** | **160** | **120** | **98** | **120** | **90** | **49** | **81** | **150** |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | < 0.58 | -- | -- | -- | < 0.58 | -- | -- | -- | **3.5** | -- | -- | -- | **15** | **0.23** | -- | -- | -- | -- | **180** | **74** | **23** | **7.1** | **0.87** | **2.5** | **7.8** | **150** | **110** | **14** | **27** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **19** | -- | -- | -- | **5.0** | -- | -- | -- | **4.5** | -- | -- | -- | **3.9** | **4.4** | -- | -- | -- | -- | **26** | **15** | **16** | **16** | **22** | **16** | **13** | **15** | **21** | **15** | **16** |
| Dissolved Oxyger | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **7.8** | -- | -- | -- | **1.6** | -- | -- | -- | **1.5** | -- | -- | -- | **1.4** | **1.5** | -- | -- | -- | -- | **6.5** | **1.4** | **1.9** | **0.92** | **1.1** | **1.6** | **0.47** | **0.48** | **0.69** | **7.5** | **6.7** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | <0.50 | < 0.50 | < 0.50 | < 10 | < 10 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | <1.0 | < 1.0 | < 1.0 | < 10 | < 10 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31,000 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | 0.069 | 0.069 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylpheno | µg/L | 700* | 700* | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 2.5 | < 2.0 | < 1.9 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylpheno | µg/L | 780 | 5,100 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 2.5 | < 2.0 | < 1.9 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 2.5 | < 2.0 | < 1.9 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | <0.50 | < 0.50 | < 0.50 | < 10 | < 10 | < 0.25 | **1.2** | < 0.19 | < 0.22 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | <9.8 | <9.8 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **37** |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 1.2 | < 0.99 | < 0.95 | < 1.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 11 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 0.25 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| **Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | **129** | **58.4** | **210** | **68.7** | **180** | **51** | **110** | **110** | **110** | **97** | **120** | **290** | **180** | **88** | -- | -- | -- | **82** | **220** | **154** | **158** | **116** | **125** | **147** | **129** | **106** | **146** | **149** | **104** | **163** | **137** | **104** | **180** | **183** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | < 20 | < 20 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **20.1** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 20 | **0.0408** | < 20 | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | -- | -- | -- | < 40 | < 40 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | **304** | **532** | **242** | **124** | **184** | **470** | **28** | < 20 | **30** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 20 | < 20 | < 20 | **55** | < 20 | < 20 | < 20 | < 20 | < 20 | **30** | < 20 |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | **247** | < 10.0 | < 10.0 | **17** | **106** | **22** | **21** | **180** | **170** | **34** | -- | -- | -- | **55** | -- | -- | -- | **46** | **390** | **57** | **56** | **57** | **59** | **41** | **35** | **90** | **95** | **101** | **159** | **133** | **46** | **190** | **293** | **283** |

Notes:
**Analyte was detected above laboratory detection limi**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well locatior**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-103 | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2/24/2017 | 8/24/2016 | 2/6/2013 | 02/13/12 | 2/22/2011 | 02/25/10 | 08/12/09 | 06/06/06 | 03/16/06 | 09/29/05 | 03/14/05 | 12/15/04 | 10/01/04 | 06/10/04 | 03/04/04 | 12/16/03 | 09/10/03 | 06/11/03 | 03/11/03 | 12/11/02 | 09/19/02 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.25 | 5.03 | 5.99 | 5.48 | 5.84 | 4.94 | 5.5 | 6.00 | 6.17 | 6.40 | 6.44 | 6.38 | 6.46 | 6.80 | 6.67 | 6.51 | 6.6 | 6.67 | 6.52 | 6.49 | 6.51 |
| Specific Conductance | µS/cm | N/A | N/A | 84.7 | 83.2 | 348 | 324 | 408 | 224 | 535 | 961 | 785 | 778 | 743 | 759 | 651 | 743 | 723 | 1,212 | 719 | 673 | 695 | 644 | 674 |
| Temperature | °Celsius | N/A | N/A | 22.02 | 25.60 | 20.99 | 15.87 | 20.04 | 15.37 | 25.13 | 22.13 | 20.43 | 24.57 | 20.65 | 22.97 | 25.55 | 21.85 | 20.12 | 22.45 | 24.37 | 21.98 | 20.53 | 23.54 | 26.43 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 5.69 | 1.12 | 0.58 | 0.71 | 0.81 | 1.81 | 5.15 | 0.27 | 0.30 | 0.46 | 4.10 | 1.66 | 0.24 | 0.60 | 0.49 | 0.24 | 0.31 | 0.46 | 0.05 | 0.05 | 0.06 |
| ORP | mV | N/A | N/A | 500.7 | 263.3 | 116.4 | 44.4 | 112.2 | 263.6 | 100.2 | 80.6 | 101.2 | -28.2 | 25.7 | -48.3 | -8.5 | -45.8 | -72.4 | -82.3 | -28.8 | -22.3 | -97.1 | -117.9 | -83.7 |
| Turbidity | NTU | N/A | N/A | 3.75 | 2.11 | 1.49 | 9.00 | 5.73 | 0.57 | 3.59 | 0.58 | 4.15 | 1.71 | 2.23 | 3.0 | 1.7 | 2.52 | 9.81 | -- | 4.71 | 8.34 | 6.8 | 4.58 | 2.8 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **33.6** | **25.9** | **17.8** | **31.2** | **25.4** | **1.02** | **40.0** | **37.4** | **9.89** | **9.66** | **20.3** |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | **2.5** | **15** | **0.15** | **7.4** | **35** | -- | -- | -- | **3.56** | **3.86** | **3.62** | **4.86** | **1.89** | **3.05** | **5.19** | **6.12** | < 0.0500 | 2.24 | < 0.0500 |
| Sulfate | mg/L | N/A | N/A | -- | -- | **88** | **40** | **110** | **34** | **70** | -- | -- | -- | **172** | **145** | **70.4** | **82.8** | **67.8** | **90.8** | **51.8** | **29.0** | **86.2** | **66.2** | **28.9** |
| Sulfide | mg/L | N/A | N/A | -- | -- | < 1.0 | < 1.0 | 1.2 | < 1.0 | < 1.0 | -- | -- | -- | < 1.0 | < 1.0 | 1.0 | < 1.0 | 1.4 | 3.4 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **0.983** | **1.05** | **0.976** | **0.911** | **1.00** | **0.974** | **0.688** | **0.701** | **1.65** | **1.80** | **1.5** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **1.00** | **1.08** | **0.998** | **0.936** | **1.09** | **0.958** | **0.694** | **0.716** | **1.74** | **1.81** | **1.44** |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | < 0.10 HF | < 0.10 HF | 0.22 HF | < 0.010 | < 0.010 | -- | -- | -- | **3.9** | **5.9** | **1.5** | **4.5** | **8.2** | **3.1** | **1.5** | **1.1** | **29.4** | **31.1** | **15.6** |
| Total Iron | mg/L | N/A | N/A | -- | -- | **0.64** | **0.23** | **0.93** | **0.38** | < 0.010 | -- | -- | -- | **4.30** | **5.68** | **1.93** | **5.51** | **8.98** | **4.58** | **1.73** | **6.17** | **29.1** | **21.9** | **16.3** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | **42** | **1.0** | **1.6** | **0.57** | **0.41** | -- | -- | -- | **94** | **100** | **92** | **100** | **130** | **100** | **91** | **110** | **110** | **120** | **120** |
| Methane | mg/L | N/A | N/A | -- | -- | **0.83** | < 0.58 | **3.0** | **0.37** | **0.9** | -- | -- | -- | **57** | **75** | **140** | **210** | **240** | **230** | **200** | **160** | **320** | **22** | **240** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | **7.7** | **4.0** | **3.6** | **4.8** | -- | -- | -- | **24** | **15** | **14** | **19** | **22** | **17** | **15** | **13** | **19** | **15** | **15** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | **7.2** | **2.4** | **1.4** | **1.2** | **1.7** | -- | -- | -- | **2.9** | **0.97** | **1.2** | **0.77** | **1.1** | **1.4** | **2.4** | **1.7** | **0.72** | **5.4** | **5.1** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9 | <5.0 | <5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **15** | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1700 | <5.0 | <5.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Naphthalene | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | <0.50 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | **30** | **44** | **50** | **60** | **39** | **22** J | **21** | **21** |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | <1.0 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | **14** | **14** | **28** | **30** | **45** | **18** | < 10 | **11** | < 10 |
| Anthracene | µg/L | 4,700 | 31, 000 | <0.050 | <0.050 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | <0.050 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | <10 | <10 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | <0.50 | < 0.20 | < 5.0 | < 5.0 | < 9.8 | < 9.8 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | <0.050 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 1.0 | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | <0.050 | <0.050 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | -- | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | **38.3** | **100** | **160** | **28** | **75** | **250** | **193** | **251** | **135** | **135** | **178** | **139** | **180** | **184** | **169** | **148** | **150** | **192** | **180** | **229** |
| Beryllium | µg/L | 31 | 200 | -- | < 5.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | < 10 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 20 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 20 | < 20 | **24** | < 20 | < 20 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | -- | < 40 | < 10 | < 10 | **13** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 0.20 | < 20 | -- | -- | -- | -- | -- | -- | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | -- | < 10 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | < 0.2 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | <0.010 | < 10 | < 10 | **61** | < 10 | **12** | **12** | **13** | **22** | **38** | **37** | < 10 | **23** | **14** | **21** | **19** | < 10 | < 10 | **57** | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
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mg/L - milligrams per liter
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NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

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**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-104 | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2/24/2017 | 8/25/2016 | 4/5/2016 | 2/5/2013 | 2/14/2012 | 2/21/2011 | 2/24/2010 | 8/11/2009 | 03/15/05 | 12/16/04 | 09/30/04 | 06/09/04 | 03/03/04 | 12/17/03 | 09/08/03 | 06/11/03 | 03/12/03 | 12/11/02 | 09/17/02 | 09/02 DUP |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.73 | 5.40 | 6.53 | 5.73 | 5.36 | 5.52 | 5.85 | 6.28 | 5.56 | 6.21 | 5.48 | 5.80 | 5.60 | 5.68 | 5.60 | 5.65 | 5.62 | 5.41 | 5.24 | 5.24 |
| Specific Conductance | µS/cm | N/A | N/A | 179.2 | 181.8 | 300 | 159 | 154 | 168 | 127 | 241 | 217 | 238 | 259 | 280 | 273 | 280 | 279 | 271 | 298 | 316 | 361 | 361 |
| Temperature | °Celsius | N/A | N/A | 22.49 | 28.60 | 21.37 | 19 | 17.14 | 20.02 | 9.88 | 31.71 | 18.90 | 22.42 | 26.87 | 22.72 | 18.69 | 20.9 | 27.19 | 22.71 | 17.16 | 21.96 | 27.62 | 27.62 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 2.47 | 0.43 | 4.83 | 1.89 | 3.77 | 0.98 | 5.1 | 5.76 | 2.15 | 1.78 | 1.20 | 1.45 | 2.09 | 0.77 | 0.23 | 0.66 | 1.45 | 0.42 | 0.21 | 0.21 |
| ORP | mV | N/A | N/A | 149.6 | 171.1 | 65.8 | 215.6 | 7.7 | -1.4 | 122.9 | -110 | 227.9 | 78.9 | 148.6 | 136.8 | 101.6 | 215.4 | 26.5 | 120.1 | 232.5 | 253.1 | 231.8 | 231.8 |
| Turbidity | NTU | N/A | N/A | 7.60 | 8.27 | 3.95 | 5.55 | 8.05 | 6.07 | 9.21 | 8.84 | 4.51 | 8.69 | 9.0 | 1.74 | 3.52 | -- | 1.82 | 0.9 | 4.93 | 28.9 | 0.81 | 0.81 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.200 | < 0.200 | < 0.200 | < 0.200 | < 0.200 |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | -- | **1.5** | **2.7** | **1.9** | **0.79** | **2.2** | **1.54** | **1.44** | **1.63** | **2.61** | **2.36** | **1.87** | **1.57** | **2.11** | **3.15** | **2.74** | **2.63** | **2.61** |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | **60** | **47** | **44** | **40** | **55** | **74.2** | **70.7** | **69.8** | **79.5** | **70.4** | **76.6** | **87.5** | **61.8** | **84** | **101** | **111** | **118** |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | < 1.0 | 12 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.00 | < 1.00 | < 1.00 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **0.0475** | **0.0482** | **0.0301** | **0.106** | **0.105** | **0.138** | **0.248** | **0.183** | **0.192** | **0.200** | **0.262** | **0.264** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **0.0782** | **0.0556** | **0.0327** | **0.104** | **0.12** | **0.145** | **0.233** | **0.177** | **0.192** | **0.212** | **0.256** | **0.237** |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | < 0.10 HF | < 0.10 HF | < 0.010 HF | < 0.010 | <0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.100 | < 0.200 | < 0.200 | < 0.200 |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | **0.22** | **1.0** | **0.47** | **0.50** | <0.1 | **0.571** | **0.471** | **0.230** | < 0.1 | **0.189** | **0.415** | < 0.100 | **0.208** | **0.371** | **0.157** | **2.31** | **1.07** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | **60** | **1.3** | **0.77** | **0.59** | **2.2** | **100** | **110** | **110** | **130** | **110** | **130** | **110** | **120** | **120** | **120** | **150** | **150** |
| Methane | mg/L | N/A | N/A | -- | -- | -- | < 0.58 | < 0.58 | <0.58 | <0.19 | <0.19 | **0.53** | **2.6** | **7.4** | **1.4** | **0.55** | **1.3** | **1.6** | **1.9** | **1.0** | **2.6** | **0.96** | **0.92** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | **18** | **6.4** | **4.8** | **4.1** | **4.4** | **25** | **15** | **11** | **16** | **22** | **18** | **13** | **16** | **20** | **14** | **16** | **14** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | **8.1** | **2.1** | **1.7** | **1.5** | **1.6** | **5.5** | **3.0** | **4.5** | **1.6** | **4.4** | **2.2** | **2.2** | **1.6** | **3.0** | **7.1** | **7.4** | **6.5** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9 | <5.0 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | < 5.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Naphthalene | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | < 5.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | <0.50 | < 0.50 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | <1.0 | < 1.0 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31, 000 | <0.050 | <0.050 | < 0.050 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | < 0.050 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | < 0.10 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | < 0.10 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | < 0.050 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | <0.050 | < 0.050 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | < 0.10 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | <10 | <10 | < 10 | < 2.0 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 0.10 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 0.10 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 10 | < 2.0 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 10 | < 2.0 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | <0.50 | < 0.50 | < 0.20 | < 5.0 | < 5.0 | <9.4 | <9.4 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | <0.050 | < 0.050 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | < 0.99 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | <0.050 | <0.050 | < 0.050 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | < 10 | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 20 | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | **36.1** | **109** | **21** | **24** | **28** | **34** | **30** | **29.8** | **29.9** | **37.4** | **29.9** | **29.9** | **31.5** | **30.7** | **30.2** | **25** | **35** | **38** | **36** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | < 20 | < 20 | -- | -- | -- | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 12 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **10** | < 10 | < 10 | < 10 | **11** | **11** |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-104I | | | | | | | | | | | | | | | | MW-105 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2/5/2013 | 2/14/2012 | 2/21/2011 | 2/24/2010 | 8/11/2009 | 03/15/05 | 12/15/04 | 09/30/04 | 6/9/2004 | 03/03/04 | 12/17/03 | 09/08/03 | 06/11/03 | 03/11/03 | 12/11/02 | 09/19/02 | 04/07/16 | 02/06/13 | 06/11/03 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.90 | 5.74 | 5.73 | 6.00 | 6.20 | 5.80 | 7.14 | 5.42 | 6.05 | 5.91 | 6.02 | 4.82 | 6.07 | 5.93 | 5.78 | 5.47 | 5.56 | 5.04 | 5.39 |
| Specific Conductance | µS/cm | N/A | N/A | 151 | 137 | 153 | 128 | 218 | 224 | 242 | 248 | 257 | 274 | 275 | 303 | 326 | 318 | 316 | 308 | 607 | 317 | 238 |
| Temperature | °Celsius | N/A | N/A | 20.51 | 16.86 | 20.42 | 12.32 | 31.7 | 19.35 | 24.08 | 27.6 | 22.61 | 18.45 | 21.89 | 27.81 | 23.02 | 18.57 | 23.5 | 27.9 | 19.95 | 20.97 | 21.75 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.81 | 3.82 | 0.42 | 2.01 | 5.46 | 0.77 | 0.44 | 0.35 | 0.79 | 0.70 | 0.50 | 0.30 | 0.08 | 0.23 | 0.07 | 0.10 | 1.08 | 1.80 | 1.51 |
| ORP | mV | N/A | N/A | 166.1 | -21 | -10.8 | 71.6 | -134.2 | 212.4 | -68.1 | 56.8 | 130.8 | 73.9 | 199.2 | 20.5 | 72.5 | 190.2 | 218.3 | 208 | 98.7 | 257.2 | 208.7 |
| Turbidity | NTU | N/A | N/A | 0.1 | 6.03 | 9.25 | 8.72 | 0.91 | 4.51 | 3.82 | 3.97 | 1.19 | 3.74 | -- | 4.91 | 0 | 3.11 | 2.80 | 3.51 | 8.43 | 9.9 | 12.8 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.200 | < 0.200 | < 0.200 | < 0.200 | -- | -- | < 0.200 |
| Nitrogen, Nitrate | mg/L | N/A | N/A | **0.77** | **1.6** | **0.63** | **0.63** | **0.85** | **0.85** | **0.764** | **0.851** | **0.909** | **1.25** | **0.367** | **0.362** | **0.977** | **1.24** | **0.935** | **0.757** | -- | **3.8** | **2.10** |
| Sulfate | mg/L | N/A | N/A | **31** | **29** | **33** | **33** | **36** | **48.4** | **50.6** | **51.1** | **53.1** | **60.2** | **58.3** | **58.8** | **48.6** | **69.8** | **72.4** | **85.4** | -- | **100** | **41.8** |
| Sulfide | mg/L | N/A | N/A | < 1.0 | **110** | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.00 | < 1.00 | -- | < 1.0 | < 1.0 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **0.166** | **0.160** | **0.197** | **0.429** | **0.414** | **0.503** | **0.502** | **0.529** | **0.697** | **0.694** | **0.79** | -- | -- | **0.0382** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **0.268** | **0.174** | **0.191** | **0.429** | **0.444** | **0.504** | **0.514** | **0.532** | **0.706** | **0.705** | **0.735** | -- | -- | **0.0522** |
| Ferrous Iron | mg/L | N/A | N/A | < 0.10 HF | < 0.10 HF | < 0.010 HF | < 0.010 | <0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.100 | < 0.200 | < 0.200 | -- | < 0.10 HF | < 0.1 |
| Total Iron | mg/L | N/A | N/A | < 0.10 | < 0.10 | **0.58** | **0.58** | <0.1 | **5.73** | **0.533** | **1.75** | **0.209** | < 0.1 | **0.496** | **3.52** | **0.118** | **0.475** | < 0.100 | 6.93 | -- | **0.21** | **0.662** |
| Carbon Dioxide | mg/L | N/A | N/A | **62** | **1.3** | **0.61** | **0.61** | **0.25** | **110** | **120** | **130** | **110** | **110** | **110** | **110** | **110** | **120** | **110** | **130** | -- | **140** | **170** |
| Methane | mg/L | N/A | N/A | **0.7** | < 0.58 | **0.48** | **0.48** | <0.19 | **0.37** | **1.8** | **2.9** | **0.55** | **1.9** | **4.1** | **6.5** | **4.0** | **1.7** | **1.5** | **7.9** | -- | < 0.58 | **0.93** |
| Dissolved Nitrogen | mg/L | N/A | N/A | **17** | **5.0** | **4.1** | **4.1** | **4.4** | **26** | **17** | **16** | **16** | **20** | **20** | **13** | **16** | **21** | **16** | **22** | -- | -- | **13** |
| Dissolved Oxygen | mg/L | N/A | N/A | **6.9** | **1.7** | **1.4** | **1.4** | **1.6** | **4.2** | **2.0** | **3.0** | **1.2** | **2.0** | **3.2** | **1.2** | **1.3** | **1.8** | **7.5** | **8.9** | -- | **7.1** | **2.4** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 5.0 | < 2.0 | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 5.0 |
| Naphthalene | µg/L | 31,000 | 200,000 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 0.50 | < 0.20 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 1.0 | < 0.20 | < 10 |
| Anthracene | µg/L | 4,700 | 31, 000 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 0.050 | < 0.20 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.050 | < 0.20 | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.050 | < 0.20 | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.10 | < 0.20 | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.10 | < 0.20 | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.050 | < 0.20 | -- |
| Chrysene | µg/L | 117 | 392 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.050 | < 0.20 | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.10 | < 0.20 | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | < 2.0 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 0.10 | < 0.20 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 0.10 | < 0.20 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.050 | < 0.20 | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 2.0 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | < 2.0 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 10 |
| Naphthalene | µg/L | 20* | 20* | < 0.20 | < 5.0 | < 5.0 | < 10 | <11 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 0.50 | < 0.20 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 0.050 | < 0.20 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | < 0.99 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 0.99 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | < 10 | < 0.050 | < 0.20 | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20 | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 0.0200 | < 20 | < 40 |
| Arsenic | µg/L | 50* | 50* | < 20 | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 0.0500 | < 20 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | **20** | **21** | **22** | **24** | **28** | **37.2** | **36.7** | **38.2** | **35.5** | **34.8** | **39.6** | **44.0** | **38.8** | **38** | **42** | **40** | **49** | **32** | **59.6** |
| Beryllium | µg/L | 31 | 200 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.0100 | < 4.0 | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.0050 | < 5.0 | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 0.0100 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 20 | < 20 | < 20 | < 20 | < 20 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 0.0100 | < 20 | < 10 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 0.0100 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 40 | < 40 | < 40 | < 40 | < 40 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 0.0200 | < 40 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | < 20 | -- | -- | -- | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 0.0200 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | < 0.20 | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.00020 | < 0.20 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 0.010 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-106 | | | | | | | | | | | | | MW-107 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/24/16 | 04/29/15 | 02/06/13 | 06/06/06 | 03/08/06 | 12/22/05 | 09/29/05 | 03/15/05 | 12/15/04 | 10/01/04 | 03/02/04 | 12/16/03 | 09/10/03 | 04/04/16 | 02/06/13 | 06/06/06 | 03/08/06 | 12/21/05 | 09/29/05 | 12/15/04 | 10/01/04 | 03/02/04 | 03/04 DUP | 12/16/03 | 09/10/03 | 09/03 DUP |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.69 | 3.56 | 5.55 | 5.53 | 5.64 | 5.90 | 5.49 | 5.09 | 5.24 | 5.18 | 5.12 | 4.95 | 3.87 | 6.16 | 6.13 | 6.38 | 6.35 | 6.39 | 6.29 | 6.15 | 6.28 | 6.05 | 6.05 | 5.93 | 5.92 | 5.92 |
| Specific Conductance | µS/cm | N/A | N/A | 450.2 | 317 | 451 | 515 | 425 | 557 | 553 | 361 | 426 | 550 | 516 | 849 | 393 | 303 | 469 | 556 | 483 | 488 | 524 | 527 | 502 | 448 | 448 | 789 | 496 | 496 |
| Temperature | °Celsius | N/A | N/A | 24.40 | 17.43 | 20.93 | 21.51 | 21.04 | 22.55 | 23.83 | 20.49 | 22.8 | 23.61 | 21.44 | 22.61 | 24.22 | 21.23 | 18.88 | 21.80 | 19.53 | 21.21 | 25.83 | 22.49 | 26.05 | 19.69 | 19.69 | 21.69 | 24.89 | 24.89 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.83 | 3.56 | 0.73 | 0.35 | 0.42 | 0.75 | 0.20 | 0.43 | 3.07 | 0.30 | 0.45 | 0.25 | 0.33 | 0.19 | 0.17 | 0.19 | 0.22 | 0.42 | 0.22 | 1.79 | 0.39 | 0.35 | 0.35 | 0.40 | 0.15 | 0.15 |
| ORP | mV | N/A | N/A | 419.6 | 59.4 | 148.4 | 186.8 | 180.6 | 158.2 | -33.7 | 267.5 | 154.7 | 81.1 | 113.4 | 123.8 | 180.5 | 51.6 | -58.3 | -89.1 | -90.7 | -66.7 | -110.6 | -81.6 | -193.3 | 28.3 | 28.3 | -111.7 | -94 | -94 |
| Turbidity | NTU | -- | -- | 1.27 | 9.02 | 2.07 | 3.93 | 4.9 | 4.7 | 5.98 | 4.32 | 3.7 | 7.10 | 7.55 | -- | 15.1 | 31.7 | 9.83 | 3.20 | 4.2 | 4.87 | 4.54 | 5.0 | 2.93 | 10.6 | 10.6 | -- | 4.8 | 4.8 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | **2.26** | **1.08** | **1.76** | **1.02** | **35.2** | **1.46** | **1.46** |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | **0.37** | -- | -- | -- | -- | **1.68** | **0.588** | < 0.0500 | **0.124** | **0.0649** | < 0.0500 | -- | < 0.050 | -- | -- | -- | -- | < 0.0500 | < 0.0500 | < 0.250 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.0500 |
| Sulfate | mg/L | N/A | N/A | -- | -- | **120** | -- | -- | -- | -- | **143** | **63.6** | **135** | **147** | **128** | **147** | -- | **130** | -- | -- | -- | -- | **82.1** | **82.9** | **122** | **83.7** | **94.5** | **159** | **155** |
| Sulfide | mg/L | N/A | N/A | -- | -- | < 1.0 | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | -- | < 1.0 | -- | -- | -- | -- | < 1.0 | 1.2 | < 1.0 | 1.3 | < 1.0 | < 1.0 | < 1.0 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | **0.266** | **0.209** | **0.239** | **0.358** | **0.512** | **0.511** | -- | -- | -- | -- | -- | -- | **0.480** | **0.528** | **0.691** | **0.696** | **0.792** | **1.03** | **1.03** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | **0.276** | **0.215** | **0.231** | **0.368** | **0.507** | **0.487** | -- | -- | -- | -- | -- | -- | **0.511** | **0.504** | **0.72** | **0.724** | **0.778** | **1.00** | **1.02** |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | < 0.10 HF | -- | -- | -- | -- | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 | **0.3** | -- | **9.3** HF | -- | -- | -- | -- | **5.2** | **5.5** | **6.5** | **8.9** | **5.0** | **7.7** | **7.8** |
| Total Iron | mg/L | N/A | N/A | -- | -- | **0.28** | -- | -- | -- | -- | **0.544** | < 0.100 | **0.202** | **0.302** | **0.340** | **0.610** | -- | **9.6** | -- | -- | -- | -- | **5.55** | **5.54** | **7.16** | **7.23** | **8.33** | **8.30** | **8.62** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | **140** | -- | -- | -- | -- | **200** | **210** | **250** | **230** | **240** | **75** | -- | **100** | -- | -- | -- | -- | **120** | **140** | **150** | **150** | **110** | **81** | **73** |
| Methane | mg/L | N/A | N/A | -- | -- | **1.3** | -- | -- | -- | -- | **0.44** | **3.8** | **33** | **3.8** | **27** | **1.9** | -- | < 0.58 | -- | -- | -- | -- | **590** | **680** | **750** | **650** | **900** | **560** | **490** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | **23** | **21** | **15** | **20** | **16** | **18** | -- | -- | -- | -- | -- | -- | **16** | **12** | **20** | **21** | **16** | **14** | **13** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | **6.4** | -- | -- | -- | -- | **4.2** | **2.6** | **1.8** | **2.4** | **1.4** | **2.8** | -- | **5.6** | -- | -- | -- | -- | **3.5** | **0.76** | **1.0** | **1.3** | **2.1** | **0.98** | **0.94** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | < 5.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 5.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Naphthalene | µg/L | 1,000* | 1,100 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | < 5.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | < 10 | < 0.22 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **1.3** | **1.6** | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | **10** | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | < 10 | < 0.22 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 1.0 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31, 000 | **0.062** | < 10 | < 0.22 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 0.082 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.050 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | < 0.050 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.050 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | < 0.10 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.10 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | < 10 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.10 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | < 10 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.050 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | < 10 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.050 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | < 0.10 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.10 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | <10 | < 10 | < 2.2 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | < 10 | < 0.22 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 0.10 | **0.28** | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | < 10 | < 0.22 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **0.41** | **1.3** | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | < 0.050 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.050 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | < 10 | < 2.2 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | < 10 | < 2.2 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | < 10 | < 0.22 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **47** | **0.79** | < 0.20 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **69** | **62** |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | < 10 | < 0.22 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 0.050 | < 0.20 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | < 10 | < 1.1 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 1.0 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | **0.47** | < 10 | < 0.22 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **0.36** | **1.4** | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20 | < 20 | < 20 | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 20 | < 20 | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | < 50 | < 50 | < 20 | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 20 | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | **34.9** | **32.8** | **25** | **29.8** | **25.8** | **30.1** | < 20 | **31.1** | **26.9** | **29.2** | **33.5** | **33.7** | **33.3** | **49.1** | **26.0** | **42.8** | **39.2** | **44.5** | **41.6** | **50.2** | **38.3** | **44.3** | **44.0** | **52.8** | **65.3** | **67.3** |
| Beryllium | µg/L | 31 | 200 | < 10 | < 10 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10 | < 10 | < 20 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 20 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | < 10 | 11.9 | < 10 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 20 | < 20 | < 40 | < 20.0 | < 20.0 | < 20.0 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 40 | < 20.0 | < 20.0 | < 20.0 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | < 20 | < 20 | < 20 | -- | -- | -- | -- | < 20 | < 20 | < 20 | 24.7 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.20 | < 0.20 | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | **72** | **94** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **10** | < 10 | **14** | < 10 | **13** | < 10 | **12** | < 10 | < 10 | < 10 | < 10 | **11** | < 10 | **16** |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-108 | | | | | | | | | | | | MW-109 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/22/17 | 08/24/16 | 04/29/15 | 02/06/13 | 02/07/12 | 02/18/11 | 02/23/10 | 08/12/09 | 03/15/05 | 12/16/04 | 10/01/04 | 06/10/04 | 02/22/17 | 08/24/16 | 04/29/15 | 08/08/13 | 02/06/13 | 02/08/12 | 02/16/11 | 02/16 DUP | 02/23/10 | 08/12/09 | 03/15/05 | 12/16/04 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.37 | 6.11 | 6.10 | 6.02 | 5.99 | 6.13 | 6.09 | 6.5 | 6.19 | 5.29 | 6.11 | 6.45 | 4.90 | 5.08 | 4.86 | 4.85 | 4.53 | 4.43 | 4.48 | | 4.75 | 4.51 | 4.71 | 5.93 |
| Specific Conductance | µS/cm | N/A | N/A | 465.90 | 469.0 | 376 | 286 | 271 | 275 | 227 | 225 | 182 | 215 | 220 | 203 | 170.20 | 172.5 | 169 | 146 | 122 | 130 | 137 | | 140 | 152 | 207 | 140 |
| Temperature | °Celsius | N/A | N/A | 21.79 | 23.55 | 19.09 | 21.19 | 20.71 | 20.4 | 18.59 | 28.28 | 20.07 | 22.74 | 25.13 | 22.15 | 20.92 | 29.53 | 19.49 | 25.55 | 20.78 | 20.69 | 20.15 | | 17.49 | 25.85 | 20.31 | 24.02 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.09 | 0.28 | 0.61 | 1.25 | 1.46 | 0.32 | 1.99 | 2.15 | 4.13 | 0.43 | 0.98 | 0.99 | 1.70 | 0.21 | 0.169 | 1.23 | 6.08 | 1.47 | 6.27 | | 4.41 | 3.38 | 5.25 | 5.82 |
| ORP | mV | N/A | N/A | -59.60 | -36.6 | -39.40 | 154.9 | 9.2 | 39.9 | 64.3 | 47 | 50.9 | -57 | 46.5 | 36.6 | 151.2 | 134.4 | -38.3 | 189.2 | 342.6 | 10.2 | 413 | | 153.20 | -140.5 | 242.9 | 152.1 |
| Turbidity | NTU | N/A | N/A | 1.76 | 7.15 | 7.97 | 4.07 | 9.37 | 2.91 | 9.51 | 4.96 | 1.74 | 3.09 | 0.00 | 33.3 | 0.27 | 0.66 | 1.36 | 0.48 | 1.62 | 4.54 | 9.12 | | 2.34 | 0.51 | 5.64 | 18.3 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 | < 0.20 |
| Nitrogen, Nitrate | mg/L | N/A | N/A | -- | -- | -- | **0.07** | **0.12** | **0.38** | **0.07** | < 0.050 | **0.304** | **0.0596** | < 0.05 | **0.131** | -- | -- | -- | -- | **0.37** | **0.52** | **0.055** | **0.064** | **0.29** | **0.1** | **1.46** | **0.984** |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | **36** | **33** | **24** | **24** | **25** | **9.63** | **13.5** | **16.4** | **14.3** | -- | -- | -- | -- | **29** | **30** | **27** | **26** | **31** | **37** | **54.1** | **24.5** |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | < 1.0 | **1.1** | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **0.144** | **0.178** | **0.164** | **0.182** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **0.164** | **0.218** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **0.157** | **0.173** | **0.162** | **0.183** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **0.181** | **0.176** |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | **0.29** HF | **2.2** HF | **3.1** HF | **1.4** | **0.87** | **1.9** | **1.4** | **2.2** | **0.7** | -- | -- | -- | -- | < 0.10 HF | < 0.10 HF | < 0.010 HF | < 0.010 | < 0.010 | < 0.1 | < 0.1 | < 0.1 |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | **0.61** | **2.6** | **3.2** | **2.8** | **1.2** | **2.09** | **1.56** | **1.58** | **1.71** | -- | -- | -- | -- | **31** | < 0.10 | **0.36** | **0.22** | **0.11** | < 0.010 | **1.47** | **0.302** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | **81** | **1.3** | **0.56** | **0.8** | **0.69** | **76** | **72** | **75** | **69** | -- | -- | -- | -- | **180** | **1.9** | **0.76** | **0.65** | **1.30** | **0.83** | **120** | **100** |
| Methane | mg/L | N/A | N/A | -- | -- | -- | **8.1** | **11** | **3.0** | **16** | **5.4** | **13** | **8.5** | **11** | **11** | -- | -- | -- | -- | < 0.58 | **0.70** | <0.58 | <0.58 | **0.51** | **1.6** | **2.6** | **8.6** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | **5.9** | **4.2** | **3.7** | **4.6** | **25** | **16** | **19** | **16** | -- | -- | -- | -- | -- | **4.9** | **4.2** | **4.4** | **4.5** | **4.4** | **22** | **18** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | **7.3** | **1.8** | **1.5** | **1.3** | **1.6** | **4.6** | **2.2** | **3.6** | **1.2** | -- | -- | -- | -- | **5.5** | **1.6** | **1.6** | **1.7** | **1.5** | **1.5** | **8.0** | **7.2** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9 | <5.0 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1700 | <5.0 | <5.0 | < 5.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | <5.0 | <5.0 | < 5.0 | < 5.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Naphthalene | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | < 5.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | <0.50 | < 10 | < 0.25 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | <0.50 | <0.50 | < 10 | < 10 | **4.4** | -- | -- | -- | -- | -- | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | <1.0 | < 10 | < 0.25 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | <1.0 | <1.0 | < 10 | < 10 | **11** | -- | -- | -- | -- | -- | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31, 000 | **0.29** | **0.23** | < 10 | < 0.25 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | **0.099** | <0.050 | < 10 | < 10 | **1.8** | -- | -- | -- | -- | -- | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | <0.050 | < 0.25 | -- | -- | -- | -- | -- | -- | -- | -- | <0.050 | <0.050 | <0.050 | < 0.20 | **2.6** | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | < 0.050 | < 0.25 | -- | -- | -- | -- | -- | -- | -- | -- | <0.050 | <0.050 | < 0.050 | < 0.20 | **3.2** | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | < 0.10 | < 0.25 | -- | -- | -- | -- | -- | -- | -- | -- | <0.10 | <0.10 | < 0.10 | < 0.20 | **1.7** | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | < 10 | < 0.25 | -- | -- | -- | -- | -- | -- | -- | -- | <0.10 | <0.10 | < 10 | < 10 | **1.1** | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | < 10 | < 0.25 | -- | -- | -- | -- | -- | -- | -- | -- | <0.050 | <0.050 | < 10 | < 10 | **2.2** | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | <0.050 | < 10 | < 0.25 | -- | -- | -- | -- | -- | -- | -- | -- | <0.050 | <0.050 | < 10 | < 10 | **2.5** | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | < 0.10 | < 0.25 | -- | -- | -- | -- | -- | -- | -- | -- | <0.10 | <0.10 | < 0.10 | < 0.20 | **0.30** | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | <10 | <10 | < 10 | < 2.5 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | <10 | <10 | < 10 | < 10 | < 2.0 | -- | -- | -- | -- | -- | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 10 | < 0.25 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | <0.10 | <0.10 | < 10 | < 10 | **4.7** | -- | -- | -- | -- | -- | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | 0.11 | < 10 | < 0.25 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | **0.17** | <0.10 | < 10 | < 10 | **6.3** | -- | -- | -- | -- | -- | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.25 | -- | -- | -- | -- | -- | -- | -- | -- | <0.050 | <0.050 | < 0.050 | < 0.20 | **0.65** | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 10 | < 2.5 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | <10 | <10 | < 10 | < 10 | < 2.0 | -- | -- | -- | -- | -- | < 10 | < 10 |
| 3 & 4-Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 10 | < 2.5 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | <10 | <10 | < 10 | < 10 | < 2.0 | -- | -- | -- | -- | -- | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | **4.1** | < 10 | < 0.25 | < 5.0 | < 5.0 | <9.8 | <9.4 | < 10 | < 10 | < 10 | < 10 | <0.50 | <0.50 | < 10 | < 10 | **44** | < 5.0 | < 5.0 | < 5.0 | <9.4 | <11 | < 10 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | **0.064** | < 10 | < 0.25 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | **0.10** | <0.050 | < 10 | < 10 | **8.7** | -- | -- | -- | -- | -- | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | < 1.2 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | <10 | <10 | < 10 | < 10 | < 0.99 | -- | -- | -- | -- | -- | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | **0.27** | 0.30 | < 10 | < 0.25 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | <0.050 | <0.050 | < 10 | < 10 | **7.4** | -- | -- | -- | -- | -- | < 10 | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 | -- | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 20 | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | -- | < 50 | < 50 | < 50 | < 20 | -- | -- | -- | -- | -- | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | **39.3** | **61.1** | **79** | **78** | **61** | **62** | **54** | **47.2** | **53.0** | **51.7** | **56.9** | -- | **82.3** | **78.6** | **73.4** | **36** | **75** | **97** | **98** | **77** | **58** | **164** | **402** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 4.0 | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 10 | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 20 | < 20 | < 20 | < 20 | -- | < 20 | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | < 20 | < 20 | -- | -- | -- | -- | < 20 | < 20 | < 20 | < 20 | -- | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | **38.8** | < 20 |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 | < 0.5 | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **30** |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 2 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-201 (Abandoned) | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/08/13 | 02/06/13 | 11/08/12 | 08/08/12 | 05/17/12 | 02/16/12 | 11/17/11 | 08/11/11 | 05/04/11 | 2/15/2011 | 11/10/2010 | 8/10/2010 | 08/10 DUP | 5/11/2010 | 02/24/10 | 08/13/09 | 08/09 DUP | 06/08/06 | 03/10/06 | 12/22/05 | 09/29/05 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.05 | 5.18 | 5.34 | 4.38 | 5.31 | 5.16 | 5.05 | 5.09 | 5.41 | 5.36 | 4.89 | 5.69 | 5.69 | 5.42 | 5.38 | 5.14 | 5.14 | 5.61 | 4.52 | 5.02 | 6.23 |
| Specific Conductance | µS/cm | N/A | N/A | 383 | 263 | 311 | 259 | 291 | 283 | 270 | 297 | 361 | 286 | 270 | 326 | 326 | 360 | 391 | 351 | 351 | 271 | 502 | 408 | 537 |
| Temperature | °Celsius | N/A | N/A | 23.23 | 21.42 | 16.87 | 22.75 | 23.04 | 20.10 | 23.12 | 26.92 | 20.23 | 20.47 | 24.36 | 23.76 | 23.76 | 21.74 | 16.98 | 25.35 | 25.35 | 24.41 | 20.70 | 23.27 | 25.74 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 5.62 | 0.54 | 1.48 | 1.58 | 6.21 | 0.32 | 0.20 | 0.88 | 0.54 | 0.72 | 0.27 | 3.30 | 3.30 | 0.69 | 0.87 | 2.75 | 2.75 | 0.50 | 0.30 | 0.43 | 0.65 |
| ORP | mV | N/A | N/A | -75.2 | 18 | 16.3 | 123.3 | 2.5 | 3.0 | 44.6 | 262.4 | -28.6 | 39.9 | 71.5 | -99.2 | -99.2 | -19.1 | 32.8 | 103.1 | 103.1 | 230.8 | 96.3 | 96.0 | -69.1 |
| Turbidity | NTU | N/A | N/A | 0.51 | 1.31 | 1.67 | 683 | 1.95 | 2.73 | 1.07 | 4.5 | 0.85 | 0.75 | 1.41 | 3.37 | 3.37 | 1.34 | 1.42 | 0.00 | 0.00 | 7.34 | 4.6 | 4.96 | 3.52 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | < 0.050 | -- | -- | -- | **0.083** | -- | -- | -- | **0.32** | -- | -- | -- | -- | < 0.050 | **0.077** | **0.074** | -- | -- | -- | -- |
| Sulfate | mg/L | N/A | N/A | -- | < 5.0 | -- | -- | -- | **60** | -- | -- | -- | **66** | -- | -- | -- | -- | **120** | **110** | **110** | -- | -- | -- | -- |
| Sulfide | mg/L | N/A | N/A | -- | < 1.0 | -- | -- | -- | **1.9** | -- | -- | -- | < 1.0 | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | -- | -- | -- | -- |
| Ferrous Iron | mg/L | N/A | N/A | -- | **29** HF | -- | -- | -- | **16** HF | -- | -- | -- | **10** HF | -- | -- | -- | -- | **4.5** | **9.1** | **8.9** | -- | -- | -- | -- |
| Total Iron | mg/L | N/A | N/A | -- | **28** | -- | -- | -- | **15** | -- | -- | -- | **11** | -- | -- | -- | -- | **4.5** | **9.1** | **9.1** | -- | -- | -- | -- |
| Carbon Dioxide | mg/L | N/A | N/A | -- | **160** | -- | -- | -- | **3.7** | -- | -- | -- | **1.9** | -- | -- | -- | -- | **2** | **1.7** | **1.7** | -- | -- | -- | -- |
| Methane | mg/L | N/A | N/A | -- | **250** | -- | -- | -- | **350** | -- | -- | -- | **190** | -- | -- | -- | -- | **100** | **96** | **100** | -- | -- | -- | -- |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **4.6** | -- | -- | -- | **4.2** | -- | -- | -- | -- | **4** | **4.2** | **4.2** | -- | -- | -- | -- |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | **5.8** | -- | -- | -- | **1.6** | -- | -- | -- | **1.4** | -- | -- | -- | -- | **1.3** | **1.5** | **1.5** | -- | -- | -- | -- |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | **390** | **1,700** | **2,400** | **2,300** | **2,500** | **550** | **2,500** | **2,900** | **510** | **730** | **3,300** | **2,500** | **2,700** | **1,100** | **350** | **310** | **410** | **4,400** | **710** | **2,600** | **1,900** |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 5.0 | < 40 | < 40 | < 40 | < 40 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | **220** | **1,100** | **1,300** | **1,700** | **1,700** | **410** | **1,100** | **1,300** | **370** | **510** | -- | -- | -- | -- | **190** | **180** | **220** | **1,800** | **500** | **1,100** | **840** |
| Toluene | µg/L | 1,000* | 1,100 | **8.8** | **62** | **77** | **64** | **91** | < 100 | <250 | **120** | < 100 | **31** | -- | -- | -- | -- | **11** | <25 | <25 | **220** | **23** | **91** | **40** |
| Total Xylenes | µg/L | 31,000 | 200,000 | **380** | **2,100** | **2,500** | **1,400** | **3,200** | **700** | **2,400** | **3,000** | **520** | **1,100** | -- | -- | -- | -- | **320** | **240** | **280** | **5,900** | **720** | **2,800** | **1,200** |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | < 10 | **19** | **17** | **30** | **47** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Acenaphthylene | µg/L | 470 | 3,100 | < 10 | < 2.0 | < 0.22 | < 2.0 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Anthracene | µg/L | 4,700 | 31,000 | < 10 | **2.9** | **3.0** | **4.7** | **7.3** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | < 0.20 | < 2.0 | < 0.22 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | < 0.20 | < 2.0 | < 0.22 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | < 0.20 | < 2.0 | < 0.22 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 10 | < 2.0 | < 0.22 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 10 | < 2.0 | < 0.22 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | < 10 | < 2.0 | < 0.22 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | < 0.20 | < 2.0 | < 0.22 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | < 10 | **40** | < 2.2 | **69** | **130** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 10 | < 2.0 | **1.5** | **2.8** | **2.7** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluorene | µg/L | 1,000* | 4,100 | < 10 | **13** | **11** | **26** | **30** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | < 0.20 | < 2.0 | < 0.22 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 10 | < 20 | < 2.2 | < 20 | < 22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | < 10 | < 20 | < 2.2 | < 20 | < 22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Naphthalene | µg/L | 20* | 20* | **490** | **1,600** | **2,900** | **1,800 D** | **4,900** | **2,100** | **3,500** | **5,700 *** | **1,700** | **2,200** | **5,500** | **4,800** | **5,900** | **1,500** | **200** | **670** | **580** | **2,400** | **600** | **2,500** | **1,900** |
| Phenanthrene | µg/L | 470 | 3,100 | 20 | 60 | **110** | **150** | **160** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Phenol | µg/L | 9,390 | 61,000 | < 10 | < 10 | < 1.1 | **11** | < 11 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | < 10 | < 2.0 | **1.8** | **2.9** | **2.4** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Arsenic | µg/L | 50* | 50* | < 50 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Barium | µg/L | 2,000 | 7,200 | **25.9** | **860** | **990** | **1,000** | **1,000** | **370** | **1,100** | **910** | **280** | **370** | -- | -- | -- | -- | **100** | **190** | **170** | **943** | **190** | **635** | < 20 |
| Beryllium | µg/L | 31 | 200 | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | **34** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | **10.8** | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10 | < 20 | < 20 | **43** | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | < 20 | < 20 | < 20 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | **44** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | **18.2** | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | < 20 | < 20 | < 20 | **100** | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | **0.24** | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Cyanide | µg/L | 310 | 2,000 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-202 (Aband.) | | MW-203 (Destroyed) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/11/13 | 09/29/05 | 02/11/13 | 11/08/12 | 08/08/12 | 08/12 DUP | 05/17/12 | 02/14/12 | 11/16/11 | 08/11/11 | 05/04/11 | 02/25/11 | 11/10/10 | 08/10/10 | 08/10 DUP | 05/11/10 | 02/24/10 | 08/13/09 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.08 | 5.9 | 6.23 | 6.21 | 6.41 | 6.41 | 6.77 | 6.14 | 6.27 | 6.44 | 5.99 | 6.12 | 6.17 | 6.11 | 6.11 | 6.00 | 6.38 | 6.78 |
| Specific Conductance | µS/cm | N/A | N/A | 257 | 377 | 292 | 287 | 144 | 144 | 134 | 150 | 186 | 188 | 327 | 276 | 293 | 246 | 246 | 175 | 76 | 120 |
| Temperature | °Celsius | N/A | N/A | 20.38 | 26.15 | 20.59 | 19.64 | 24.47 | 24.47 | 22.91 | 18.42 | 23.92 | 26.94 | 19.86 | 18.71 | 23.2 | 24.32 | 24.32 | 20.26 | 12.11 | 29.32 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 2.23 | 0.40 | 1.42 | 0.91 | 0.50 | 0.50 | 2.40 | 0.50 | 0.16 | 0.50 | 0.23 | 0.42 | 0.19 | 1.78 | 1.78 | 1.25 | 1.24 | 5.83 |
| ORP | mV | N/A | N/A | 48.5 | -23 | -33.5 | -7.4 | -11.4 | -11.4 | 69.6 | 30.8 | -51.7 | -55.0 | -76.3 | -18.2 | -60.6 | -45.9 | -45.9 | 36.2 | 50.7 | 22.1 |
| Turbidity | NTU | N/A | N/A | 6.97 | 3.93 | 2.71 | 1.21 | 6.79 | 6.79 | 3.14 | 9.21 | 2.54 | 9.52 | 5.68 | 8.6 | 20.6 | 9.63 | 9.63 | 7.57 | 24.2 | 4.5 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | **0.062** | -- | < 0.050 | -- | -- | -- | -- | < 0.050 | -- | -- | -- | **0.15** | -- | -- | -- | -- | **0.26** | < 0.050 |
| Sulfate | mg/L | N/A | N/A | **40** | -- | **9.2** | -- | -- | -- | -- | **9.0** | -- | -- | -- | < 5.0 | -- | -- | -- | -- | < 5.0 | **310** |
| Sulfide | mg/L | N/A | N/A | < 1.0 | -- | < 1.0 | -- | -- | -- | -- | **2.3** | -- | -- | -- | < 1.0 | -- | -- | -- | -- | < 1.0 | < 1.0 |
| Ferrous Iron | mg/L | N/A | N/A | **16** HF | -- | **15** HF | -- | -- | -- | -- | **0.99** HF | -- | -- | -- | **13** HF | -- | -- | -- | -- | < 0.010 | < 0.010 |
| Total Iron | mg/L | N/A | N/A | **18** | -- | **31** | -- | -- | -- | -- | **2.2** | -- | -- | -- | **26** | -- | -- | -- | -- | **1** | **0.34** |
| Carbon Dioxide | mg/L | N/A | N/A | **160** | -- | **110** | -- | -- | -- | -- | **750** | -- | -- | -- | **1.6** | -- | -- | -- | -- | **0.16** | **1.7** |
| Methane | mg/L | N/A | N/A | **600** | -- | **97** | -- | -- | -- | -- | **19** | -- | -- | -- | **230** | -- | -- | -- | -- | **2.4** | **1.1** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | **5400** | -- | -- | -- | **4.2** | -- | -- | -- | -- | **4** | **4.2** |
| Dissolved Oxygen | mg/L | N/A | N/A | **4.6** | -- | **5.6** | -- | -- | -- | -- | **1700** | -- | -- | -- | **1.3** | -- | -- | -- | -- | **1.3** | **1.5** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | **1,000** | **1,900** | **8.2** | **< 1.0** | **2.2** | **1.2** | **1.5** | **25** | **60** | **65** | **400** | **430** | < 5.0 | **150** | **150** | **220** | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 20 | -- | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | **720** | **1,100** | **7.0** | < 1.0 | < 1.0 | < 1.0 | < 1.0 | **13** | **7.1** | **9.9** | **120** | **170** | -- | -- | -- | -- | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | **23** | **23** | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | <25 | -- | -- | -- | -- | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | **470** | **660** | **2.9** | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | **20** | **43** | -- | -- | -- | -- | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | **13** | -- | **19** | **2.8** | **1.5** | **0.92** | **0.83** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Acenaphthylene | µg/L | 470 | 3,100 | < 2.1 | -- | < 0.20 | < 0.24 | < 0.21 | < 0.20 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Anthracene | µg/L | 4,700 | 31,000 | **2.1** | -- | **0.20** | < 0.24 | < 0.21 | < 0.20 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | < 2.1 | -- | < 0.20 | < 0.24 | < 0.21 | < 0.20 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | < 2.1 | -- | < 0.20 | < 0.24 | < 0.21 | < 0.20 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | < 2.1 | -- | < 0.20 | < 0.24 | < 0.21 | < 0.20 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 2.1 | -- | < 0.20 | < 0.24 | < 0.21 | < 0.20 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 2.1 | -- | < 0.20 | < 0.24 | < 0.21 | < 0.20 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | < 2.1 | -- | < 0.20 | < 0.24 | < 0.21 | < 0.20 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | < 2.1 | -- | < 0.20 | < 0.24 | < 0.21 | < 0.20 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | < 21 | -- | < 2.0 | < 2.4 | < 2.1 | < 2.0 | < 2.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 2.1 | -- | **0.30** | **0.24** | < 0.21 | < 0.20 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluorene | µg/L | 1,000* | 4,100 | **11** | -- | **6.4** | **0.83** | **0.52** | **0.30** | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | < 2.1 | -- | < 0.20 | < 1.9 | < 0.21 | < 0.20 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 21 | -- | < 2.0 | < 2.4 | < 2.1 | < 2.0 | < 2.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | < 21 | -- | < 2.0 | < 2.4 | < 2.1 | < 2.0 | < 2.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Naphthalene | µg/L | 20* | 20* | **1,900** | **1,300** | **4.7** | < 0.24 | **1.30** | **0.56** | **0.30** | **7.2** | **21** | **8.4 *** | **220** | **550** | < 5.0 | **91** | **80** | **230** | < 9.9 | < 9.7 |
| Phenanthrene | µg/L | 470 | 3,100 | **69** | -- | **0.38** | < 0.24 | < 0.21 | < 0.20 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Phenol | µg/L | 9,390 | 61,000 | < 10 | -- | < 1.0 | < 1.2 | **3.7** | **2.9** | < 1.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | < 2.1 | -- | **0.33** | **0.26** | < 0.21 | < 0.20 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Arsenic | µg/L | 50* | 50* | < 20 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Barium | µg/L | 2,000 | 7,200 | **560** | **41.6** | **320** | **200** | **97** | **96** | **58** | **120** | **130** | **210** | **510** | **520** | -- | -- | -- | -- | **36** | **44** |
| Beryllium | µg/L | 31 | 200 | < 4.0 | -- | < 4.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | -- | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 20 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | < 20 | < 20 |
| Lead | µg/L | 15* | 15* | **17** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | -- | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 40 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | -- | -- | -- | -- | < 40 | < 40 |
| Zinc | µg/L | 4,700 | 31,000 | **62** | -- | **45** | **92** | **550** | **540** | **160** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Mercury | µg/L | 2* | 2* | < 0.20 | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Cyanide | µg/L | 310 | 2,000 | < 10 | **12** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | -- | -- | -- | -- | < 10 | 19 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-204 (Abandoned) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/05/13 | 02/11/13 | 11/06/12 | 08/07/12 | 05/15/12 | 02/13/12 | 11/17/11 | 08/09/11 | 05/03/11 | 02/15/11 | 11/09/10 | 08/11/10 | 05/11/10 | 02/24/10 | 08/14/09 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.19 | 6.03 | 5.72 | 5.05 | 5.72 | 5.78 | 5.72 | 5.55 | 5.69 | 5.84 | 5.77 | 5.94 | 5.86 | 6.10 | 6.12 |
| Specific Conductance | µS/cm | N/A | N/A | 702 | 287 | 668 | 673 | 680 | 497 | 719 | 680 | 678 | 385 | 543 | 658 | 601 | 501 | 794 |
| Temperature | °Celsius | N/A | N/A | 26.72 | 20.92 | 20.85 | 24.52 | 23.72 | 19.43 | 21.54 | 24.92 | 20.84 | 21.05 | 25.05 | 25.42 | 21.91 | 13.95 | 25.39 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 1.53 | 0.86 | 0.35 | 0.24 | 0.35 | 0.89 | 0.28 | 0.91 | 0.20 | 1.25 | 0.36 | 0.58 | 0.57 | 1.68 | 1.71 |
| ORP | mV | N/A | N/A | -68.0 | -12.2 | 30.6 | 197.8 | 173.0 | 36.8 | 103.3 | 106.4 | -15.0 | 103.4 | 149.0 | 1.3 | 57.2 | 74.9 | 109.3 |
| Turbidity | NTU | N/A | N/A | 1.39 | 0.44 | 6.25 | 2.40 | 0.58 | 9.27 | 5.06 | 7.67 | 3.31 | 9.82 | 2.33 | 7.61 | 8.19 | 9.34 | 4 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | < 0.050 | -- | -- | -- | **0.060** | -- | -- | -- | **0.062** | -- | -- | -- | < 0.050 | **0.056** |
| Sulfate | mg/L | N/A | N/A | -- | **54** | -- | -- | -- | **140** | -- | -- | -- | **110** | -- | -- | -- | **150** | **6.8** |
| Sulfide | mg/L | N/A | N/A | -- | < 1.0 | -- | -- | -- | < 1.0 | -- | -- | -- | < 1.0 | -- | -- | -- | < 1.0 | < 1.0 |
| Ferrous Iron | mg/L | N/A | N/A | -- | **0.15** HF | -- | -- | -- | **0.11** HF | -- | -- | -- | **0.11** HF | -- | -- | -- | < 0.010 | **0.13** |
| Total Iron | mg/L | N/A | N/A | -- | < 0.10 | -- | -- | -- | **0.36** | -- | -- | -- | **1.9** | -- | -- | -- | **0.82** | **1.3** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | **120** | -- | -- | -- | **1.4** | -- | -- | -- | **1.1** | -- | -- | -- | **2.1** | **0.079** |
| Methane | mg/L | N/A | N/A | -- | < 0.58 | -- | -- | -- | **1.1** | -- | -- | -- | <0.58 | -- | -- | -- | **7.1** | **4.1** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **4.5** | -- | -- | -- | **4.3** | -- | -- | -- | **2.9** | **1.7** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | **5.9** | -- | -- | -- | **1.5** | -- | -- | -- | **1.5** | -- | -- | -- | **0.98** | **1.7** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | < 10 | < 0.20 | < 0.20 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Acenaphthylene | µg/L | 470 | 3,100 | < 10 | < 0.20 | < 0.20 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Anthracene | µg/L | 4,700 | 31,000 | < 10 | < 0.20 | < 0.20 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | < 0.20 | < 0.20 | < 0.20 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | < 0.20 | < 0.20 | < 0.20 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | < 0.20 | < 0.20 | < 0.20 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 10 | < 0.20 | < 0.20 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 10 | < 0.20 | < 0.20 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | < 10 | < 0.20 | < 0.20 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | < 0.20 | < 0.20 | < 0.20 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | < 10 | < 2.0 | < 2.0 | < 1.9 | < 2.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 10 | < 0.20 | < 0.20 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluorene | µg/L | 1,000* | 4,100 | < 10 | < 0.20 | < 0.20 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | < 0.20 | < 0.20 | < 0.20 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 10 | < 2.0 | < 2.0 | < 1.9 | < 2.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | < 10 | < 2.0 | < 2.0 | < 1.9 | < 2.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Naphthalene | µg/L | 20* | 20* | < 10 | < 0.20 | **3.0** | < 0.19 | < 0.23 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | <9.9 | <9.4 |
| Phenanthrene | µg/L | 470 | 3,100 | < 10 | < 0.20 | < 0.20 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Phenol | µg/L | 9,390 | 61,000 | < 10 | < 0.99 | < 1.0 | < 0.96 | < 1.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | < 10 | < 0.20 | **0.36** | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Arsenic | µg/L | 50* | 50* | < 50 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Barium | µg/L | 2,000 | 7,200 | **54.5** | **44** | **44** | **59** | **41** | **43** | **42** | **53** | **48** | **47** | -- | -- | -- | **41** | **57** |
| Beryllium | µg/L | 31 | 200 | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | < 20 | < 20 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | -- | -- | -- | < 40 | < 40 |
| Zinc | µg/L | 4,700 | 31,000 | < 20 | < 20 | **21** | **28** | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Cyanide | µg/L | 310 | 2,000 | < 10 | **10** | < 10 | **15** | **21** | < 10 | -- | -- | -- | < 10 | -- | -- | -- | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-205 | | | | | | | | | | | | | | | | | | | | MW-206 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/22/17 | 08/24/16 | 04/27/15 | 08/06/13 | 02/07/13 | 11/07/12 | 08/07/12 | 05/17/12 | 02/14/12 | 11/15/11 | 08/10/11 | 05/03/11 | 02/23/11 | 02/11 DUP | 11/09/10 | 11/10 DUP | 08/10/10 | 08/10 DUP | 05/10/10 | 02/23/10 | 02/11/13 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.37 | 5.80 | 6.45 | 8.08 | 6.32 | 6.28 | 6.17 | 6.74 | 6.16 | 6.34 | 6.18 | 6.08 | 6.39 | 6.39 | 6.24 | 6.24 | 4.16 | 4.16 | 6.25 | 6.37 | 5.8 |
| Specific Conductance | µS/cm | N/A | N/A | 289.0 | 65.3 | 272 | 293 | 244 | 276 | 297 | 295 | 251 | 293 | 289 | 323 | 273 | 273 | 314 | 314 | 328 | 328 | 314 | 339 | 521 |
| Temperature | °Celsius | N/A | N/A | 22.40 | 31.13 | 20.23 | 24.72 | 18.09 | 20.72 | 24.17 | 22.74 | 19.10 | 22.57 | 23.92 | 20.23 | 19.7 | 19.7 | 22.24 | 22.24 | 23.68 | 23.68 | 19.18 | 17.18 | 19.01 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.91 | 0.14 | 1.0 | 0.06 | 1.29 | 1.35 | 2.0 | 0.34 | 2.05 | 0.22 | 0.28 | 0.17 | 0.32 | 0.32 | 0.25 | 0.25 | 0.27 | 0.27 | 0.73 | 3.77 | 0.24 |
| ORP | mV | N/A | N/A | -69.80 | 5.8 | -62.7 | -94.1 | -27.1 | -43.5 | 7.6 | -66.6 | -29.9 | -100.0 | 146.2 | -102.1 | -105.6 | -105.6 | -1.0 | -1.0 | 79.5 | 79.5 | -102.8 | -45.6 | -3.1 |
| Turbidity | NTU | N/A | N/A | 5.50 | 12.70 | 0.56 | 1.96 | 5.81 | 0.95 | 1.59 | 3.58 | 3.11 | 7.26 | 2.02 | 0.89 | 2.43 | 2.43 | 1.18 | 1.18 | 0.65 | 0.65 | 2.97 | 3.61 | 32.9 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | < 0.050 | -- | -- | -- | < 0.050 | -- | -- | -- | < 0.050 | 0.07 | -- | -- | -- | -- | -- | < 0.050 | < 0.050 |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | **12** | -- | -- | -- | **7.2** | -- | -- | -- | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | < 5.0 | **150** |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | < 1.0 | -- | -- | -- | < 1.0 | -- | -- | -- | < 1.0 | < 1.0 | -- | -- | -- | -- | -- | < 1.0 | < 1.0 |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | **17** HF | -- | -- | -- | 21 HF | -- | -- | -- | 6.1 HF | 5.7 HF | -- | -- | -- | -- | -- | **23** | 14 HF |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | **20** | -- | -- | -- | **24** | -- | -- | -- | **26** | **22** | -- | -- | -- | -- | -- | **30** | **15** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | **86** | -- | -- | -- | **1.8** | -- | -- | -- | **1.1** | **1.1** | -- | -- | -- | -- | -- | **1.3** | **150** |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | **22** | -- | -- | -- | **42** | -- | -- | -- | **55** | **62** | -- | -- | -- | -- | -- | **150** | **7.1** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **6.5** | -- | -- | -- | **4.3** | **4.5** | -- | -- | -- | -- | -- | **3.3** | -- |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | **5.0** | -- | -- | -- | **1.9** | -- | -- | -- | **1.3** | **1.4** | -- | -- | -- | -- | -- | **0.98** | **6.6** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | **35** | <5.0 | **66** | **53** | **5.8** | **24** | **16** | **42** | **26** | **62** | **350** | **37** | **19** | **55** | **580** | **33** | **33** | **33** | **63** | **91** | < 1.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 2.0 |
| Ethylbenzene | µg/L | 700* | 2,300 | **50** | **7.0** | **150** | **130** | **4.5** | **32** | **18** | **75** | **29** | **34** | **230** | **66** | **67** | **120** | -- | -- | -- | -- | -- | **130** | < 1.0 |
| Toluene | µg/L | 1,000* | 1,100 | **5.5** | <5.0 | **13** | **11** | < 1.0 | **1.5** | **1.0** | **8.8** | < 5.0 | < 5.0 | **41** | **8.1** | **8.9** | **15** | -- | -- | -- | -- | -- | **17** | < 1.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | **36** | <5.0 | **100** | **98** | **7.2** | **15** | **11** | **57** | **29** | **18** | **240** | **42** | **51** | **99** | -- | -- | -- | -- | -- | **100** | < 2.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | **25** | **9.1** | **72** | **55** | **36** | **47** | **34** | **49** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 |
| Acenaphthylene | µg/L | 470 | 3,100 | **3.0** | <1.0 | < 10 | < 10 | < 0.19 | < 0.23 | **4.0** | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 |
| Anthracene | µg/L | 4,700 | 31,000 | **1.3** | **0.62** | < 10 | < 10 | **1.3** | **2.1** | **2.1** | **2.5** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | **0.11** | **0.12** | **0.20** | < 0.20 | **0.19** | < 0.23 | < 0.21 | **0.28** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | < 0.050 | < 0.20 | < 0.19 | < 0.23 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | < 0.10 | < 0.20 | < 0.19 | < 0.23 | < 0.21 | **0.22** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | < 10 | < 10 | < 0.19 | < 0.23 | < 0.21 | **0.22** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | < 10 | < 10 | < 0.19 | < 0.23 | < 0.21 | **0.21** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 |
| Chrysene | µg/L | 117 | 392 | **0.12** | **0.11** | < 10 | < 10 | **0.26** | < 0.23 | **0.22** | **0.31** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | < 0.10 | < 0.20 | < 0.19 | < 0.23 | < 0.21 | **0.22** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | <10 | < 10 | < 10 | < 1.9 | < 2.3 | < 2.1 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 2.0 |
| Fluoranthene | µg/L | 1,000* | 4,100 | **1.7** | **1.1** | < 10 | < 10 | **2.9** | **3.6** | **3.6** | **3.0** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 |
| Fluorene | µg/L | 1,000* | 4,100 | **10** | **4.6** | **32** | **21** | **18** | **23** | **21** | **25** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.20 | < 0.19 | < 0.23 | < 0.21 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 10 | < 10 | < 1.9 | < 2.3 | < 2.1 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 2.0 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 10 | < 10 | < 1.9 | < 2.3 | < 2.1 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 2.0 |
| Naphthalene | µg/L | 20* | 20* | **46** | **10** | **280** | **160** | **19** | **55** | **28** | **150** | **130** | **79** | **940** | **140** | **580** | **330** | **120** | **100** | **63** | **63** | **270** | **160** | < 0.20 |
| Phenanthrene | µg/L | 470 | 3,100 | **5.9** | **2.1** | **29** | **17** | **3.7** | **9.4** | **5.8** | **14** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | < 10 | 1.0 | < 1.1 | < 1.0 | < 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 1.0 |
| Pyrene | µg/L | 1,000* | 3,100 | **1.8** | **1.2** | < 10 | < 10 | **4.1** | **3.8** | **4.1** | **4.3** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 20 |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 20 |
| Barium | µg/L | 2,000 | 7,200 | -- | **21.9** | **90.8** | **91.5** | **51** | **64** | **58** | **68** | **63** | **87** | **190** | **71** | **82** | **64** | -- | -- | -- | -- | -- | **110** | 29.0 |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 4.0 |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 5.0 |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | -- | -- | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | < 20 | < 20 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | -- | -- | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 20 | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | -- | -- | -- | -- | -- | < 40 | < 40 |
| Zinc | µg/L | 4,700 | 31,000 | -- | **32.3** | **242** | < 20.0 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 20 |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | < 10 | -- | -- | -- | -- | -- | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Alluvial Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-400 | | | | | | MW-401 | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2/23/2017 | DUP-3 | 8/24/2016 | 8/16 DUP | 4/6/2016 | 04/29/15 | 02/24/17 | 08/24/16 |
| **roundwater Quality Parameters** | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.41 | | 5.53 | | 5.54 | 5.90 | 6.05 | 5.73 |
| Specific Conductance | µS/cm | N/A | N/A | 806.5 | | 817.2 | | 1000 | 520 | 339.9 | 201.2 |
| Temperature | °Celsius | N/A | N/A | 21.88 | | 30.62 | | 21.48 | 16.72 | 21.43 | 25.01 |
| Dissolved Oxygen (YSI) | mg/L | N/A | N/A | 0.24 | | 3.81 | | 0.24 | 2.71 | 0.88 | 0.27 |
| ORP | mV | N/A | N/A | 148.1 | | 151.5 | | 119.7 | -7.1 | 61.3 | 48.4 |
| Turbidity | NTU | N/A | N/A | 3.12 | | 1.38 | | 4.37 | 9.2 | 9.1 | 8.19 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | <5.0 | <5.0 | <5.0 | <5.0 | **11** | < 5.0 | <5.0 | <5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | <0.50 | <0.50 | **0.52** | **1.0** | < 10 | **0.83** | <0.50 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | <1.0 | <1.0 | <1.0 | **1.30** | < 10 | <1.0 | <1.0 |
| Anthracene | µg/L | 4,700 | 31,000 | **0.11** | **0.12** | 0.14 | **0.17** | **0.15** | < 10 | **0.060** | **0.093** |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | <0.050 | <0.050 | < 0.050 | <0.050 | <0.050 | <0.050 |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | <0.050 | <0.050 | < 0.050 | < 0.050 | <0.050 | <0.050 |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | <0.10 | <0.10 | < 0.10 | < 0.10 | <0.10 | <0.10 |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | <0.10 | <0.10 | < 0.10 | < 10 | <0.10 | <0.10 |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | <0.050 | <0.050 | < 0.050 | < 10 | <0.050 | <0.050 |
| Chrysene | µg/L | 117 | 392 | <0.050 | <0.050 | <0.050 | <0.050 | < 0.050 | < 10 | <0.050 | <0.050 |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | <0.10 | <0.10 | < 0.10 | < 0.10 | <0.10 | <0.10 |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | <10 | <10 | <10 | < 10 | < 10 | <10 | <10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | **0.10** | <0.10 | <0.10 | <0.10 | **0.11** | < 10 | <0.10 | <0.10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | **0.19** | 0.21 | **0.28** | < 10 | <0.10 | <0.10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | <0.050 | <0.050 | < 0.050 | < 0.050 | <0.050 | <0.050 |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | <10 | <10 | < 10 | < 10 | <10 | <10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | <10 | <10 | < 10 | < 10 | <10 | <10 |
| Naphthalene | µg/L | 20* | 20* | **0.56** | **0.55** | <0.50 | <0.50 | **1.70** | < 10 | <0.50 | <0.50 |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | <0.050 | <0.050 | <0.050 | < 0.050 | < 10 | <0.050 | <0.050 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | <10 | <10 | < 10 | < 10 | <10 | <10 |
| Pyrene | µg/L | 1,000* | 3,100 | **0.14** | **0.14** | **0.13** | **0.13** | **0.14** | < 10 | **1.0** | **1.0** |
| **Inorganic Constituents** | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | -- | < 20.0 | < 20.0 | < 20.0 | < 20.0 | -- | < 20.0 |
| Arsenic | µg/L | 50* | 50* | -- | -- | < 50.0 | < 50.0 | < 50.0 | < 50.0 | -- | < 50.0 |
| Barium | µg/L | 2,000 | 7,200 | -- | -- | **68** | **67.6** | **67.6** | **38.1** | -- | **122** |
| Beryllium | µg/L | 31 | 200 | -- | -- | < 10.0 | < 10.0 | < 10.0 | < 10.0 | -- | < 10.0 |
| Cadmium | µg/L | 7.8 | 51 | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | < 5.0 |
| Chromium | µg/L | 100 | 310 | -- | -- | < 10.0 | < 10.0 | < 10.0 | < 10.0 | -- | < 10.0 |
| Copper | µg/L | 630 | 4,100 | -- | -- | < 10.0 | < 10.0 | < 10.0 | < 10.0 | -- | < 10.0 |
| Lead | µg/L | 15* | 15* | -- | -- | < 10.0 | < 10.0 | < 10.0 | < 10.0 | -- | < 10.0 |
| Nickel | µg/L | 100 | 2,000 | -- | -- | < 20.0 | < 20.0 | < 20.0 | < 20.0 | -- | < 20.0 |
| Zinc | µg/L | 4,700 | 31,000 | -- | -- | **145** | **147** | **88.7** | < 20.0 | -- | **166** |
| Mercury | µg/L | 2* | 2* | -- | -- | <0.20 | <0.20 | < 0.20 | < 0.20 | -- | <0.20 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | -- | **288** | **167** | < 10 | **9.9** | -- | <10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Stamdard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-08D | | |
|---|---|---|---|---|---|---|
| | | | | 04/27/15 | 08/06/14 | 12/07/06 |
| **Field Groundwater Quality Parameters** | | | | | | |
| pH | SU | N/A | N/A | 5.61 | 7.22 | -- |
| Specific Conductance | µm/cm | N/A | N/A | 336 | 338 | -- |
| Temperature | °Celsius | N/A | N/A | 21.31 | 22.45 | -- |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.49 | 0.95 | -- |
| ORP | mV | N/A | N/A | -66.2 | -105.7 | -- |
| Turbidity | NTU | N/A | N/A | 14.8 | 2.24 | -- |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- |
| Methane | mg/L | N/A | N/A | -- | -- | -- |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- |
| **Laboratory Results - Organic Constituents** | | | | | | |
| Volatile Organic Compounds | | | | | | |
| Benzene | µg/L | 5* | 9 | < 5.0 | < 5.0 | < 5 |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 5.0 | < 5.0 | < 5 |
| Ethylbenzene | µg/L | 700* | 2,300 | < 5.0 | < 5.0 | < 5 |
| Toluene | µg/L | 1,000* | 1,100 | < 5.0 | < 5.0 | < 5 |
| Total Xylenes | µg/L | 31,000 | 200,000 | < 5.0 | < 5.0 | < 5 |
| Semivolatile Organic Compounds | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | < 10 | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | < 10 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31,000 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | < 0.050 | < 0.050 | < 10 |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | < 0.050 | < 0.050 | < 10 |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | < 0.10 | < 0.10 | < 10 |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 10 | < 10 | < 10 |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 10 | < 10 | < 10 |
| Chrysene | µg/L | 117 | 392 | < 10 | < 10 | < 10 |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | < 0.10 | < 0.10 | < 10 |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | < 0.050 | < 0.050 | < 10 |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 10 | < 10 | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | < 10 | < 10 | -- |
| Naphthalene | µg/L | 20* | 20* | < 10 | < 10 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | < 10 | < 10 | < 10 |
| **Inorganic Constituents** | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20 | < 20 | -- |
| Arsenic | µg/L | 50* | 50* | < 50 | < 50 | -- |
| Barium | µg/L | 2,000 | 7,200 | **902** | **9790** | -- |
| Beryllium | µg/L | 31 | 200 | < 10 | < 10 | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | -- |
| Copper | µg/L | 630 | 4,100 | < 10 | < 10 | -- |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | -- |
| Nickel | µg/L | 100 | 2,000 | < 20 | < 20 | -- |
| Zinc | µg/L | 4,700 | 31,000 | < 20 | < 20 | -- |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | -- |
| Total Cyanide | µg/L | 310 | 2000 | < 10 | **12** | -- |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
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**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-09D (Abandoned) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/19/14 | 08/05/14 | 8/05 DUP | 08/07/13 | 02/07/13 | 11/07/12 | 08/09/12 | 05/16/12 | 02/07/12 | 11/16/11 | 11/16 DUP | 08/11/11 | 08/11 DUP | 05/05/11 | 02/18/11 | 11/09/10 | 08/10/10 | 05/10/10 | 02/23/10 | 02/10 DUP | 08/13/09 | 06/08/06 | 03/10/06 | 12/22/05 | 12/05 DUP | 09/29/05 | 02/28/05 | 02/05 DUP | 12/16/04 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.29 | 6.80 | | 7.31 | 6.11 | 6.22 | 6.37 | 6.65 | 6.67 | 6.58 | 6.58 | 6.78 | 6.78 | 6.86 | 6.31 | 6.41 | 6.17 | 6.17 | 7.18 | 7.18 | 7.12 | 6.82 | 6.58 | 6.70 | 6.70 | 7.06 | 8.85 | 8.85 | 8.85 |
| Specific Conductance | µm/cm | N/A | N/A | 257 | 364 | | 419 | 243 | 225 | 400 | 273 | 374 | 385 | 385 | 433 | 433 | 425 | 243 | 270 | 281 | 278 | 404 | 404 | 362 | 320 | 285 | 277 | 277 | 308 | 355 | 355 | 326 |
| Temperature | °Celsius | N/A | N/A | 20.80 | 23.63 | | 23.28 | 14.62 | 19.58 | 25.52 | 25.18 | 18.94 | 23.14 | 23.14 | 24.60 | 24.60 | 21.24 | 22.43 | 24.41 | 24.69 | 21.61 | 20.41 | 20.41 | 24.67 | 22.62 | 19.72 | 20.77 | 20.77 | 21.94 | 19.84 | 19.84 | 21.20 |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.31 | 0.34 | | 0.15 | 0.17 | 1.65 | 0.84 | 1.13 | 1.32 | 0.24 | 0.24 | 0.70 | 0.70 | 0.32 | 0.12 | 0.22 | 0.33 | 1.16 | 1.28 | 1.28 | 4.31 | 0.22 | 0.31 | 0.46 | 0.46 | 0.20 | 1.53 | 1.53 | 1.69 |
| ORP | mV | N/A | N/A | 78.3 | -30.4 | | -91.6 | -82.4 | 41.8 | -35.2 | -27.9 | -77.6 | -88.5 | -88.5 | 150.5 | 150.5 | -104.6 | -73.1 | -88.3 | -60.8 | -36.9 | -120.6 | -120.6 | -47.4 | -127.8 | -105.0 | -96.4 | -96.4 | -70.1 | -65.8 | -65.8 | -47.5 |
| Turbidity | NTU | N/A | N/A | 0.76 | 1.37 | | 0.39 | 0.69 | 2.51 | 2.97 | 2.45 | 0.54 | 0.53 | 0.53 | 8.82 | 8.82 | 5.26 | 0.63 | 0.65 | 0.27 | 0.71 | 1.23 | 1.23 | 0 | 0.79 | 1.2 | 2.69 | 2.69 | 3.14 | 11.7 | 11.7 | 9.19 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 | < 0.20 | < 0.20 |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | < 0.25 | -- | -- | -- | < 0.050 | -- | -- | -- | < 0.050 | -- | -- | -- | -- | -- | < 0.050 | -- | -- | -- | < 0.050 | < 0.050 | < 0.050 | -- | -- | -- | -- | -- | < 0.0500 | < 0.500 | < 0.0500 |
| Sulfate | mg/L | N/A | N/A | **2.1** | -- | -- | -- | < 5.0 | -- | -- | -- | < 5.0 | -- | -- | -- | -- | -- | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | **1.32** | **4.42** | **3.78** |
| Sulfide | mg/L | N/A | N/A | < 1.0 | -- | -- | -- | < 1.0 | -- | -- | -- | **1.1** | -- | -- | -- | -- | -- | < 1.0 | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | -- | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **0.0868** | **0.0825** | **0.0426** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **0.141** | **0.142** | **0.138** |
| Ferrous Iron | mg/L | N/A | N/A | < 0.100 | -- | -- | -- | <0.100 | -- | -- | -- | 1.0 HF | -- | -- | -- | -- | -- | 0.55 HF | -- | -- | -- | **0.17** | < 0.010 | **0.34** | -- | -- | -- | -- | -- | **0.4** | **0.4** | **0.7** |
| Total Iron | mg/L | N/A | N/A | **0.211** | -- | -- | -- | **0.211** | -- | -- | -- | **2.7** | -- | -- | -- | -- | -- | **1.1** | -- | -- | -- | **1.1** | **1.2** | **1.5** | -- | -- | -- | -- | -- | **1.65** | **1.59** | **2.40** |
| Carbon Dioxide | mg/L | N/A | N/A | **45** | -- | -- | -- | **45** | -- | -- | -- | **0.63** | -- | -- | -- | -- | -- | **0.53** | -- | -- | -- | **0.26** | **0.24** | **0.2** | -- | -- | -- | -- | -- | **0.6** | **2.6** | **0.52** |
| Methane | mg/L | N/A | N/A | **15** | -- | -- | -- | **15** | -- | -- | -- | **1500** | -- | -- | -- | -- | -- | **570** | -- | -- | -- | **36** | <0.19 | <0.19 | -- | -- | -- | -- | -- | **350** | **340** | **600** |
| Dissolved Nitrogen | mg/L | N/A | N/A | **19** | -- | -- | -- | **19** | -- | -- | -- | **5.1** | -- | -- | -- | -- | -- | **3.8** | -- | -- | -- | **3.7** | **4.3** | **4.4** | -- | -- | -- | -- | -- | **22** | **20** | **20** |
| Dissolved Oxygen | mg/L | N/A | N/A | **4.7** | -- | -- | -- | **4.7** | -- | -- | -- | **1.6** | -- | -- | -- | -- | -- | **1.3** | -- | -- | -- | **1.1** | **1.3** | **1.5** | -- | -- | -- | -- | -- | **4.8** | **2.6** | **1.4** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | < 5.0 | **77** | **86** | **350** | < 1.0 | < 1.0 | < 1.0 | < 5.0 | **16** | **44** | **38** | **91** | **93** | **13** | **5.6** | **13** | **7.5** | **7.0** | **94** | **88** | **23** | **59** | **58** | **45** | **44** | **120** | **550** | **550** | **560** |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | **7.7** | < 5.0 | **6.6** | **7.5** | **6.1** | < 5.0 | < 5.0 | **5.4** | **6.3** | -- | -- | -- | **16** | **14** | **10** | **11** | **7.3** | **9.6** | **9.5** | **11** | **5.6** | **5.7** | **16** |
| Toluene | µg/L | 1,000* | 1,100 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **11** | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **5.0** | **8.4** | **8.2** | **14** | **44** | **45** | **98** |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | < 10 | < 10 | < 10 | < 10 | **0.87** | < 0.19 | **0.71** | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | < 10 | < 10 | < 10 | < 10 | < 0.26 | < 0.19 | < 0.19 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31,000 | < 10 | < 10 | < 10 | < 10 | < 0.26 | < 0.19 | < 0.19 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.26 | < 0.19 | < 0.19 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.26 | < 0.19 | < 0.19 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.26 | < 0.19 | < 0.19 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 10 | < 10 | < 10 | < 10 | < 0.26 | < 0.19 | < 0.19 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 10 | < 10 | < 10 | < 10 | < 0.26 | < 0.19 | < 0.19 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | < 10 | < 10 | < 10 | < 10 | < 0.26 | < 0.19 | < 0.19 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.26 | < 0.19 | < 0.19 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | < 10 | < 10 | < 10 | < 10 | < 2.6 | < 1.9 | < 1.9 | **4.3** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **48** | **44** | **48** |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 10 | < 10 | < 10 | < 10 | < 0.26 | < 0.19 | < 0.19 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | < 10 | < 10 | < 10 | < 10 | < 0.26 | < 0.19 | 0.23 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.26 | < 0.19 | < 0.19 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 10 | < 10 | < 10 | < 10 | < 2.6 | < 1.9 | < 1.9 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | < 10 | < 10 | < 10 | < 10 | < 2.6 | < 1.9 | < 1.9 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | < 10 | **130** | **120** | **96** | **2.2** | < 0.19 | **29** | **0.21** | **82** | **120** | **80** | **58** | **58** | **11** | **41** | **6.0** | < 10 | **80** | **58** | **54** | **16** | **33** | < 10 | < 10 | **13** | < 10 | **120** | **100** | **140** |
| Phenanthrene | µg/L | 470 | 3,100 | < 10 | < 10 | < 10 | < 10 | < 0.26 | < 0.19 | < 0.19 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | < 10 | < 10 | < 10 | < 10 | < 1.3 | < 0.97 | < 0.95 | < 1.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | < 10 | < 10 | < 10 | < 10 | < 0.26 | < 0.19 | < 0.19 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 |
| **Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | < 50 | < 50 | < 50 | < 50 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | **2,290** | **3,050** | **3,080** | **3,250** | **2,300** | **2,200** | **2,900** | **2,300** | **3,000** | **3,100** | **3,100** | **2,600** | **2,600** | **2,700** | **2,000** | -- | -- | -- | **2,100** | **2,100** | **2,100** | **1,650** | **1,580** | **1,480** | **1,470** | **1,380** | **1,100** | **1,110** | **1,080** |
| Beryllium | µg/L | 31 | 200 | < 10 | < 10 | < 10 | < 10 | **7.4** | < 4.0 | **5.0** | **5.1** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | < 10 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10 | < 10 | < 10 | < 10 | < 20 | **21** | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | < 20 | < 20 | < 20 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | < 10 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 20 | < 20 | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | -- | -- | -- | < 40 | < 40 | < 40 | < 20.0 | < 20.0 | < 20.0 | < 20.0 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | < 20 | < 20 | < 20 | < 20 | < 20 | **23** | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | -- | -- | **16** | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-12DRR | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/24/17 | 08/22/16 | 04/05/16 | 08/13/15 | 08/15 DUP | 02/16/15 | 02/18/14 | 02/14 DUP | 08/05/14 | 08/14 DUP | 08/06/13 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.42 | 6.34 | 6.48 | 6.36 | | 6.54 | 6.68 | | 6.41 | | 6.33 |
| Specific Conductance | µm/cm | N/A | N/A | 493.6 | 399.0 | 540 | 530 | | 438 | 445 | | 504 | | 521 |
| Temperature | °Celsius | N/A | N/A | 21.91 | 26.70 | 22.43 | 25.82 | | 17.65 | 20.79 | | 23.69 | | 25.49 |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.18 | 0.16 | 0.37 | 0.32 | | 0.55 | 0.22 | | 0.38 | | 0.58 |
| ORP | mV | N/A | N/A | 1.00 | -107.9 | -108.91 | -170.70 | | -60.0 | -56.1 | | -112.4 | | -94.7 |
| Turbidity | NTU | N/A | N/A | 0.74 | 0.5 | 1.84 | 6.65 | | 4.20 | 1.45 | | 0.52 | | 9.41 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | < 0.25 | < 0.25 | < 0.25 | -- | -- | -- |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | 1.4 | 1.1 | < 1.0 | -- | -- | -- |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | -- | -- | -- |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | 3.98 | 2.1 | 1.92 | -- | -- | -- |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | 5.19 | 5.53 | 5.61 | -- | -- | -- |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | 94 | 85 | 84 | -- | -- | -- |
| Carbon Monoxide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | -- | -- | -- |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | -- | 920 | 840 | 780 | -- | -- | -- |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | 21 | 20 | 19 | -- | -- | -- |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | 2.7 | 2.6 | 2.0 | -- | -- | -- |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9.0 | **470** | 220 | 96 | 250 | 180 | 280 | 280 | 290 | 340 | 370 | 460 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Ethylbenzene | µg/L | 700* | 2,300 | **150** | 76 | 36 | 110 | 77 | 100 | 120 | 130 | 130 | 160 | 180 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | 6.9 | 7.0 | 5.4 | 5.9 | 9.8 |
| Total Xylenes | µg/L | 31,000 | 200,000 | **140** | 48 | 22 | 60 | 43 | 100 | 94 | 98 | 56 | 65 | 100 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | **36** | 10 | < 50 | 39 | 31 | < 10 | 35 | 35 | 39 | 33 | 30 |
| Acenaphthylene | µg/L | 470 | 3,100 | **6.5** | <1.0 | 8.9 | 9.6 | 7.5 | < 10 | 12 | 12 | 16 | 14 | 14 |
| Anthracene | µg/L | 4,700 | 31, 000 | **4.5** | 0.65 | 1.7 | 3.7 | 3.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | **0.15** | 0.16 | 0.140 | 0.23 | 0.30 | 0.079 | 0.29 | 0.27 | 0.17 | 0.14 | < 0.20 |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | < 0.050 | < 0.050 | 0.083 | < 0.050 | 0.087 | < 0.050 | < 0.050 | < 0.050 | < 0.20 |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | < 0.10 | < 0.10 | 0.11 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | < 0.10 | < 0.10 | 0.12 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | < 0.050 | < 0.050 | 0.10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Chrysene | µg/L | 117 | 392 | **0.12** | 0.13 | 0.12 | 0.14 | 0.22 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | < 0.10 | < 0.10 | 0.11 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | **5.0** | 3.6 | 4.6 | 6.3 | 5.8 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | **32** | 14 | 31 | 36 | 28 | 31 | 40 | 41 | 48 | 42 | 35 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.050 | 0.11 | < 0.050 | 0.087 | < 0.050 | < 0.050 | < 0.050 | < 0.20 |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | **1600** | 8.9 | 260 | 550 | 550 | 770 | 530 | 570 | 1,000 | 870 | 1,400 |
| Phenanthrene | µg/L | 470 | 3,100 | **17.00** | 0.66 | 7.6 | 18 | 13 | 13 | 14 | 17 | 25 | 23 | 28 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | **5.3** | 3.7 | 5.2 | 7.1 | 6.2 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20.0 | < 20.0 | < 20.0 | < 20.0 | < 20.0 | < 20.0 | < 20.0 | < 20.0 | < 20.0 | < 20.0 |
| Arsenic | µg/L | 50* | 50* | -- | < 50.0 | < 50.0 | < 50.0 | < 50.0 | < 50.0 | < 50.0 | < 50.0 | < 50.0 | < 50.0 | < 50.0 |
| Barium | µg/L | 2,000 | 7,200 | -- | 1100 | 1,390 | 1,680 | 1,620 | 1,550 | 1,420 | 1,430 | 1,610 | 1,630 | 1,530 |
| Beryllium | µg/L | 31 | 200 | -- | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chromium | µg/L | 100 | 310 | -- | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 |
| Copper | µg/L | 630 | 4,100 | -- | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 |
| Lead | µg/L | 15* | 15* | -- | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 |
| Nickel | µg/L | 100 | 2,000 | -- | < 20.0 | 42.1 | < 20.0 | < 20.0 | < 20.0 | < 20.0 | < 20.0 | < 20.0 | < 20.0 | < 20.0 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20.0 | < 20.0 | < 20.0 | < 20.0 | 42.8 | < 20.0 | < 20.0 | < 20.0 | < 20.0 | 43.9 |
| Mercury | µg/L | 2* | 2* | -- | <0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | <10 | 23 | 26 | 37 | 33 | 26 | 20 | 48 | 37 | 40 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-12DR | | | | | MW-12D | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 11/10/10 | 08/10/10 | 05/10/10 | 05/10 DUP | 02/23/10 | 08/14/09 | 06/07/06 | 03/09/06 | 03/06 DUP | 12/21/05 | 12/05 DUP | 09/29/05 | 03/02/05 | 12/16/04 | 12/04 DUP | 10/01/04 | 06/09/04 | 03/04/04 | 12/17/03 | 12/03 DUP | 09/10/03 | 06/10/03 | 03/12/03 | 12/10/02 | 09/18/02 | 11/06/01 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 12.24 | 12.31 | 12.69 | 12.69 | 12.13 | 7.24 | 8.11 | 7.41 | 7.41 | 6.99 | 6.99 | 6.62 | 6.55 | 6.45 | 6.45 | 6.68 | 6.90 | 6.97 | 6.53 | 6.53 | 7.01 | 7.07 | 6.73 | 6.58 | 6.82 | 6.80 |
| Specific Conductance | µm/cm | N/A | N/A | 1,327 | 1,922 | 1,851 | 18,510 | 2,398 | 376 | 831 | 664 | 664 | 798 | 798 | 760 | 1,242 | 1642 | 1642 | 1,569 | 406 | 440 | 672 | 672 | 288 | 295 | 400 | 393 | 400 | 376 |
| Temperature | °Celsius | N/A | N/A | 22.4 | 25.55 | 23.04 | 23.04 | 12.87 | 27.19 | 24.64 | 21.77 | 21.77 | 19.92 | 19.92 | 23.76 | 21.93 | 23.15 | 23.15 | 24.44 | 22.52 | 22.06 | 21.84 | 21.84 | 24.26 | 23.57 | 22.36 | 22.27 | 24.14 | 24.49 |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.71 | 0.76 | 1.24 | 1.24 | 1.08 | 5.73 | 0.13 | 0.31 | 0.31 | 0.19 | 0.19 | 0.16 | 1.16 | 3.67 | 3.67 | 3.25 | 0.55 | 0.35 | 0.30 | 0.30 | 0.19 | 0.07 | 0.04 | 0.18 | 0.03 | 0.09 |
| ORP | mV | N/A | N/A | -128.6 | -54.2 | -108.6 | -108.6 | -105.0 | -85.0 | -145.5 | -55.9 | -55.9 | -72.2 | -72.2 | -76.5 | -18.4 | 12.7 | 12.7 | -2.4 | -111.6 | -164.0 | -191 | -191 | -177 | -156 | -118.3 | -99.6 | -178.4 | -135.2 |
| Turbidity | NTU | N/A | N/A | 6.24 | 0.65 | 5.52 | 5.52 | 0.62 | 3.32 | 4.60 | 2.8 | 2.8 | 0.00# | 0.00# | 1.29 | 4.34 | 4.51 | 4.51 | 2.3 | 3.14 | 5.63 | -- | -- | 11.0 | 5.1 | 0.9 | 4.3 | 10 | 31 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **5.84** | **9.49** | **10.3** | **13.0** | **0.42** | **0.56** | **0.47** | **0.47** | **0.60** | **0.546** | **0.754** | **0.505** | **0.724** | **0.448** |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | < 0.050 | < 0.050 | -- | -- | -- | -- | -- | -- | < 0.500 | **0.0529** | **0.162** | **0.241** | < 0.5 | < 0.250 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.500 | < 0.0500 | < 0.050 | < 0.050 | **0.454** |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | **290** | 26 | -- | -- | -- | -- | -- | -- | **302** | **352** | **486** | **187** | **2.19** | **2.70** | **3.73** | **4.16** | **8.82** | **3.06** | **5.81** | **5.10** | **4.08** | **4.28** |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | < 1.0 | < 1.0 | -- | -- | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | **2.8** | < 1.0 | < 1.0 | **1.3** | **1.6** | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | **0.500** |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **1.87** | **2.16** | **2.15** | **1.74** | **0.548** | **0.584** | **0.663** | **0.664** | **0.474** | **0.497** | **0.514** | **0.525** | **0.522** | **0.451** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **1.90** | **2.29** | **2.39** | **1.77** | **0.556** | **0.673** | **0.669** | **0.668** | **0.504** | **0.543** | **0.532** | **0.614** | **0.483** | **0.519** |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | < 0.010 | **0.24** | -- | -- | -- | -- | -- | -- | **0.9** | < 0.1 | < 0.1 | < 0.1 | **2.4** | **3.2** | **1.5** | **8.6** | **1.9** | **1.9** | **1.69** | **2.78** | **1.55** | **1.89** |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | **0.14** | **2.8** | -- | -- | -- | -- | -- | -- | **6.45** | **6.01** | **6.29** | **2.58** | **2.13** | **3.83** | **2.78** | **2.77** | **2.41** | **2.66** | **1.72** | **4.18** | **1.75** | **2.67** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | < 0.050 | **0.15** | -- | -- | -- | -- | -- | -- | **120** | **150** | **150** | **130** | **41** | < 0.6 | **51** | **49** | **14** | **21** | **40** | **40** | **33** | **23** |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | **47** | **40** | -- | -- | -- | -- | -- | -- | **360** | **360** | **350** | **470** | **2,600** | **120** | **2,900** | **3,000** | **150** | **2,000** | **3,300** | **2,600** | **3,000** | **380** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | **4** | **5** | -- | -- | -- | -- | -- | -- | **15** | **16** | **14** | **14** | **16** | **24** | **20** | **21** | **14** | **17** | **18** | **17** | **20** | **13** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | **1.5** | **1.8** | -- | -- | -- | -- | -- | -- | **1.3** | **4.3** | **3.3** | **12** | **0.46** | **2.7** | **1.1** | **1.1** | **0.66** | **0.63** | **0.66** | **4.9** | **7.1** | **0.78** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9.0 | **250** | **190** | **170** | **190** | **200** | **13** | **18** | **38** | **38** | **47** | **84** | **300** | **200** | **240** | **250** | **320** | **4,300** | **2,900** | **4,200** | **3,400** | **11** | **920** | **2,400** | **2,200** | **1,500** | **4,700** |
| Carbon Disulfide | µg/L | 329 | 1,700 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | -- | -- | -- | -- | **33** | **5.4** | **9.3** | **26** | **25** | **10** | **20** | **59** | **44** | **41** | **41** | **20** | **1,100** | **620** | **910** | **740** | < 5.0 | **390** | **830** | **830** | **510** | **1,200** |
| Toluene | µg/L | 1,000* | 1,100 | -- | -- | -- | -- | **130** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **6.8** | **5.0** | < 5.0 | < 5.0 | **48** | **< 250** | **24** | **68** | **72** | < 5.0 | **6.0** | **14** | **19** | **20** | **11** |
| Total Xylenes | µg/L | 31,000 | 200,000 | -- | -- | -- | -- | **250** | < 5.0 | < 5.0 | **6.4** | **6.3** | **7.2** | **12** | **60** | **48** | **45** | **47** | **48** | **830** | **170** | **1,320** | **1,070** | < 5.0 | **300** | **740** | **200** | **500** | **92** |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | **78** | **79** | **100** | **100** | **56** | **30** | < 100 | **63** | **49** | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | **23** | **23** | **27** | **26** | **13** | < 10 | < 100 | **17** | **17** | **42** |
| Anthracene | µg/L | 4,700 | 31, 000 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 100 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 100 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 100 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | **59** | **63** | **78** | **79** | **43** | **24** | < 100 | **48** | **39** | **30** |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 100 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 100 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | **430** | **790** | **330** | **200** | **890** | **28** | **20** | **220** | **300** | **200** | **240** | **< 10** | **240** | **400** | **340** | < 10 | **8,400** | **5,900** | **9,400** | **8,900** | **5,600** | **3,000** | **4,400** | **6,700** | **5,200** | **4,500** |
| Phenanthrene | µg/L | 470 | 3,100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | **62** | **70** | **80** | **83** | **33** | **21** | < 100 | **50** | **40** | **23** |
| Phenol | µg/L | 9,390 | 61,000 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 100 | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 100 | < 10 | < 10 | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | -- | -- | -- | **400** | **280** | **269** | **243** | **259** | **276** | **257** | **197** | **61.2** | **42.4** | **43.7** | **23.8** | **2,730** | **2,510** | **2,490** | **2,520** | **851** | **967** | **2,850** | **2,840** | **2,200** | **1,420** |
| Beryllium | µg/L | 31 | 200 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | -- | -- | -- | 1,500 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | -- | -- | -- | < 20 | < 20 | **160** | **680** | **76.3** | **73.9** | **58.7** | **261** | **159** | **325** | **337** | **574** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **11.4** | **46.7** | **47.9** | **31.9** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | -- | -- | -- | < 40 | **42** | **158** | **125** | **125** | **195** | **161** | **< 20** | **344** | **369** | **379** | **223** | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **648** | **824** | **857** | **693** | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | -- | -- | -- | **130** | **19** | **25** | **24** | **46** | **19** | **20** | **45** | **24** | **51** | **38** | **27** | **51** | **56** | **81** | **84** | **< 10** | **20** | **93** | **86** | **113** | **62** |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-12DD | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/23/17 | 04/06/16 | 02/16/15 | 08/05/14 | 02/19/14 | 08/07/13 | 02/06/13 | 11/07/12 | 08/09/12 | 05/16/12 | 02/09/12 | 11/16/11 | 08/11/11 | 05/04/11 | 05/11 DUP | 02/17/11 | 11/10/10 | 08/10/10 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 7.63 | 7.37 | 7.32 | 7.78 | 8.13 | 6.05 | 7.32 | 7.02 | 6.87 | 7.58 | 7.31 | 7.44 | 7.29 | 6.98 | 6.98 | 7.62 | 7.80 | 6.12 |
| Specific Conductance | µm/cm | N/A | N/A | 225.20 | 200 | 209 | 227 | 241 | 225 | 225 | 220 | 231 | 231 | 230 | 239 | 256 | 284 | 284 | 294 | 280 | 508 |
| Temperature | °Celsius | N/A | N/A | 22.45 | 23.01 | 18.44 | 24.35 | 24.24 | 23.72 | 19.70 | 21.02 | 22.89 | 22.09 | 18.16 | 23.11 | 23.56 | 23.02 | 23.02 | 23.55 | 23.00 | 26.84 |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.34 | 0.85 | 0.81 | 0.34 | 0.26 | 1.08 | 2.23 | 0.50 | 1.12 | 1.29 | 0.56 | 0.43 | 0.28 | 0.97 | 0.97 | 0.30 | 1.05 | 19.74 |
| ORP | mV | N/A | N/A | -117.00 | -94.8 | -53.0 | -161.4 | -172.8 | -59.4 | -19.4 | -74.6 | 0.3 | -90.2 | -114.4 | -103.4 | 174.0 | -402.6 | -402.6 | -153.4 | -4.4 | -91.1 |
| Turbidity | NTU | N/A | N/A | 1.74 | 1.16 | 0.99 | 6.00 | 15.6 | 2.12 | 2.69 | 3.61 | 17.2 | 5.90 | 0.98 | 2.21 | 11.8 | 7.95 | 7.95 | 1.34 | 1.17 | 2.42 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | < 0.050 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | < 0.25 | -- | < 5.0 | -- | -- | -- | < 0.050 | -- | -- | -- | -- | < 0.050 | -- | -- |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | **6.3** | -- | **1.0** | -- | -- | -- | **7.4** | -- | -- | -- | -- | **24** | -- | -- |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | **1.6** | -- | -- | -- | -- | -- | < 1.0 | -- | -- | -- | -- | < 1.0 | -- | -- |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | **0.258** | -- | < 0.10 HF | -- | -- | -- | < 0.10 HF | -- | -- | -- | -- | < 0.010 | -- | -- |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | **0.161** | -- | 2.7 J | -- | -- | -- | **0.11** | -- | -- | -- | -- | **0.12** | -- | -- |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | < 5.0 | -- | < 1.0 | -- | -- | -- | **100** | -- | -- | -- | -- | **0.081** | -- | -- |
| Carbon Monoxide | mg/L | N/A | N/A | -- | -- | -- | -- | < 1.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | **260** | -- | **160** | -- | -- | -- | < 0.58 | -- | -- | -- | -- | **1.6** | -- | -- |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | **14** | -- | -- | -- | -- | -- | **5000** | -- | -- | -- | -- | **4.8** | -- | -- |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | **1.4** | -- | **6.8** | -- | -- | -- | **1500** | -- | -- | -- | -- | **1.6** | -- | -- |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | **35** | **15** | **44** | **140** | **130** | **8.0** | **150** | **29** | **41** | **35** | **71** | **81** | **25** | **15** | **27** | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | < 5.0 | **10** | **28** | **19** | < 5.0 | **16** | **7.9** | **7.4** | **7.0** | **8.4** | **18** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | < 5.0 | < 5.0 | **6** | **6** | < 5.0 | **5.2** | **1.4** | **1.7** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | < 5.0 | **11** | **21** | **13** | < 5.0 | **12** | **6.0** | **8.4** | 8.4 | **10** | **22** | | < 5.0 | < 5.0 | < 5.0 | -- | -- |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | **0.65** | **0.73** | < 10 | < 10 | < 10 | < 10 | **0.45** | < 0.19 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | < 1.0 | < 10 | < 10 | < 10 | < 10 | **0.24** | < 0.19 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- |
| Anthracene | µg/L | 4,700 | 31,000 | <0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 0.19 | < 0.19 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.19 | < 0.19 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.19 | < 0.19 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.19 | < 0.19 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 0.19 | < 0.19 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 0.19 | < 0.19 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 0.19 | < 0.19 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.19 | < 0.19 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 1.9 | < 1.9 | < 20 | < 2.3 | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 0.19 | < 0.19 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluorene | µg/L | 1,000* | 4,100 | **0.33** | **0.32** | < 10 | < 10 | < 10 | < 10 | **0.21** | < 0.19 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.19 | < 0.19 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 1.9 | < 1.9 | < 20 | < 2.3 | -- | -- | -- | -- | -- | -- | -- | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 1.9 | < 1.9 | < 20 | < 2.3 | -- | -- | -- | -- | -- | -- | -- | -- |
| Naphthalene | µg/L | 20* | 20* | **4.3** | < 0.50 | **13** | **62** | < 10 | < 10 | **0.44** | < 0.19 | < 2.0 | < 0.23 | **46** | **110** | **7.6** | < 5.0 | **9.4** | < 5.0 | < 5.0 | < 5.0 |
| Phenanthrene | µg/L | 470 | 3,100 | **0.16** | 0.10 | < 10 | < 10 | < 10 | < 10 | < 0.19 | < 0.19 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- |
| Phenol | µg/L | 9,390 | 61,000 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | **9.6** | < 0.97 | < 9.9 | < 1.1 | -- | -- | -- | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | <0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 0.19 | < 0.19 | < 2.0 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- |
| **Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- |
| Barium | µg/L | 2,000 | 7,200 | -- | **93.6** | **94.8** | **66.1** | **92.1** | **86.4** | **89** | **85** | **86** | **75** | **77** | **83** | **73** | **64** | **67** | **39** | -- | -- |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | **6.3** | **6.3** | **6.3** | **6.3** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- |
| Nickel | µg/L | 100 | 2,000 | -- | **26.0** | < 20 | < 20 | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | -- | -- |
| Zinc | µg/L | 4,700 | 31,000 | -- | **22.4** | **312** | **62.7** | **87.8** | **312** | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10 | < 10 | **12** | < 10 | **10** | **20** | **28** | **24** | **21** | **24** | -- | -- | -- | -- | **15** | -- | -- |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-12DD (Continued) | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 05/10/10 | 02/25/10 | 08/14/09 | 06/07/06 | 03/09/06 | 12/21/05 | 09/30/05 | 03/02/05 | 12/14/04 | 10/05/04 | 06/11/04 | 03/05/04 | 12/18/03 | 09/10/03 | 06/12/03 | 06/03 DUP | 03/13/03 | 03/03 DUP | 12/12/02 | 09/18/02 | 11/07/01 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.86 | 8.62 | 11.65 | 9.79 | 9.88 | 9.80 | 8.95 | 7.75 | 8.18 | 7.90 | 9.99 | 8.37 | 10.32 | 10.54 | 12.01 | 12.01 | 11.67 | 11.67 | 11.89 | 11.97 | 12.00 |
| Specific Conductance | µm/cm | N/A | N/A | 506 | 216 | 173 | 266 | 215 | 209 | 161 | 122 | 102 | 98 | 248 | 154 | 222 | 683 | 1057 | 1057 | 1,195 | 1,195 | 2,711 | 4,196 | 4,630 |
| Temperature | °Celsius | N/A | N/A | 23.54 | 22.12 | 27.75 | 25.03 | 24.40 | 23.91 | 23.22 | 22.99 | 24.98 | 26.9 | 27.48 | -- | 22.34 | 23.94 | 24.58 | 24.58 | 22.75 | 22.75 | 21.50 | 26.32 | 22.80 |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.72 | 0.54 | 1.15 | 0.26 | 0.27 | 0.23 | 0.35 | 1.27 | 2.76 | 1.50 | 1.61 | 3.81 | 0.31 | 0.82 | 0.76 | 0.76 | 0.19 | 0.19 | 0.30 | 0.13 | 0.24 |
| ORP | mV | N/A | N/A | -45.2 | -3.1 | 158.7 | -143.3 | -142.5 | -150.3 | -22.4 | -60.1 | -111.6 | -62.7 | -78.8 | -60.8 | -177.2 | -204.1 | -150.4 | -150.4 | -199.9 | -199.9 | -213.5 | -209.3 | -194.8 |
| Turbidity | NTU | N/A | N/A | 21.8 | 2.71 | 9.89 | 43.1 | 45 | 4.36 | 51.7 | -- | 35.6 | 59 | 22 | -- | 13.40 | 14.2 | 15 | 15 | 9.61 | 9.61 | 7.70 | 13.0 | 9.81 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | **0.21** | < 0.20 | < 0.20 | **0.28** | **0.27** | **0.32** | **0.36** | **0.303** | **0.358** | **0.484** | **0.414** | **0.557** | **0.573** | **0.691** |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | < 0.050 | < 0.050 | -- | -- | -- | -- | < 0.0500 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.0500 | **0.0579** | < 0.0500 | **0.0828** | **0.0817** | **0.0749** | < 0.0500 | < 0.0500 | < 0.0500 | **0.525** |
| Sulfate | mg/L | N/A | N/A | -- | **19** | < 5.0 | -- | -- | -- | -- | **1.50** | **21.2** | **1.79** | **2.63** | **5.18** | **3.09** | **4.54** | **10.8** | **8.56** | **6.82** | **6.39** | **4.85** | **4.97** | **3.08** |
| Sulfide | mg/L | N/A | N/A | -- | < 1.0 | < 1.0 | -- | -- | -- | -- | **2.0** | **1.4** | < 1.0 | **2.3** | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | **2.74** |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | < 0.0050 | **0.0071** | < 0.005 | < 0.005 | < 0.005 | < 0.0050 | < 0.0050 | < 0.0050 | < 0.0050 | < 0.0050 | < 0.0050 | < 0.005 | < 0.005 | < 0.005 |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | **0.0204** | **0.0166** | **0.0240** | **0.0152** | **0.0111** | **0.0083** | < 0.0050 | **0.0052** | < 0.0050 | < 0.0050 | **0.0111** | < 0.005 | < 0.005 | < 0.005 |
| Ferrous Iron | mg/L | N/A | N/A | -- | < 0.010 | < 0.010 | -- | -- | -- | -- | **0.4** | **0.1** | **0.2** | < 0.1 | < 0.1 | **0.8** | < 0.1 | **0.2** | **0.3** | **0.137** | **0.154** | < 0.200 | < 0.200 | < 2.00 |
| Total Iron | mg/L | N/A | N/A | -- | **0.2** | **0.23** | -- | -- | -- | -- | **1.97** | **0.345** | **1.12** | **0.932** | **0.435** | **0.525** | < 0.100 | **0.212** | **0.168** | **0.187** | **0.303** | **0.126** | < 0.100 | < 0.100 |
| Carbon Dioxide | mg/L | N/A | N/A | -- | < 0.050 | < 50 | -- | -- | -- | -- | < 0.60 | < 0.60 | < 0.60 | < 0.6 | 180 | < 0.60 | < 0.60 | < 0.60 | < 0.60 | < 0.60 | < 0.60 | < 0.60 | 0.40 | < 0.60 |
| Carbon Monoxide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Methane | mg/L | N/A | N/A | -- | **120** | **150** | -- | -- | -- | -- | **280** | **160** | **120** | **200** | **25** | **94** | **170** | **180** | **190** | **200** | **200** | **220** | **200** | **220** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | **4.1** | **4.5** | -- | -- | -- | -- | **22** | **16** | **16** | **19** | **21** | **23** | **19** | **20** | **20** | **23** | **23** | **19** | **23** | **16** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | **1.5** | **1.5** | -- | -- | -- | -- | **2.4** | **1.7** | **2.0** | **0.61** | **1.6** | **5.4** | **1.6** | **1.3** | **1.4** | **1.4** | **1.3** | **6.7** | **6.5** | **2.8** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | < 5.0 | **310** | **68** | **180** | **38** | **40** | **40** | **290** | **430** | **230** | **560** | **190** | **130** | **630** | **390** | **400** | **680** | **740** | **1,000** | **1,800** | **1,800** |
| Carbon Disulfide | µg/L | 329 | 1,700 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | -- | **40** | < 5.0 | **14** | < 5.0 | < 5.0 | < 5.0 | **19** | **31** | **21** | **40** | **13** | **14** | **31** | **17** | **16** | **9.0** | **42** | **41** | **45** | **38** |
| Toluene | µg/L | 1,000* | 1,100 | -- | **10** | < 5.0 | **5.3** | < 5.0 | < 5.0 | < 5.0 | **8.0** | **11** | **6.7** | **16** | **5.7** | **6.2** | **13** | **8.6** | **8.2** | **6.1** | **15** | **14** | **16** | **13** |
| Total Xylenes | µg/L | 31,000 | 200,000 | -- | **46** | < 5.0 | **15** | < 5.0 | < 5.0 | < 5.0 | **28** | **35** | **20** | **38** | **5.0** | **13.8** | **30** | **17** | **17** | **6.2** | **46** | **21** | **61** | **23** |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31,000 | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | -- | -- | -- | -- | -- | -- | -- | **16** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | < 5.0 | < 9.7 | < 9.7 | **55** | < 10 | **18** | < 10 | **39** | **71** | < 10 | < 10 | < 10 | < 10 | **89** | **17** | **16** | **150** | **180** | **160** | **220** | **150** |
| Phenanthrene | µg/L | 470 | 3,100 | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | -- | -- | -- | -- | -- | -- | -- | **18** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **19** | < 10 | < 10 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| **Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | -- | -- | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | -- | -- | -- | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | **31** | **390** | **130** | **109** | **109** | **102** | **76.0** | **110** | **164** | **208** | **136** | **161** | **287** | **287** | **281** | **382** | **404** | **932** | **1,490** | **1,860** |
| Beryllium | µg/L | 31 | 200 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10.0 | < 10 | **21.5** | < 10 | **32.1** | **116** | **10.4** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 20 | < 20 | < 10 | < 10 | < 10.0 | < 10 | < 10 | < 10 | < 10 | **16.1** | < 10 | < 10 | < 10 | **10.1** | **10.4** | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | **15.1** | **12.3** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 23.4 | 21.9 | < 10 | 12 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 40 | < 40 | < 20 | < 20 | < 20.0 | < 20 | < 20 | < 20 | < 20 | **97.7** | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | -- | -- | -- | -- | -- | -- | **44.0** | < 20 | **25.3** | < 20 | **27.9** | < 20 | < 20 | **21.7** | **21.2** | **22** | **30** | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | -- | -- | -- | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | **12** | **88** | **23** | **19** | **27** | **28** | **18** | **10** | < 10 | < 10 | **36** | < 10 | < 10 | < 10 | < 10 | **16** | **15** | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-22D | | | | | | MW-23D | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/21/17 | 08/23/16 | 04/05/16 | 08/12/15 | 04/29/15 | 03/01/05 | 02/22/17 | 08/23/16 | 04/05/16 | 08/11/15 | 02/16/15 | 08/04/14 | 02.18/14 | 08/05/13 | 02/28/05 | 10/06/04 | 06/10/03 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.91 | 6.74 | 9.07 | 7.69 | 6.83 | 6.66 | 6.04 | 6.04 | 6.17 | 5.93 | 5.87 | 6.38 | 6.15 | 5.55 | 6.07 | 5.91 | 6.17 |
| Specific Conductance | µm/cm | N/A | N/A | 418.20 | 372.2 | 300 | 327 | 475 | 423 | 385.10 | 381.1 | 400 | 304 | 369 | 374 | 372 | 363 | 378 | 388 | 399 |
| Temperature | °Celsius | N/A | N/A | 21.21 | 27.00 | 22.98 | 26.29 | 19.41 | 19.85 | 22.56 | 29.10 | 23.34 | 27.58 | 17.45 | 26.22 | 20.60 | 26.06 | 22.07 | 24.18 | 23.37 |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.26 | 0.73 | 3.83 | 0.31 | 0.50 | 1.03 | 0.22 | 0.70 | 0.26 | 0.26 | 0.82 | 0.36 | 0.58 | 1.09 | 2.78 | 0.11 | 0.14 |
| ORP | mV | N/A | N/A | -97.30 | -81.5 | 106.5 | -169.1 | -74.0 | -87.4 | 43.20 | -7.1 | 121.5 | 149.7 | 200.9 | 72.9 | 163.0 | -105.6 | 148.6 | 85.0 | 113.8 |
| Turbidity | NTU | N/A | N/A | 0.66 | 8.3 | 1.78 | 9.73 | 1.90 | 2.76 | 7.84 | 7.0 | 1.42 | 9.92 | 2.01 | 1.27 | 0.36 | 9.12 | 12.5 | 5.19 | 3.3 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 | < 0.20 | < 0.200 |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | < 0.500 | -- | -- | -- | -- | -- | -- | < 0.25 | -- | < 0.0500 | < 0.0500 | < 0.0500 |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **2.67** | -- | -- | -- | -- | -- | -- | **49.0** | -- | **28.0** | **55.2** | **39.7** |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | < 1.0 | -- | -- | -- | -- | -- | -- | < 1.0 | -- | < 1.0 | < 1.0 | < 1.0 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **1.45** | -- | -- | -- | -- | -- | -- | < 0.100 | -- | **0.596** | **0.510** | **0.637** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **1.43** | -- | -- | -- | -- | -- | -- | < 0.100 | -- | **0.622** | **0.529** | **0.651** |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **6.7** | -- | -- | -- | -- | -- | -- | **78** | -- | < 0.1 | < 0.1 | **0.7** |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **6.43** | -- | -- | -- | -- | -- | -- | < 1.0 | -- | **0.375** | < 0.1 | **1.35** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **31** | -- | -- | -- | -- | -- | -- | **17** | -- | **140** | **150** | **170** |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **24** | -- | -- | -- | -- | -- | -- | **16** | -- | **31** | **22** | **23** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **21** | -- | -- | -- | -- | -- | -- | **5.3** | -- | **16** | **15** | **14** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **1.5** | -- | -- | -- | -- | -- | -- | -- | -- | **1.1** | **1.5** | **1.0** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | -- | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Naphthalene | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | <0.50 | < 0.50 | < 10 | < 0.50 | < 10 | <0.50 | <0.50 | < 0.50 | < 10 | < 0.50 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | <1.0 | < 1.0 | < 10 | < 1.0 | < 10 | <1.0 | <1.0 | < 1.0 | < 10 | < 1.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31, 000 | <0.050 | <0.050 | < 0.050 | < 10 | < 0.050 | < 10 | <0.050 | <0.050 | < 0.050 | < 10 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | -- | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | -- | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | -- | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | < 0.10 | < 10 | < 0.10 | -- | <0.10 | <0.10 | < 0.10 | < 10 | < 0.10 | < 10 | < 10 | < 10 | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | < 0.050 | < 10 | < 0.050 | -- | <0.050 | <0.050 | < 0.050 | < 10 | < 0.050 | < 10 | < 10 | < 10 | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | <0.050 | < 0.050 | < 10 | < 0.050 | -- | <0.050 | <0.050 | < 0.050 | < 10 | < 0.050 | < 10 | < 10 | < 10 | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | -- | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | -- | -- | -- |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | <10 | < 10 | < 10 | < 10 | < 10 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 0.10 | < 10 | < 0.10 | < 10 | <0.10 | <0.10 | < 0.10 | < 10 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 0.10 | < 10 | < 0.10 | < 10 | <0.10 | <0.10 | < 0.10 | < 10 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | 0.056 | <0.050 | < 0.050 | < 0.050 | < 0.050 | -- | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | <0.50 | < 0.50 | < 10 | < 0.50 | < 10 | <0.50 | <0.50 | < 0.50 | < 10 | < 0.50 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | <0.50 | 0.063 | < 0.050 | < 10 | < 0.050 | < 10 | <0.050 | <0.050 | < 0.050 | < 10 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | <0.050 | <0.050 | < 0.050 | < 10 | < 0.050 | < 10 | <0.050 | <0.050 | < 0.050 | < 10 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | < 20 | < 40 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20.0 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | < 50 | < 50 | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50.0 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | **1120** | **469** | **907** | **1,440** | **1,290** | -- | **65.5** | **57.5** | **64.4** | **66.1** | **56.6** | 52.2 | 54.3 | 52.2 | 48.2 | 50 |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | < 10 | < 10 | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10.0 | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10.0 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10.0 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10.0 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | **45.4** | < 20.0 | < 20.0 | < 20.0 | < 20 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20.0 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20.0 | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.5 | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-24D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/28/17 | 08/22/16 | 07/26/16 | 07/08/16 | 06/24/16 | 04/05/16 | 08/13/15 | 02/17/15 | 08/06/14 | 02/18/14 | 02/04/13 | 02/06/12 | 02/15/11 | 02/22/10 | 08/14/09 | 06/06/06 | 03/09/06 | 12/20/05 | 09/30/05 | 03/01/05 | 12/14/04 | 09/30/04 | 06/08/04 | 03/03/04 | 12/16/03 | 09/09/03 | 06/10/03 | 03/11/03 | 12/11/02 | 09/18/02 | 11/08/01 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.70 | 6.43 | 6.19 | 6.44 | 6.47 | 6.33 | 6.08 | 6.03 | 6.16 | 6.56 | 5.84 | 5.9 | 5.77 | 6.05 | 6.14 | 5.68 | 5.74 | 5.83 | 5.88 | 5.83 | 9.78 | 5.91 | 5.71 | 5.91 | 6.16 | 4.79 | 6.13 | 5.92 | 5.84 | 6.03 | 5.89 |
| Specific Conductance | µm/cm | N/A | N/A | 49.20 | 137.7 | 62.8 | 123.5 | 135.8 | 46 | 484 | 64 | 325 | 45 | 195 | 247 | 198 | 69 | 324 | 368 | 350 | 379 | 450 | 348 | 461 | 536 | 478 | 436 | 381 | 468 | 466 | 404 | 486 | 568 | 538 |
| Temperature | °Celsius | N/A | N/A | 17.36 | 23.80 | 23.95 | 23.84 | 22.58 | 17.78 | 21.66 | 15.75 | 22.39 | 16.26 | 15.89 | 16.64 | 18.33 | 14.62 | 23.77 | 19.70 | 18.80 | 18.48 | 21.33 | 19.27 | 19.28 | 21.05 | 21.91 | 18.16 | 17.34 | 21.04 | 20.5 | 18.52 | 20.06 | 21.98 | 21.50 |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.38 | 0.20 | 0.51 | 0.53 | 0.29 | 4.46 | 0.21 | 1.45 | 0.58 | 6.58 | 0.74 | 0.31 | 1.49 | 4.73 | 5.12 | 0.71 | 1.26 | 0.40 | 0.80 | 1.57 | 0.5 | 0.27 | 0.23 | 0.61 | 2.46 | 0.37 | 0.11 | 0.37 | 0.17 | 0.04 | 0.18 |
| ORP | mV | N/A | N/A | 90.3 | -109.6 | -72.4 | -66.3 | -112.8 | 78.4 | -80.8 | 100.1 | -58.6 | 162.0 | 55.4 | 57.5 | 79.1 | 135.4 | 214.6 | 4.3 | 35.3 | -8.7 | -16.8 | 103.4 | -110.3 | -35.1 | -27.6 | 47.7 | 146.8 | -51 | -9.5 | 22.0 | 0.2 | -32.5 | -31.6 |
| Turbidity | NTU | N/A | N/A | 1.39 | 1.5 | 3.58 | 3.89 | 1.65 | 22.6 | 34 | 9.47 | 1.68 | 8.72 | 7.53 | 27.7 | 7.31 | 9.51 | 0.95 | 35.7 | 33.8 | 23.4 | 48.3 | 56.6 | 24.5 | 6.1 | 60 | 75.6 | -- | 22.7 | 100 | 35 | 60.0 | 29.0 | 28.6 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | **0.26** | **0.287** | **0.253** | < 0.200 | < 0.200 | **0.110** |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.25 | **0.073** | **0.057** | < 0.050 | 0.46 | < 0.050 | -- | -- | -- | -- | < 0.500 | < 0.0500 | < 0.0500 | < 0.5 | < 0.250 | **0.258** | **0.206** | < 0.0500 | < 0.0500 | < 0.050 | **0.056** | < 0.0500 |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | **1.32** | **1.26** | **2.43** | **1.92** | **2.32** | **3.36** | < 2.00 | < 1.00 | **2.05** | **1.88** | **1.82** | < 1.00 |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 1.0 | < 1.0 | **1.8** | < 1.0 | < 1.0 | < 1.0 | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.00 | < 1.00 | < 1.00 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **1.71** | **2.15** | **2.32** | **2.33** | **2.12** | **1.63** | **2.32** | **2.24** | **1.68** | **2.45** | **2.55** | **2.56** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | **1.67** | **2.14** | **2.35** | **2.39** | **2.34** | **1.67** | **2.33** | **2.2** | **1.74** | **2.36** | **2.26** | **2.54** |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | **0.791** | 18 HF | **16** | **12** | < 0.010 | **4.9** | -- | -- | -- | -- | **13.7** | **38.6** | **38.3** | **38.1** | **25.1** | **0.2** | **11.6** | **14.6** | **15.7** | **49.5** | **36.0** | **41.3** |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | **5.2** | **18** | **2.7** | **15** | **0.73** | **5.8** | -- | -- | -- | -- | **15.4** | **37.4** | **38.7** | **33.5** | **29.3** | **6.07** | **39.7** | **37.5** | **18.0** | **40.3** | **38.3** | **43.0** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 1.0 | **140** | **3.5** | **1.8** | **0.23** | **0.94** | -- | -- | -- | -- | **140** | **200** | **180** | **200** | **190** | **79** | **200** | **200** | **200** | **230** | **190** | **170** |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 4 | **140** | **120** | **72** | **0.29** | **56** | -- | -- | -- | -- | **120** | **410** | **420** | **290** | **250** | **3.5** | **500** | **300** | **210** | **300** | **390** | **300** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | **17** | **18** | **3.9** | **4.3** | **4.1** | **4.5** | -- | -- | -- | -- | **18** | **20** | **16** | **20** | **22** | **17** | **21** | **19** | **20** | **16** | **19** | **17** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | **9.0** | 4.7 | 0.99 | 1.4 | **1.5** | **1.6** | -- | -- | -- | -- | **3.0** | **2.3** | **0.98** | **0.51** | **0.83** | **5.1** | **0.64** | **0.62** | **0.58** | **4.6** | **6.0** | **1.1** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9.0 | <5.0 | **11** | **120** | **9.0** | < 5.0 | **100** | **39** | < 5.0 | **15** | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | **7.5** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1700.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | **5.2** | **140** | **6.0** | < 5.0 | **44** | **31** | < 5.0 | **7.2** | < 5.0 | **1.9** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **5.6** | < 5.0 | < 5.0 | 5.1 | < 5.0 | **11** | < 5.0 | **57** | **84** | < 5.0 | **12** | **16** | **5.2** | **110** | **24** | **130** |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | **8** | < 5.0 | < 5.0 | 8.6 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Xylenes | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | **18** | < 5.0 | < 5.0 | 8.3 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | **1.7** | **14** | **1.3** | **0.78** | < 0.50 | **15** | < 10 | < 10 | < 10 | **2.3** | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | **13** | < 10 | **13** | < 10 | < 10 | **15** | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | <1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 10 | < 10 | < 10 | **0.32** | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **15** |
| Anthracene | µg/L | 4,700 | 31, 000 | **0.17** | **0.19** | **0.35** | **0.32** | **0.25** | **0.27** | **0.41** | < 10 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | **0.56** | <0.050 | < 0.050 | **0.087** | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | **0.98** | <0.050 | < 0.050 | **0.11** | < 0.050 | **0.053** | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | **1.1** | <0.10 | < 0.10 | **0.26** | < 0.10 | **0.14** | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | **1.1** | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | **1.0** | <0.050 | < 0.050 | **0.10** | < 0.050 | **0.074** | < 0.050 | < 10 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | **0.53** | <0.050 | < 0.050 | **0.15** | < 0.050 | **0.077** | < 0.050 | < 10 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | **1.0** | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 1.9 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | **0.11** | **0.12** | < 0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | **0.27** | **3.3** | **0.16** | < 0.10 | < 0.10 | **1.5** | < 10 | < 10 | < 10 | **0.48** | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | **1.0** | <0.050 | < 0.050 | **0.077** | < 0.050 | **0.064** | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 1.9 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 1.9 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | **14** | **290** | **13.0** | **8.7** | < 0.50 | **220** | < 10 | **37** | < 10 | **3.5** | < 5.0 | < 5.0 | < 9.4 | < 10 | **13** | < 10 | < 10 | < 10 | < 10 | **17** | **11** | **36** | **66** | < 10 | **35** | **35** | < 10 | **98** | **23** | **130** |
| Phenanthrene | µg/L | 470 | 3,100 | <0.50 | **0.21** | **2** | **0.077** | < 0.050 | < 0.050 | **2.4** | < 10 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 0.97 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | **0.055** | <0.050 | **0.12** | **0.18** | < 0.050 | **0.075** | **0.11** | < 10 | < 10 | < 10 | < 0.19 | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | -- | -- | | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | -- | < 20 | -- | -- | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | **1100** | -- | -- | -- | **1,250** | **4,370** | **422** | **2,270** | **149** | **2,300** | **2,600** | **2,200** | **470** | **2,800** | **3,510** | **3,040** | **3,910** | **4,170** | **2,870** | **3,850** | **4,120** | **3,940** | **4,060** | **3,080** | **4,210** | **2,600** | **3,550** | **3,940** | **4,130** | **4,400** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | -- | -- | -- | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 10.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 10 | < 10 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | -- | < 10 | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Mercury | µg/L | 2* | 2* | -- | <0.02 | -- | -- | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 40 | -- | -- | -- | -- | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Nickel | µg/L | 100 | 2,000 | -- | < 20 | -- | -- | -- | **58.4** | **197** | **39.8** | < 20 | **27.2** | **20** | < 40 | < 40 | < 40 | < 40 | < 20.0 | < 20.0 | < 20.0 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 0.20 | -- | -- | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | **25.4** | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10 | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **15** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 17 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 2 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-25D | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/12/15 | 02/16/15 | 08/04/14 | 02/18/14 | 08/05/13 | 02/04/13 | 11/06/12 | 08/07/12 | 05/14/12 | 02/07/12 | 11/18/11 | 08/08/11 | 05/02/11 | 02/16/11 | 11/09/10 | 08/09/10 | 05/10/10 | 02/23/10 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.40 | 5.60 | 5.69 | 5.69 | 4.65 | 5.53 | 5.62 | 5.09 | 5.41 | 5.22 | 5.46 | 5.49 | 5.06 | 5.40 | 5.49 | 7.14 | 5.43 | 5.59 |
| Specific Conductance | µm/cm | N/A | N/A | 446 | 371 | 461 | 461 | 441 | 408 | 416 | 484 | 464 | 426 | 403 | 489 | 485 | 418 | 471 | 502 | 470 | 493 |
| Temperature | °Celsius | N/A | N/A | 26.25 | 17.09 | 23.64 | 23.64 | 23.67 | 16.81 | 19.04 | 22.92 | 24.02 | 19.76 | 17.02 | 27.36 | 19.96 | 22.49 | 22.74 | 24.74 | 20.35 | 15.21 |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.59 | 2.67 | 0.76 | 0.76 | 3.01 | 1.83 | 1.75 | 2.72 | 2.01 | 0.57 | 0.75 | 0.64 | 0.84 | 2.63 | 1.67 | 0.87 | 0.97 | 4.26 |
| ORP | mV | N/A | N/A | 4.2 | 129.2 | 116.1 | 116.1 | -2.3 | 258.2 | 195.5 | 109.9 | 138.7 | 78.1 | 243.7 | 226.5 | -15.6 | 282.5 | 241.2 | -145.3 | 203.8 | 161.5 |
| Turbidity | NTU | N/A | N/A | 0.52 | 2.43 | 8.36 | 8.36 | 0.75 | 0.78 | 1.17 | 2.56 | 0.93 | 1.29 | 1.46 | 5.75 | 2.54 | 2.31 | 0.10 | 6.08 | 1.18 | 2.33 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia (as N | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | **3.9** | -- | **3.4** | -- | -- | -- | **4.2** | -- | -- | -- | **4.2** | -- | -- | -- | **3.7** |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | < 1.0 | -- | < 5.0 | -- | -- | -- | < 5.0 | -- | -- | -- | < 5.0 | -- | -- | -- | < 5.0 |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | < 1.0 | -- | < 1.0 | -- | -- | -- | < 1.0 | -- | -- | -- | < 1.0 | -- | -- | -- | < 1.0 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | < 0.100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | < 0.100 | -- | < 0.10 HF | -- | -- | -- | < 0.10 HF | -- | -- | -- | < 0.010 | -- | -- | -- | < 0.010 |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | **91** | -- | < 0.10 | -- | -- | -- | < 0.10 | -- | -- | -- | < 0.010 | -- | -- | -- | < 0.010 |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | < 1.0 | -- | **76** | -- | -- | -- | **1.6** | -- | -- | -- | **2.1** | -- | -- | -- | **0.93** |
| Methane | mg/L | N/A | N/A | -- | -- | -- | < 4 | -- | < 0.58 | -- | -- | -- | < 0.58 | -- | -- | -- | <0.58 | -- | -- | -- | <0.19 |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | **20** | -- | **18** | -- | -- | -- | **5.6** | -- | -- | -- | **4.4** | -- | -- | -- | **3.8** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | **6.6** | -- | **6.2** | -- | -- | -- | **1.8** | -- | -- | -- | **1.4** | -- | -- | -- | **1.3** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | < 0.50 | < 10 | < 10 | < 10 | < 10 | < 0.19 | < 0.20 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Acenaphthylene | µg/L | 470 | 3,100 | < 1.0 | < 10 | < 10 | < 10 | < 10 | < 0.19 | < 0.20 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Anthracene | µg/L | 4,700 | 31,000 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 0.19 | < 0.20 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.19 | < 0.20 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.19 | < 0.20 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.19 | < 0.20 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 0.19 | < 0.20 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 0.19 | < 0.20 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 0.19 | < 0.20 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.19 | < 0.20 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | < 10 | < 10 | < 10 | < 10 | < 10 | < 1.9 | < 2.0 | < 2.0 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 0.19 | < 0.20 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluorene | µg/L | 1,000* | 4,100 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 0.19 | < 0.20 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.19 | < 0.20 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 10 | < 10 | < 10 | < 10 | < 10 | < 1.9 | < 2.0 | < 2.0 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | < 10 | < 10 | < 10 | < 10 | < 10 | < 1.9 | < 2.0 | < 2.0 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Naphthalene | µg/L | 20* | 20* | < 0.50 | < 10 | < 10 | < 10 | < 10 | < 0.19 | < 0.20 | < 0.20 | < 0.21 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | <9.4 |
| Phenanthrene | µg/L | 470 | 3,100 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 0.19 | < 0.20 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Phenol | µg/L | 9,390 | 61,000 | < 10 | < 10 | < 10 | < 10 | < 10 | < 0.97 | < 0.99 | < 1.0 | < 1.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 0.19 | < 0.20 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Arsenic | µg/L | 50* | 50* | < 50 | < 50 | < 50 | < 50 | < 50 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Barium | µg/L | 2,000 | 7,200 | **3,790** | **3,500** | **3,960** | **3,700** | **3,150** | **3,800** | **3,700** | **4,100** | **3,600** | **4,200** | **4,000** | **3,700** | **4,000** | **3,500** | -- | -- | -- | **3,900** |
| Beryllium | µg/L | 31 | 200 | < 10 | < 10 | < 10 | < 10 | < 10 | < 4.0 | **5.7** | < 4.0 | **5.3** | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10 | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | < 20 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 20 | < 20 | < 20 | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | -- | -- | -- | < 40 |
| Zinc | µg/L | 4,700 | 31,000 | < 20 | **29.2** | < 20.0 | **29.3** | < 20.0 | < 20 | **25** | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Cyanide | µg/L | 310 | 2,000 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | -- | -- | -- | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-26D | | | | | MW-27D | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/22/17 | 08/23/16 | 04/11/16 | 03/01/05 | 03/05/04 | 02/21/17 | 08/23/16 | 04/05/16 | 08/11/15 | 04/30/15 | 03/01/05 | 12/15/04 | 10/04/04 | 06/10/04 | 03/04/04 | 12/17/03 | 09/09/03 | 06/12/03 | 03/12/03 | 12/11/02 | 09/19/02 | 11/09/01 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 10.22 | 11.70 | 11.89 | 12.05 | 11.81 | 6.46 | 6.26 | 6.52 | 6.80 | 7.16 | 6.32 | 7.18 | 6.06 | 6.28 | 6.34 | 6.12 | 5.29 | 6.35 | 6.32 | 6.09 | 6.27 | 9.24 |
| Specific Conductance | µm/cm | N/A | N/A | 234.20 | 1903.9 | 2,170 | 2,066 | 2,362 | 215.9 | 209.8 | 200 | 254 | 266 | 182 | 206 | 213 | 242 | 209 | 335 | 212 | 202 | 222 | 190 | 219 | 230 |
| Temperature | °Celsius | N/A | N/A | 21.46 | 25.40 | 16.6 | 17.67 | 18.69 | 19.5 | 22.00 | 19.73 | 25.40 | 18.9 | 18.96 | 20.18 | 21.34 | 24.06 | 21.77 | 20.85 | 23.16 | 21 | 20.12 | 20.44 | 21.07 | 19.98 |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.26 | 0.40 | 2.22 | 1.38 | 1.22 | 0.11 | 1.00 | 0.42 | 1.29 | 3.7 | 1.29 | 0.21 | 0.05 | 1.78 | 0.45 | 0.48 | 0.32 | 0.38 | 0.12 | 0.18 | 0.13 | 0.29 |
| ORP | mV | N/A | N/A | 35.90 | -70.6 | 13.3 | -444.4 | 8.6 | -13.1 | 38.6 | -3.0 | -14.5 | -14.8 | -13.1 | -130.6 | -19.6 | -36.8 | 44.0 | -101.4 | -74.3 | -59 | -29.6 | 2.3 | -31.9 | -14.5 |
| Turbidity | NTU | N/A | N/A | 8.01 | 1.6 | 4.36 | 2.95 | 1.41 | 5.26 | 4.2 | 8.77 | 1.03 | 2.97 | 0.72 | 0.53 | 0.92 | 1.80 | 2.72 | 1.81 | 3.27 | 0.0 | 1.2 | 0.0 | 0.0 | 2.06 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia (as N | mg/L | N/A | N/A | -- | -- | -- | **0.25** | -- | -- | -- | -- | -- | -- | < 0.20 | **0.23** | **0.26** | **0.29** | < 0.20 | < 0.20 | **0.39** | **0.327** | **0.336** | **0.260** | < 0.200 | < 0.200 |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | < 0.0500 | -- | -- | -- | -- | -- | -- | < 0.500 | < 0.0500 | < 0.0500 | < 0.5 | < 0.250 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.050 | **0.561** | **0.091** |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | **5.88** | -- | -- | -- | -- | -- | -- | **3.25** | **3.49** | **5.24** | **3.13** | **4.05** | **4.21** | **3.62** | **3.06** | **3.43** | **3.18** | **3.78** | **4.12** |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | **1.5** | -- | -- | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | < 0.0050 | -- | -- | -- | -- | -- | -- | **1.40** | **1.41** | **1.48** | **1.5** | **1.48** | **1.52** | **1.51** | **1.49** | **1.51** | **1.47** | **1.4** | **1.35** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | **0.0351** | **0.0067** | -- | -- | -- | -- | -- | **1.44** | **1.44** | **1.48** | **1.5** | **1.5** | **1.48** | **1.53** | **1.49** | **1.52** | **1.55** | **1.32** | **1.26** |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | < 0.1 | -- | -- | -- | -- | -- | -- | **3.0** | **3.1** | **3.0** | **5.4** | **3.5** | **1.4** | **< 2.5** | **2.4** | **2.6** | **1.88** | **2.21** | **1.66** |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | **0.126** | < 0.1 | -- | -- | -- | -- | -- | **3.04** | **2.95** | **2.73** | **2.67** | **2.87** | **2.37** | **2.86** | **2.31** | **2.5** | **2.92** | **2.07** | **1.97** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | < 0.60 | -- | -- | -- | -- | -- | -- | **62** | **67** | **61** | **68** | **72** | **65** | **59** | **72** | **75** | **67** | **68** | **42** |
| Methane | mg/L | N/A | N/A | -- | -- | -- | **140** | -- | -- | -- | -- | -- | -- | **220** | **270** | **300** | **120** | **3.8** | **5.6** | **0.66** | **220** | **280** | **0.75** | **96** | **33** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | **22** | -- | -- | -- | -- | -- | -- | **26** | **31** | **24** | **20** | **31** | **26** | **20** | **23** | **25** | **19** | **25** | **18** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | **3.6** | -- | -- | -- | -- | -- | -- | **1.7** | **3.0** | **1.4** | **1.0** | **1.6** | **1.5** | **2.4** | **1.8** | **1.2** | **6.8** | **7.7** | **1.9** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1700 | <5.0 | <5.0 | < 5.0 | -- | -- | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Naphthalene | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | <0.50 | -- | < 10 | < 10 | <0.50 | <0.50 | < 0.50 | < 0.50 | < 0.50 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | <1.0 | -- | < 10 | < 10 | <1.0 | <1.0 | < 1.0 | < 1.0 | < 1.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31, 000 | <0.050 | <0.050 | -- | < 10 | < 10 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | -- | -- | -- | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | -- | -- | -- | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | -- | -- | -- | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | -- | -- | -- | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | -- | -- | -- | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | <0.050 | -- | -- | -- | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | -- | -- | -- | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | <10 | <10 | -- | < 10 | < 10 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | -- | < 10 | < 10 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | -- | < 10 | < 10 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | -- | -- | -- | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | -- | < 10 | < 10 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | -- | < 10 | < 10 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | <0.50 | < 5.0 | < 10 | < 10 | <0.50 | <0.50 | < 0.50 | < 0.50 | < 0.50 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | <0.050 | -- | < 10 | < 10 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | -- | < 10 | < 10 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | <0.050 | <0.050 | -- | < 10 | < 10 | <0.050 | 0.17 | < 0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **12** | < 10 | < 10 | < 10 | < 10 | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 40 | < 40 | -- | < 20 | < 20 | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | < 50 | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | **1,340** | **1,740** | **1,450** | **1,720** | -- | **934** | **961** | **813** | **813** | **869** | **862** | **878** | **865** | **954** | **904** | **921** | **600** | **910** | **968** | **825** | **859** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | < 50 | < 50 | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | <10 | **12.9** | < 10 | < 10 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 20 | < 20 | < 20 | < 20 | -- | **37.5** | **23** | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | < 20 | < 20 | < 20 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | **22.7** | < 20 | < 20 | < 20 | < 20 | **22** | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.5 | < 0.5 | -- | < 0.20 | < 0.20 | < 0.20 | <0.20 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10 | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-27DD | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 04/30/15 | 03/01/05 | 12/15/04 | 10/04/04 | 06/10/04 | 03/04/04 | 12/17/03 | 09/10/03 | 06/12/03 | 03/13/03 | 12/12/02 | 09/19/02 | 11/9/2001 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 7.24 | 7.44 | 7.22 | 7.48 | 7.25 | 9.74 | 7.06 | 6.91 | 9.53 | 7.22 | 7.67 | 10.59 | 7.62 |
| Specific Conductance | µm/cm | N/A | N/A | 602 | 507 | 515 | 575 | 604 | 481 | 864 | 465 | 525 | 564 | 516 | 663 | 548 |
| Temperature | °Celsius | N/A | N/A | 19.02 | 19.59 | 20.32 | 21.87 | 21.58 | 20.20 | 20.53 | 21.42 | 22.68 | 20.19 | 19.78 | 21.36 | 21.91 |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.52 | 1.39 | 0.39 | 0.21 | 0.12 | 0.62 | 0.35 | 0.83 | 0.09 | 0.18 | 0.22 | 0.35 | 1.70 |
| ORP | mV | N/A | N/A | -82.7 | -144.2 | -220.5 | -168.5 | -141.5 | -9.1 | -207.3 | -190.2 | -204.5 | -159.1 | -215.3 | -40.6 | -122.1 |
| Turbidity | NTU | N/A | N/A | 16.9 | 2.83 | 3.0 | 5.8 | 4.30 | 1.18 | 0.00 | 6.81 | 0.5 | 49 | 1.40 | 8.50 | 4.64 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia (as N) | mg/L | N/A | N/A | -- | **0.22** | **0.32** | **0.37** | **0.48** | **1.01** | **0.23** | **0.47** | **0.699** | **0.379** | **0.345** | **0.315** | **0.343** |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | < 0.500 | < 0.0500 | < 0.0500 | < 0.5 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.0500 | < 0.0500 |
| Sulfate | mg/L | N/A | N/A | -- | **41.1** | **1.21** | **38.9** | **28.5** | **3.40** | **37.2** | **35.3** | **28.6** | **38.6** | **43.0** | **46.2** | **37.3** |
| Sulfide | mg/L | N/A | N/A | -- | **1.5** | < 1.0 | < 1.0 | < 1.0 | 1.1 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.00 | < 1.00 | < 1.00 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | **0.862** | **0.826** | **0.915** | **0.882** | **0.0166** | **0.932** | **0.687** | **0.294** | **0.901** | **0.908** | **0.856** | **0.805** |
| Total Manganese | mg/L | N/A | N/A | -- | **0.853** | **0.857** | **0.913** | **0.905** | **0.0537** | **0.950** | **0.673** | **0.298** | **0.971** | **0.954** | **0.811** | **0.795** |
| Ferrous Iron | mg/L | N/A | N/A | -- | **3.4** | **4.1** | **4.5** | **6.3** | < 0.1 | **2.9** | **1.7** | **0.1** | **4.56** | **4.08** | **2.67** | **2.03** |
| Total Iron | mg/L | N/A | N/A | -- | **3.55** | **4.63** | **3.80** | **3.72** | < 0.1 | **3.73** | **2.10** | **0.209** | **4.96** | **3.96** | **3.98** | **2.22** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | **8.9** | **12** | **13** | **11** | < 0.6 | **15** | **3.9** | < 0.60 | **14** | **14** | **0.60** | **6.0** |
| Methane | mg/L | N/A | N/A | -- | **5.3** | **5.7** | **4.1** | **6.6** | **3.4** | **5.8** | **8.8** | **5.3** | **5.2** | **4.6** | **2.5** | **2.9** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | **24** | **19** | **18** | **20** | **22** | **20** | **22** | **19** | **23** | **18** | **20** | **17** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | **3.9** | **1.0** | **0.91** | **0.83** | **2.0** | **1.2** | **3.0** | **1.0** | **1.1** | **7.3** | **7.2** | **14** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5.0* | 9 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1700 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Naphthalene | µg/L | 31,000 | 200,000 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31, 000 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | < 0.050 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | < 0.050 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | < 0.10 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 10 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 10 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | < 10 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | < 0.10 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | < 0.050 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | **544** | **423** | **447** | **424** | **421** | **205** | **429** | **337** | **278** | **424** | **407** | **342** | **273** |
| Beryllium | µg/L | 31 | 200 | < 10 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10 | < 10 | < 10 | < 10 | < 10 | **26** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | < 20 | < 20 | < 20 | < 20 | < 20 | **39.2** | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | **64** | **25** | **18** | **55** | < 10 | < 10 | **55** | < 10 | < 10 | **39** | < 10 | **39** | **37** |

Notes:
**Analyte was detected above laboratory detection limit**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-108D | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2/22/2017 | 4/8/2016 | 2/17/2015 | 8/5/2014 | 2/17/2014 | 02/06/13 | 02/07/12 | 02/23/11 | 02/23/10 | 08/12/09 | 03/02/05 | 12/16/04 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 7.70 | 7.04 | 6.96 | 6.92 | 7.01 | 6.73 | 5.22 | 6.47 | 6.51 | 8.89 | 8.21 | 10.15 |
| Specific Conductance | µm/cm | N/A | N/A | 151.60 | 200 | 140 | 158 | 151 | 151 | 426 | 115 | 111 | 141 | 169 | 246 |
| Temperature | °Celsius | N/A | N/A | 22.45 | 20.92 | 19.07 | 24.23 | 20.99 | 21.85 | 19.76 | 20.30 | 19.35 | 25.18 | 21.11 | 22.59 |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.30 | 0.54 | 2.00 | 1.68 | 2.16 | 0.65 | 0.57 | 2.19 | 3.67 | 5.94 | 0.87 | 0.58 |
| ORP | mV | N/A | N/A | -149.30 | -66.4 | 86.3 | 27.8 | 76.1 | -76.5 | 78.1 | 150.10 | 155.70 | 32.6 | -191.4 | -141.1 |
| Turbidity | NTU | N/A | N/A | 0.90 | 13.9 | 2.11 | 0.82 | 0.43 | 0.31 | 1.29 | 3.42 | 0.62 | 0 | 1.64 | 6.41 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 | < 0.20 |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | **0.43** | < 0.050 | **4.2** | < 0.050 | < 0.050 | < 0.050 | < 0.0500 | < 0.0500 |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | **2.6** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **2.73** | **4.31** |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | **1.60** | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **0.198** | **0.0439** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | < 0.100 | -- | -- | -- | -- | -- | **0.193** | **0.0984** |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | **0.139** | < 0.10 HF | < 0.10 HF | < 0.010 | < 0.010 | < 0.010 | **0.3** | **0.1** |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | < 5.0 | **0.29** | < 0.10 | **0.22** | < 0.010 | **0.330** | **0.360** | **0.446** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | < 1.0 | **7.2** | **1.6** | **0.18** | **0.16** | < 0.050 | **0.71** | < 0.60 |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | < 4 | **70** | < 0.58 | <0.58 | <0.19 | **4.1** | **69** | **240** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | **22** | -- | **5.6** | **4.7** | **4.0** | **4.8** | **18** | **17** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | **12** | **7.0** | **1.8** | **1.6** | **1.4** | **1.7** | **1.2** | **1.5** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | < 0.50 | < 10 | < 10 | < 10 | < 0.25 | -- | -- | -- | -- | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | < 1.0 | < 10 | < 10 | < 10 | < 0.25 | -- | -- | -- | -- | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31,000 | <0.050 | < 0.050 | < 10 | < 10 | < 10 | < 0.25 | -- | -- | -- | -- | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | **0.085** | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.25 | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.25 | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.25 | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | < 0.10 | < 10 | < 10 | < 10 | < 0.25 | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | **0.052** | < 0.050 | < 10 | < 10 | < 10 | < 0.25 | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | **0.081** | < 0.050 | < 10 | < 10 | < 10 | < 0.25 | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.25 | -- | -- | -- | -- | -- | -- |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | < 10 | < 10 | < 10 | < 10 | < 2.5 | -- | -- | -- | -- | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | < 0.10 | < 10 | < 10 | < 10 | < 0.25 | -- | -- | -- | -- | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | < 0.10 | < 10 | < 10 | < 10 | < 0.25 | -- | -- | -- | -- | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.25 | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | < 10 | < 10 | < 10 | < 10 | < 2.5 | -- | -- | -- | -- | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | < 10 | < 10 | < 10 | < 10 | < 2.5 | -- | -- | -- | -- | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | < 0.50 | < 10 | < 10 | < 10 | < 0.25 | < 5.0 | < 5.0 | <9.9 | <9.4 | < 10 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | < 0.050 | < 10 | < 10 | < 10 | < 0.25 | -- | -- | -- | -- | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | < 10 | < 10 | < 10 | < 10 | < 1.2 | -- | -- | -- | -- | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | <0.050 | < 0.050 | < 10 | < 10 | < 10 | < 0.25 | -- | -- | -- | -- | < 10 | < 10 |
| **Inorganic Constituents** | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | < 50 | < 20 | -- | -- | -- | -- | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | **783** | **631** | **632** | **465** | **600** | **4,200** | **540** | **470** | **620** | **513** | **416** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | < 10 | < 10 | < 4.0 | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5 | **6.6** | **13.1** | **9.3** | < 5.0 | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | **44** | < 20 | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | **43.3** | **50.1** | **113** | < 20 | -- | -- | -- | -- | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-110D | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/23/17 | DUP-4 | 08/24/16 | 8/16 DUP | 04/07/16 | 4/16 DUP | 08/13/15 | 08/15 DUP | 02/16/15 | 08/06/14 | 02/20/14 | 08/07/13 | 08/13 DUP | 02/08/13 | 02/13 DUP | 11/07/12 | 11/12 DUP |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.30 | | 6.22 | | 6.43 | | 6.14 | | 6.18 | 6.21 | 6.28 | 5.07 | | 6.27 | | 6.32 | |
| Specific Conductance | µm/cm | N/A | N/A | 518.6 | | 600 | | 501 | | 565 | | 495 | 533 | 495 | 492 | | 503 | | 503 | |
| Temperature | °Celsius | N/A | N/A | 23.35 | | 25.20 | | 20.39 | | 26.45 | | 17.20 | 27.75 | 19.80 | 25.46 | | 20.28 | | 23.88 | |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.19 | | 0.44 | | 0.19 | | 0.38 | | 1.68 | 0.52 | 0.67 | 0.71 | | 1.38 | | 0.2 | |
| ORP | mV | N/A | N/A | -48.50 | | -69.1 | | -60.20 | | -146.7 | | -145.9 | -52.6 | -34.6 | -142.9 | | -40.4 | | -113.2 | |
| Turbidity | NTU | N/A | N/A | 5.95 | | 9.4 | | 8.30 | | 2.42 | | 9.26 | 2.51 | 0.66 | 0.28 | | 9.8 | | 0.95 | |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **--** | -- | -- | -- | -- | -- | -- | -- | -- |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | < 0.25 | -- | < 0.25 | -- | -- | **0.34 *** | < 0.050 | -- | -- |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **1.1** | -- | < 1.0 | -- | -- | **7.0** | < 5.0 | -- | -- |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | < 1.00 | -- | < 1.0 | -- | -- | < 1.0 | < 1.0 | -- | -- |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **5.00** | -- | -- | -- | -- | -- | -- |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **5.60** | -- | **5.89** | -- | -- | 4.6 HF | 4.8 HF | -- | -- |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **6.61** | -- | **140** | -- | -- | **6.8** | **4.4** | -- | -- |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **150** | -- | < 1.0 | -- | -- | **120** | **66** | -- | -- |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **960** | -- | **770** | -- | -- | **620** | **520** | -- | -- |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **21** | -- | **17** | -- | -- | -- | -- | -- | -- |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **3.9** | -- | **3.0** | -- | -- | **2.8** | **5.7** | -- | -- |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | **70** | **63** | **86** | **88** | **96** | **94** | **120** | **120** | **340** | **480** | **480** | **580** | **620** | **150** | **150** | **430** | **280** |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 40 | < 40 | < 40 | < 40 |
| Ethylbenzene | µg/L | 700* | 2,300 | **150** | **160** | **280** | **240** | **290** | **280** | **420** | **450** | **560** | **620** | **540** | **390** | **460** | **310** | **320** | **550** | **440** |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **5.3** | **5.1** | **5.2** | **5.7** | < 20 | < 20 | < 20 | < 20 |
| Total Xylenes | µg/L | 31,000 | 200,000 | **5.7** | **6.0** | **5.2** | <5.0 | **7.0** | **6.8** | **11** | **11** | **47** | **60** | **48** | **64** | **45** | < 40 | < 40 | < 40 | < 40 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | **46** | **55** | **80** | **80** | **76** | **60** | **77** | **70** | **97** | **120** | **81** | **100** | **96** | **81** | **17** | **89** | **99** |
| Acenaphthylene | µg/L | 470 | 3,100 | **1.9** | **1.8** | **2.7** | **3.0** | **2.8** | < 1.0 | **3.0** | **2.4** | < 10 | < 10 | < 10 | < 10 | < 10 | **3.9** | **1.9** | **4.5** | **4.4** |
| Anthracene | µg/L | 4,700 | 31,000 | **6.2** | **5.5** | **8.3** | **8.9** | **7.1** | **6.3** | **8.1** | **5.9** | < 10 | < 10 | < 10 | < 10 | < 10 | **6.4** | **0.34** | **6.8** | **6.7** |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | **0.20** | **0.17** | **0.30** | **0.31** | **0.20** | **0.15** | **0.32** | **0.23** | **0.20** | **0.40** | **0.18** | **0.27** | **0.3** | < 1.9 | < 1.9 | < 2.0 | < 0.20 |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.20 | < 1.9 | < 1.9 | < 2.0 | < 0.20 |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.20 | < 1.9 | < 1.9 | < 2.0 | < 0.20 |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 1.9 | < 1.9 | < 2.0 | < 0.20 |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 10 | < 1.9 | < 1.9 | < 2.0 | < 0.20 |
| Chrysene | µg/L | 117 | 392 | **0.16** | **0.14** | **0.25** | **0.27** | **0.18** | **0.13** | **0.23** | **0.17** | < 10 | < 10 | < 10 | < 10 | < 10 | < 1.9 | < 1.9 | < 2.0 | < 0.20 |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.20 | < 1.9 | < 1.9 | < 2.0 | < 0.20 |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | <10 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 19 | < 19 | < 20 | < 2.0 |
| Fluoranthene | µg/L | 1,000* | 4,100 | **4.5** | **4.1** | **6.3** | **6.6** | **4.4** | **4.0** | **6.5** | **4.8** | < 10 | < 10 | < 10 | < 10 | < 10 | **5.3** | **2.1** | **5.2** | **5.5** |
| Fluorene | µg/L | 1,000* | 4,100 | **15** | **19** | **28** | **26** | **21** | **19** | **19** | **16** | **33** | **40** | **25** | **32** | **31** | **25** | **14** | **28** | **29** |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.20 | < 1.9 | < 1.9 | < 2.0 | < 0.20 |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 19 | < 19 | < 20 | < 2.0 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 19 | < 19 | < 20 | < 2.0 |
| Naphthalene | µg/L | 20* | 20* | **760** | **1,100** | **3,100** | **3,100** | **1,600** | **1300 E** | **2,200** | **1,500** | **3,400** | **4,400** | **1,100** | **4,400** | **4,200** | **2,300** | **15** | **5,000** | **1,400** |
| Phenanthrene | µg/L | 470 | 3,100 | **26** | **32** | **50** | **48** | **40** | **33** | **43** | **37** | **53** | **69** | **40** | **59** | **60** | **42** | **42** | **49** | **58** |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 9.7 | < 9.7 | < 10 | **2.4** |
| Pyrene | µg/L | 1,000* | 3,100 | **5.6** | **5.1** | **7.9** | **8.2** | **5.9** | **5.2** | **8.3** | **6.1** | < 10 | < 10 | < 10 | < 10 | < 10 | **8.1** | **2.2** | **6.4** | **6.1** |
| **Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Arsenic | µg/L | 50* | 50* | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 20 | < 20 | < 20 | < 20 |
| Barium | µg/L | 2,000 | 7,200 | -- | -- | **3510** | **2900** | **2510** | **2490** | **2800** | **3780** | **4007** | **4850** | **4770** | **5100** | **5210** | **3200** | **800** | **5000** | **4800** |
| Beryllium | µg/L | 31 | 200 | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 |
| Cadmium | µg/L | 7.8 | 51 | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chromium | µg/L | 100 | 310 | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 |
| Lead | µg/L | 15* | 15* | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | -- | **122** | **120** | **177** | **181** | **104** | **103** | **107** | **110** | **125** | **138** | **140** | **160** | < 40 | **160** | **160** |
| Zinc | µg/L | 4,700 | 31,000 | -- | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | -- | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | -- | **14** | **12** | < 10.0 | **0.020** | **0.015** | **0.012** | < 0.010 | **0.024** | **0.021** | **18** | **18** | **20** | **32** | **24** | **25** |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-110D (continued) | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/09/12 | 05/17/12 | 02/15/12 | 02/12 DUP | 11/17/11 | 08/10/11 | 05/05/11 | 02/21/11 | 11/10/10 | 08/10/10 | 05/11/10 | 02/24/10 | 02/10 DUP | 08/12/09 | 06/07/06 | 03/09/06 | 12/22/05 | 09/30/05 | 03/02/05 | 03/05 DUP | 12/16/04 | 09/30/04 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.62 | 6.57 | 6.2 | | 6.32 | 6.31 | 6.17 | 6.23 | 6.07 | 6.12 | 5.86 | 6.13 | | 6.05 | 6.13 | 6.16 | 6.38 | 6.17 | 6.24 | | 5.62 | 6.10 |
| Specific Conductance | µm/cm | N/A | N/A | 548 | 527 | 488 | | 547 | 577 | 467 | 489 | 504 | 508 | 506 | 432 | | 507 | 521 | 475 | 449 | 524 | 523 | | 509 | 472 |
| Temperature | °Celsius | N/A | N/A | 26.84 | 24.06 | 20.97 | | 21.39 | 30.14 | 19.43 | 21.38 | 24.66 | 26.84 | 23.54 | 16.26 | | 26.32 | 24.43 | 21.19 | 20.93 | 25.21 | 21.1 | | 22.39 | 24.79 |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.17 | 0.83 | 2.11 | | 0.48 | 0.25 | 0.86 | 0.53 | 0.11 | 19.74 | 0.72 | 1.67 | | 3.46 | 0.24 | 0.28 | 0.61 | 0.34 | 1.42 | | 0.16 | 0.04 |
| ORP | mV | N/A | N/A | -47.8 | -61.2 | -65.8 | | -59 | -81.8 | -69.0 | -74.4 | -108.6 | -91.1 | -45.2 | -102.3 | | -131.6 | -96.1 | -87.0 | -55.6 | -99.3 | -112.8 | | -150.9 | -234.3 |
| Turbidity | NTU | N/A | N/A | 7.21 | 4.63 | 3.93 | | 4.6 | 29.0 | 8.59 | 7.58 | 0.24 | 2.42 | 21.8 | 0.61 | | 3.19 | 1.02 | 0.90 | 4.29 | 2.10 | 1.62 | | 5.32 | 2.98 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | < 0.050 | < 0.050 | -- | -- | -- | < 0.050 | -- | -- | -- | < 0.050 | < 0.050 | 0.19 | -- | -- | -- | -- | < 0.500 | < 0.500 | < 0.0500 | < 0.0500 |
| Sulfate | mg/L | N/A | N/A | -- | -- | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | **2.38** | < 1.00 | **1.97** | **4.95** |
| Sulfide | mg/L | N/A | N/A | -- | -- | 1.0 | < 1.0 | -- | -- | -- | < 1.0 | -- | -- | -- | < 1.0 | < 1.0 | < 1.0 | -- | -- | -- | -- | **1.3** | < 1.0 | < 1.0 | < 1.0 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **0.760** | **0.762** | **0.584** | **1.36** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **0.754** | **0.748** | **0.635** | **1.36** |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | 5.3 HF | 4.9 HF | -- | -- | -- | **1.0** | -- | -- | -- | **3** | **2.8** | **1.7** | -- | -- | -- | -- | **3.8** | **3.7** | **3.8** | **5.3** |
| Total Iron | mg/L | N/A | N/A | -- | -- | **7.3** | **7.5** | -- | -- | -- | **6.7** | -- | -- | -- | **4.1** | **4.3** | **3.6** | -- | -- | -- | -- | **4.09** | **4.07** | **3.98** | **5.51** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | **2.3** | **2.3** | -- | -- | -- | **1.6** | -- | -- | -- | **1.8** | **1.8** | **1.5** | -- | -- | -- | -- | **140** | **150** | **170** | **160** |
| Methane | mg/L | N/A | N/A | -- | -- | **480** | **480** | -- | -- | -- | **720** | -- | -- | -- | **720** | **780** | **230** | -- | -- | -- | -- | **1,500** | **1,700** | **2700** | **1,500** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | **4.8** | **5.5** | -- | -- | -- | **4.1** | -- | -- | -- | **4** | **4.1** | **4.1** | -- | -- | -- | -- | **17** | **18** | **16** | **16** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | **1.5** | **1.6** | -- | -- | -- | **1.4** | -- | -- | -- | **1.2** | **1.3** | **1.4** | -- | -- | -- | -- | **3.4** | **2.8** | **0.88** | **0.86** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | **380** | **400** | < 250 | < 250 | <250 | **370** | **290** | **310** | **430** | **450** | **610** | **620** | **580** | < 25 | **790** | **1,100** | **1,200** | **1,900** | **1,900** | **1,900** | **1,600** | **950** |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 40 | < 40 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | **480** | **480** | **340** | **340** | <250 | <250 | <250 | 350 | -- | -- | -- | **490** | **460** | **440** | **710** | **770** | **350** | **950** | **900** | **950** | **900** | **820** |
| Toluene | µg/L | 1,000* | 1,100 | < 20 | < 20 | <250 | <250 | <250 | <250 | <250 | <250 | -- | -- | -- | < 50 | < 50 | <25 | **18** | **31** | **79** | **100** | **220** | **230** | **170** | **71** |
| Total Xylenes | µg/L | 31,000 | 200,000 | < 40 | < 40 | <250 | <250 | <250 | <250 | <250 | <250 | -- | -- | -- | **91** | **82** | **29** | **330** | **370** | **370** | **490** | **480** | **520** | **570** | **410** |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | **100** | **110** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **110** | **100** | **120** | **83** |
| Acenaphthylene | µg/L | 470 | 3,100 | **5.3** | **6.7** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **43** | **42** | **30** | **49** |
| Anthracene | µg/L | 4,700 | 31,000 | **9.5** | **12** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **11** | **11** | **10** | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | < 1.9 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | < 1.9 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | < 1.9 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 1.9 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 1.9 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | < 1.9 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | < 1.9 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | < 19 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | **7.7** | **8.9** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | **35** | **38** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **44** | **42** | **47** | **49** |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | < 1.9 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 19 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | < 19 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | **1,900** | **4,100** | **4,500** | **4,600** | **2,700** | **2,600** | **2,700** | **5,500** | **6,400** | **6,800** | **4,900** | **3,600** | **4,100** | **4,000** | **4,400** | **4,600** | **3,000** | **6,300** | **6,000** | **5,500** | **7,200** | **4,400** |
| Phenanthrene | µg/L | 470 | 3,100 | **69** | **71** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **73** | **70** | **74** | **64** |
| Phenol | µg/L | 9,390 | 61,000 | < 9.6 | < 9.9 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | **13** |
| Pyrene | µg/L | 1,000* | 3,100 | **9.9** | **8.7** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 | < 10 |
| **Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 40 | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | **5,000** | **4,600** | **4,100** | **4,200** | **4,200** | **5,500** | **4,300** | **5,000** | -- | -- | -- | **5,300** | **5,400** | **6,500** | **6,740** | **6,600** | **6,740** | **7,270** | **6,120** | **6,050** | **7,090** | **4,060** |
| Beryllium | µg/L | 31 | 200 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | < 20 | < 20 | < 20 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | **160** | **170** | **170** | **180** | **170** | **190** | **200** | **200** | -- | -- | -- | **230** | **230** | **280** | **121** | **130** | **106** | **97** | **24.6** | **24.7** | **< 20** | **< 20** |
| Zinc | µg/L | 4,700 | 31,000 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 20 | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | **19** | **23** | **15** | **22** | -- | -- | -- | **24** | -- | -- | -- | **25** | **24** | **12** | **42** | **55** | **15** | **41** | **48** | **50** | **115** | **27** |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-111D | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 8/13/2015 | 8/7/2014 | 11/08/12 | 11/18/11 | 08/13/09 | 08/09 DUP | 06/07/06 | 06/06 DUP | 03/10/06 | 03/06 DUP | 12/22/05 | 09/30/05 | 09/05 DUP | 03/02/05 | 12/16/04 | 09/30/04 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.21 | 6.48 | 6.62 | 6.48 | 6.47 | | 6.42 | | 6.58 | | 6.60 | 6.41 | | 6.67 | 6.51 | 6.51 |
| Specific Conductance | µm/cm | N/A | N/A | 542 | 559 | 547 | 540 | 598 | | 691 | | 772 | | 618 | 683 | | 673 | 739 | 719 |
| Temperature | °Celsius | N/A | N/A | 26.85 | 27.81 | 21.46 | 22.4 | 24.99 | | 22.58 | | 20.87 | | 22.81 | 25.35 | | 20.05 | 19.5 | 24.06 |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.23 | 0.23 | 0.20 | 0.24 | 4.97 | | 0.49 | | 0.36 | | 0.37 | 0.22 | | 1.45 | 1.62 | 0.39 |
| ORP | mV | N/A | N/A | -204.5 | -134.3 | -151.6 | -124.3 | -184.8 | | -107.7 | | -93.1 | | -85.0 | -114.2 | | -84.4 | -102.1 | -127.5 |
| Turbidity | NTU | N/A | N/A | 5.59 | 5.64 | 0.73 | 2.40 | 2.52 | | 1.05 | | 2.86 | | 2.37 | 0.00 | | 1.24 | 6.02 | 2.8 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia (as N) | mg/L | N/A | N/A | -- | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **0.51** | **0.61** | < 0.20 |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | | -- | -- | < 0.050 | < 0.050 | -- | -- | -- | -- | -- | -- | -- | < 0.500 | < 0.0500 | < 0.0500 |
| Sulfate | mg/L | N/A | N/A | -- | | -- | -- | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | **1.85** | **1.44** | **1.67** |
| Sulfide | mg/L | N/A | N/A | -- | | -- | -- | **2.3** | **2.3** | -- | -- | -- | -- | -- | -- | -- | **1.1** | < 1.0 | < 1.0 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **1.02** | **0.941** | **0.941** |
| Total Manganese | mg/L | N/A | N/A | -- | | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **1.02** | **0.989** | **0.987** |
| Ferrous Iron | mg/L | N/A | N/A | -- | | -- | -- | < 0.010 | < 0.010 | -- | -- | -- | -- | -- | -- | -- | **4.6** | **5.4** | **4.7** |
| Total Iron | mg/L | N/A | N/A | -- | | -- | -- | **1.8** | **1.9** | -- | -- | -- | -- | -- | -- | -- | **4.54** | **4.97** | **4.72** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | | -- | -- | **0.76** | **0.88** | -- | -- | -- | -- | -- | -- | -- | **110** | **130** | **140** |
| Methane | mg/L | N/A | N/A | -- | | -- | -- | **28** | **29** | -- | -- | -- | -- | -- | -- | -- | **3,100** | **2100** | **2,600** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | | -- | -- | **5.3** | **4.5** | -- | -- | -- | -- | -- | -- | -- | **18** | **18** | **18** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | | -- | -- | **1.9** | **1.6** | -- | -- | -- | -- | -- | -- | -- | **0.78** | **3.6** | **0.97** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | **1,700** | **2,700** | **570** | **1,700** | **3,900** | **3,800** | **4,600** | **4,700** | **6,100** | **6,000** | **2,600** | **6,500** | **6,400** | **6,900** | **5,700** | **7,300** |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 5.0 | < 5.0 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | **820** | **930** | **240** | **920** | **1,300** | **1,200** | **1,200** | **1,100** | **1,600** | **1,600** | **300** | **1,200** | **1,800** | **1,500** | **1,200** | **1,400** |
| Toluene | µg/L | 1,000* | 1,100 | **380** | **1200** | **320** | **1,400** | **1,800** | **1,700** | **38** | **39** | **60** | **59** | **28** | **40** | **53** | **170** | **120** | **190** |
| Xylene | µg/L | 31,000 | 200,000 | **330** | **670** | **220** | **940** | **900** | **850** | **1,200** | **1,100** | **1,400** | **1,400** | **570** | **1,100** | **1,600** | **980** | **780** | **830** |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | **53** | **59** | **84** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **140** | **150** | **150** |
| Acenaphthylene | µg/L | 470 | 3,100 | **44** | **70** | **14** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **12** | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31,000 | **9.6** | **14** | **13** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | **0.73** | **2.0** | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | **0.15** | **1.4** | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | **0.20** | **1.2** | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 0.10 | < 10 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | **0.057** | < 10 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | **0.53** | < 10 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | < 0.10 | **0.13** | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimethylphenol | µg/L | 700* | 700* | < 10 | < 10 | < 21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | **8.2** | **16** | **11** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | **35** | **64** | **68** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **34** | **31** | **42** |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | < 0.050 | **0.62** | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 10 | < 10 | < 21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 |
| 4-Methylphenol | µg/L | 78 | 510 | < 10 | < 10 | < 21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | **3.8** | **3,000** | **1,800** | **9,300** | **5,100** | **5,300** | **4,400** | **4,300** | **3,600** | **3,600** | < 10 | **5,800** | **6,600** | **5,400** | **4,800** | **5,800** |
| Phenanthrene | µg/L | 470 | 3,100 | **58** | **92** | **100** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **39** | **37** | **46** |
| Phenol | µg/L | 9,390 | 61,000 | **15** | **11** | < 10 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **19** | < 10 | **42** |
| Pyrene | µg/L | 1,000* | 3,100 | **12** | **20** | **13** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 | < 10 | < 10 |
| **Laboratory Results - Inorganic Constituents** | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 400 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 40 | < 40 | < 40 |
| Arsenic | µg/L | 50* | 50* | < 50 | < 50 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | **1,009** | **910** | **550** | **500** | **160** | **170** | **3,470** | **3,510** | **3,410** | **3,480** | **3,430** | **3,430** | **2,720** | **2,720** | **2,730** | **2,660** |
| Beryllium | µg/L | 31 | 200 | < 10 | < 10.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 10 | < 10 | < 10 | < 10 | **10.1** | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10.0 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 20 | < 20 | **40** | **49** | < 40 | < 40 | < 10 | < 10 | < 10 | < 10 | < 20.0 | < 10 | < 10 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.5 | < 0.5 | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | **13** | **10** | **19** | -- | < 10 | 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **11** | < 10 | < 10 | **25** | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-112D | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2/22/2017 | 4/5/2016 | 2/16/2015 | 8/5/2014 | 2/17/2014 | 08/06/13 | 02/05/13 | 11/06/12 | 08/07/12 | 05/14/12 | 02/15/12 | 11/17/11 | 08/08/11 | 05/05/11 | 02/24/11 | 11/10/10 | 08/09/10 | 05/10/10 | 02/23/10 | 08/11/09 | 06/07/06 | 03/09/06 | 12/20/05 | 09/29/05 | 03/01/05 |
| **Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 9.22 | 9.70 | 9.77 | 9.12 | 8.95 | 10.26 | 10.93 | 10.75 | 9.91 | 10.59 | 10.40 | 10.72 | 10.08 | 10.67 | 10.98 | 10.43 | 8.86 | 10.83 | 11.03 | 11.43 | 11.01 | 11.09 | 11.01 | 10.60 | 6.89 |
| Specific Conductance | µm/cm | N/A | N/A | 287.40 | 301 | 306 | 304 | 288 | 296 | 390 | 366 | 382 | 389 | 318 | 372 | 391 | 426 | 355 | 327 | 435 | 427 | 407 | 536 | 558 | 585 | 422 | 464 | 489 |
| Temperature | °Celsius | N/A | N/A | 22.10 | 21.24 | 16.81 | 22.55 | 19.28 | 22.84 | 15.87 | 16.66 | 24.41 | 24.2 | 19.10 | 21.27 | 23.99 | 20.66 | 16.40 | 20.17 | 24.52 | 19.69 | 16.70 | 29.32 | 20.50 | 20.07 | 19.36 | 22.09 | 20.26 |
| Dissolved Oxygen | mg/L | N/A | N/A | 5.23 | 5.41 | 4.70 | 0.89 | 0.43 | 0.15 | 4.60 | 0.75 | 2.14 | 4.40 | 6.64 | 0.47 | 1.74 | 4.39 | 4.23 | 2.77 | 1.20 | 3.29 | 4.10 | 4.99 | 0.68 | 2.10 | 0.56 | 0.16 | 0.82 |
| ORP | mV | N/A | N/A | 71.10 | 34.9 | 146.3 | -4.2 | 40.1 | -70.3 | 101.7 | 55.7 | 7.4 | 15.3 | -70.2 | -100.9 | 9.3 | -103.2 | -32.4 | -40.3 | 61.2 | 29.3 | 5.4 | 22.6 | -102.1 | -99.0 | -92.4 | -20.3 | -423.6 |
| Turbidity | NTU | N/A | N/A | 1.43 | 6.21 | 7.99 | 1.45 | 1.22 | 1.01 | 1.43 | 1.27 | 7.20 | 2.08 | 3.29 | 4.00 | 5.06 | 9.17 | 6.89 | 3.15 | 2.37 | 1.24 | 4.92 | 0.75 | 2.98 | 2.14 | 3.16 | 16.04 | 8.78 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.20 |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | **1.0** | -- | < 0.25 | -- | **0.29** | -- | -- | -- | **0.29** | -- | -- | -- | **0.27** | -- | -- | -- | **0.32** | **0.21** | -- | -- | -- | -- | < 0.0500 |
| Sulfate | mg/L | N/A | N/A | -- | -- | **4.1** | -- | **3.1** | -- | < 5.0 | -- | -- | -- | < 5.0 | -- | -- | -- | **5.7** | -- | -- | -- | **7.3** | **7.3** | -- | -- | -- | -- | **10.6** |
| Sulfide | mg/L | N/A | N/A | -- | -- | < 1.00 | -- | < 1.0 | -- | < 1.0 | -- | -- | -- | **1.8** | -- | -- | -- | **1.2** | -- | -- | -- | < 1.0 | < 1.0 | -- | -- | -- | -- | **1.1** |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **0.287** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | < 0.100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **0.302** |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | < 0.100 | -- | < 0.100 | -- | < 0.10 HF | -- | -- | -- | < 0.10 HF | -- | -- | -- | < 0.010 | -- | -- | -- | < 0.010 | < 0.010 | -- | -- | -- | -- | **0.5** |
| Total Iron | mg/L | N/A | N/A | -- | -- | **0.266** | -- | < 5.0 | -- | < 0.10 | -- | -- | -- | **0.10** | -- | -- | -- | **0.16** | -- | -- | -- | **0.26** | **0.27** | -- | -- | -- | -- | **1.09** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | < 5.0 | -- | < 1.0 | -- | < 5.0 | -- | -- | -- | < 0.050 | -- | -- | -- | < 0.050 | -- | -- | -- | **0.14** | < 0.050 | -- | -- | -- | -- | **35** |
| Methane | mg/L | N/A | N/A | -- | -- | **6** | -- | **5** | -- | **5.4** | -- | -- | -- | < 0.58 | -- | -- | -- | <0.58 | -- | -- | -- | **4.8** | **20** | -- | -- | -- | -- | **26** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | **20** | -- | **18** | -- | **18** | -- | -- | -- | **5.2** | -- | -- | -- | **4.2** | -- | -- | -- | **3.9** | **4.5** | -- | -- | -- | -- | **19** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | **8.0** | -- | **9.6** | -- | **9.0** | -- | -- | -- | **1.9** | -- | -- | -- | **1.5** | -- | -- | -- | **1.4** | **1.6** | -- | -- | -- | -- | **2.5** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | < 0.50 | < 10 | < 10 | < 10 | < 10 | < 0.21 | < 0.22 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | < 1.0 | < 10 | < 10 | < 10 | < 10 | < 0.21 | < 0.22 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 |
| Anthracene | µg/L | 4,700 | 31,000 | <0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 0.21 | < 0.22 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.21 | < 0.22 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.21 | < 0.22 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.21 | < 0.22 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 0.21 | < 0.22 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 0.21 | < 0.22 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 0.21 | < 0.22 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.21 | < 0.22 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.1 | < 2.2 | < 1.9 | < 2.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 0.21 | < 0.22 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 0.21 | < 0.22 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.21 | < 0.22 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.1 | < 2.2 | < 1.9 | < 2.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.1 | < 2.2 | < 1.9 | < 2.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | < 0.50 | < 10 | < 10 | < 10 | < 10 | < 0.21 | < 0.22 | < 0.19 | < 0.23 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | <9.9 | <9.8 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 0.21 | < 0.22 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 1.1 | < 1.1 | < 0.95 | < 1.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | <0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 0.21 | < 0.22 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 |
| **Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 40 |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | **179** | **218** | **152** | **225** | **93.4** | **110** | **110** | **130** | **100** | **100** | **130** | **120** | **150** | **130** | -- | -- | -- | **95** | **111** | **179** | **163** | **185** | **211** | **550** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | < 10 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | < 20 | < 20 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | < 10 | < 10.0 | < 10.0 | < 10.0 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | -- | -- | -- | < 40 | < 40 | < 20.0 | < 20.0 | < 20.0 | < 10 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 20 |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **12** | < 10 | -- | -- | -- | < 10 | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-113D | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2/22/2017 | 2/17/2015 | 8/5/2014 | 2/17/2014 | 08/05/13 | 02/04/13 | 11/06/12 | 08/06/12 | 05/14/12 | 02/13/12 | 11/16/11 | 08/09/11 | 05/04/11 | 02/24/11 | 11/09/10 | 08/09/10 | 05/10/09 | 02/24/10 | 08/11/09 | 06/06/06 | 03/10/06 | 12/21/05 | 09/29/05 | 03/25/05 | 03/01/05 |
| **Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.80 | 5.63 | 6.09 | 5.92 | 6.36 | 5.76 | 5.82 | 5.64 | 5.79 | 5.71 | 5.75 | 5.81 | 5.43 | 5.79 | 5.76 | 5.33 | 5.25 | 5.73 | 6.55 | 5.68 | 5.73 | 5.85 | 6.0 | 5.87 | 5.87 |
| Specific Conductance | µm/cm | N/A | N/A | 355.70 | 354 | 349 | 353 | 357 | 362 | 363 | 366 | 363 | 295 | 351 | 368 | 369 | 321 | 356 | 360 | 352 | 363 | 368 | 373 | 374 | 321 | 370 | 357 | 385 |
| Temperature | °Celsius | N/A | N/A | 22.17 | 15.85 | 23.30 | 21.42 | 25.35 | 18.82 | 19.51 | 27.04 | 24.98 | 19.98 | 23.81 | 25.79 | 22.04 | 19.16 | 24.04 | 27.65 | 21.26 | 17.13 | 25.47 | 23.37 | 18.78 | 17.41 | 23.61 | 21.69 | 22.41 |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.20 | 1.14 | 0.41 | 7.06 | 0.14 | 0.36 | 1.30 | 1.56 | 0.84 | 5.86 | 0.70 | 0.86 | 0.31 | 1.07 | 0.15 | 0.19 | 0.62 | 2.32 | 2.89 | 0.33 | 0.46 | 1.43 | 0.20 | 0.07 | 1.01 |
| ORP | mV | N/A | N/A | 68.60 | 162.9 | 149.3 | 143.1 | 101.2 | 138.3 | 78.9 | 82.6 | -125.7 | 11.9 | 126.7 | 87.5 | -22.0 | 136.0 | 148.7 | 72.4 | 123.5 | 114.6 | -171.4 | 126.3 | 151.4 | 157.0 | 69.1 | 184.5 | 134.5 |
| Turbidity | NTU | N/A | N/A | 1.10 | 0.63 | 1.32 | 0.37 | 0.19 | 0.64 | 0.31 | 1.29 | 1.15 | 0.86 | 1.09 | 1.94 | 0.70 | 6.6 | 0.21 | 0.71 | 0.54 | 1.03 | 0.29 | 0.42 | 0.35 | 0.23 | 0.5 | 2.46 | 31.0 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **1.99** |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | < 0.25 | -- | < 0.050 | -- | -- | -- | **3.0** | -- | -- | -- | < 0.050 | -- | -- | -- | **1.2** | < 0.050 | -- | -- | -- | -- | -- | < 0.0500 |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | **46** | -- | **41** | -- | -- | -- | **52** | -- | -- | -- | **53** | -- | -- | -- | **20** | **61** | -- | -- | -- | -- | -- | **70.9** |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | < 1.0 | -- | < 1.0 | -- | -- | -- | **1.2** | -- | -- | -- | < 1.0 | -- | -- | -- | < 1.0 | < 1.0 | -- | -- | -- | -- | -- | < 1.0 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **3.22** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | < 0.100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **3.22** |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | < 0.100 | -- | 0.29 HF | -- | -- | -- | < 0.10 HF | -- | -- | -- | **0.18** | -- | -- | -- | **0.2** | **0.28** | -- | -- | -- | -- | -- | **0.3** |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | **110** | -- | **0.40** | -- | -- | -- | < 0.10 | -- | -- | -- | **0.29** | -- | -- | -- | **0.25** | **0.38** | -- | -- | -- | -- | -- | **2.86** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | < 1.0 | -- | **160** | -- | -- | -- | **2.1** | -- | -- | -- | **1.8** | -- | -- | -- | **1.9** | **1.4** | -- | -- | -- | -- | -- | **170** |
| Methane | mg/L | N/A | N/A | -- | -- | -- | **25** | -- | **32** | -- | -- | -- | < 0.58 | -- | -- | -- | **8.2** | -- | -- | -- | **25** | **37** | -- | -- | -- | -- | -- | **140** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | **19** | -- | **18** | -- | -- | -- | **4.4** | -- | -- | -- | **4.1** | -- | -- | -- | **3.8** | **4.2** | -- | -- | -- | -- | -- | **19** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | **10** | -- | **7.1** | -- | -- | -- | **1.5** | -- | -- | -- | **1.4** | -- | -- | -- | **1.3** | **1.4** | -- | -- | -- | -- | -- | **1.9** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **6.5** |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | < 10 | < 10 | < 10 | < 10 | < 0.25 | < 0.22 | < 0.22 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | < 10 | < 10 | < 10 | < 10 | < 0.25 | < 0.22 | < 0.22 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 |
| Anthracene | µg/L | 4,700 | 31,000 | **0.060** | < 10 | < 10 | < 10 | < 10 | < 0.25 | < 0.22 | < 0.22 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.25 | < 0.22 | < 0.22 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.25 | < 0.22 | < 0.22 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.25 | < 0.22 | < 0.22 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | < 10 | < 10 | < 10 | < 10 | < 0.25 | < 0.22 | < 0.22 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | < 10 | < 10 | < 10 | < 10 | < 0.25 | < 0.22 | < 0.22 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | < 10 | < 10 | < 10 | < 10 | < 0.25 | < 0.22 | < 0.22 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.25 | < 0.22 | < 0.22 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | < 10 | < 10 | < 10 | < 10 | < 2.5 | < 2.2 | < 2.2 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | < 10 | < 10 | < 10 | < 10 | < 0.25 | < 0.22 | < 0.22 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | < 10 | < 10 | < 10 | < 10 | < 0.25 | < 0.22 | < 0.22 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.25 | < 0.22 | < 0.22 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | < 10 | < 10 | < 10 | < 10 | < 2.5 | < 2.2 | < 2.2 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | < 10 | < 10 | < 10 | < 10 | < 2.5 | < 2.2 | < 2.2 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | < 10 | < 10 | < 10 | < 10 | < 0.25 | < 0.22 | < 0.22 | < 0.22 | < 5.0 | < 5.0 | < 5.0 | 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | <9.4 | <9.8 | < 10 | < 10 | < 10 | < 10 | **9.1** | **24** |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | < 10 | < 10 | < 10 | < 10 | < 0.25 | < 0.22 | < 0.22 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | < 10 | < 10 | < 10 | < 10 | < 1.3 | < 1.1 | < 1.1 | < 1.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | <0.050 | < 10 | < 10 | < 10 | < 10 | < 0.25 | < 0.22 | < 0.22 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 10 |
| **Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 40 |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | < 50 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | **75** | **80.3** | **72.7** | **72.3** | **65** | **110** | **67** | **72** | **48** | **72** | **71** | **84** | **65** | -- | -- | -- | **65** | **69** | **63.8** | **60.9** | **47** | **65.0** | -- | **87.7** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | < 10 | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | **27** | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | < 20 | < 20 | < 10 | < 10 | < 10 | < 10 | -- | **14.2** |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | < 10.0 | < 10 | < 10 | < 10 | < 10 | -- | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 20 | < 20 | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | -- | -- | -- | < 40 | < 40 | < 20 | < 20 | < 20 | < 10 | -- | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | **68.4** |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | **10** | **15** | **11** | < 10 | -- | -- | -- | **10** | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | 10 | -- | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-114D | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 04/29/15 | 02/25/10 | 08/13/09 | 06/07/06 | 03/09/06 | 12/22/05 | 09/29/05 | 03/01/05 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | |
| pH | SU | N/A | N/A | 7.9 | 9.51 | 9.99 | 7.12 | 7.00 | 7.26 | 7.77 | 7.02 |
| Specific Conductance | µm/cm | N/A | N/A | 395 | 291 | 383 | 500 | 432 | 422 | 431 | 462 |
| Temperature | °Celsius | N/A | N/A | 20.12 | 19.01 | 29.57 | 26.90 | 20.57 | 22.10 | 24.89 | 20.89 |
| Dissolved Oxygen | mg/L | N/A | N/A | 6.23 | 7.22 | 5.85 | 0.37 | 0.45 | 0.31 | 0.09 | 0.72 |
| ORP | mV | N/A | N/A | -29.8 | 23.2 | -169.8 | -154.2 | -157.9 | 162.3 | 142.6 | -86.9 |
| Turbidity | NTU | N/A | N/A | 1.45 | 0.7 | 0.98 | 0.74 | 2.6 | 3.11 | 3.94 | 23.1 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | |
| Nitrogen, Ammonia (as N) | mg/L | N/A | N/A | -- | -- | | -- | -- | -- | -- | < 0.20 |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | < 0.050 | **0.93** | -- | -- | -- | -- | < 0.500 |
| Sulfate | mg/L | N/A | N/A | -- | **20** | **20** | -- | -- | -- | -- | **4.54** |
| Sulfide | mg/L | N/A | N/A | -- | < 1.0 | < 1.0 | -- | -- | -- | -- | < 1.0 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | **0.809** |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | **0.845** |
| Ferrous Iron | mg/L | N/A | N/A | -- | < 0.010 | < 0.010 | -- | -- | -- | -- | **2.4** |
| Total Iron | mg/L | N/A | N/A | -- | < 0.010 | < 0.010 | -- | -- | -- | -- | **2.85** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | < 0.050 | < 0.050 | -- | -- | -- | -- | **18** |
| Methane | mg/L | N/A | N/A | -- | **1.2** | **1.2** | -- | -- | -- | -- | **99** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | **3.9** | **4.6** | -- | -- | -- | -- | **22** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | **1.5** | **1.7** | -- | -- | -- | -- | **1.9** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **5.2** |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 5.0 | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | < 10 | -- | -- | -- | -- | -- | -- | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | < 10 | -- | -- | -- | -- | -- | -- | < 10 |
| Anthracene | µg/L | 4,700 | 31,000 | < 10 | -- | -- | -- | -- | -- | -- | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | < 0.050 | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | < 0.050 | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | < 0.10 | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 10 | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 10 | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | < 10 | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | < 0.10 | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | < 10 | -- | -- | -- | -- | -- | -- | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 10 | -- | -- | -- | -- | -- | -- | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | < 10 | -- | -- | -- | -- | -- | -- | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | < 0.050 | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 10 | -- | -- | -- | -- | -- | -- | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | < 10 | -- | -- | -- | -- | -- | -- | < 10 |
| Naphthalene | µg/L | 20* | 20* | < 10 | < 10 | <9.4 | < 10 | < 10 | < 10 | < 10 | **88** |
| Phenanthrene | µg/L | 470 | 3,100 | < 10 | -- | -- | -- | -- | -- | -- | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | < 10 | -- | -- | -- | -- | -- | -- | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | < 10 | -- | -- | -- | -- | -- | -- | < 10 |
| **Inorganic Constituents** | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20 | -- | -- | -- | -- | -- | -- | < 40 |
| Arsenic | µg/L | 50* | 50* | < 50 | -- | -- | -- | -- | -- | -- | < 50 |
| Barium | µg/L | 2,000 | 7,200 | **493** | **140** | **140** | **558** | **613** | **636** | **763** | **1,260** |
| Beryllium | µg/L | 31 | 200 | < 10 | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10 | < 20 | < 20 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 20 | < 40 | < 40 | < 20 | < 20 | < 20 | < 10 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | < 20 | -- | -- | -- | -- | -- | -- | **147** |
| Mercury | µg/L | 2* | 2* | < 0.20 | -- | -- | -- | -- | -- | -- | < 0.5 |
| Total Cyanide | µg/L | 310 | 2,000 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; there Exceeds Type 2 RRS (only indicated for off-site wells)
ft AMSL - feet Above Mean Sea Level Exceeds Type 4 RRS
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-115D (Abandoned) | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/05/14 | 02/20/14 | 08/06/13 | 02/07/13 | 11/08/12 | 08/08/12 | 05/14/12 | 02/13/12 | 11/16/11 | 08/11/11 | 05/05/11 | 02/24/11 | 11/09/10 | 11/10 DUP | 08/10/10 | 05/11/10 | 02/24/10 | 2/10 DUP |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 7.22 | 7.38 | 6.66 | 7.37 | 7.47 | 7.33 | 7.53 | 7.56 | 7.88 | 7.98 | 8.69 | 8.70 | 7.71 | | 6.49 | 9.09 | 10.45 | |
| Specific Conductance | µm/cm | N/A | N/A | 257 | 344 | 217 | 228 | 258 | 256 | 244 | 198 | 213 | 222 | 225 | 222 | 208 | | 200 | 209 | 235 | |
| Temperature | °Celsius | N/A | N/A | 24.47 | 22.62 | 23.70 | 13.83 | 22.04 | 24.15 | 23.00 | 19.84 | 22.03 | 25.82 | 20.28 | 21.23 | 23.64 | | 24.65 | 22.71 | 17.06 | |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.42 | 0.40 | 1.77 | 2.23 | 0.66 | 0.65 | 1.24 | 4.39 | 0.22 | 0.48 | 0.34 | 0.27 | 0.17 | | 0.22 | 0.86 | 1.58 | |
| ORP | mV | N/A | N/A | 34.4 | -33.5 | -68.6 | 20.1 | -26 | -9.5 | 65.7 | -88.1 | -169.4 | 119.4 | -91.3 | -46.1 | -154.3 | | 11.1 | -57.4 | -134.4 | |
| Turbidity | NTU | N/A | N/A | 0.00 | 9.47 | 1.47 | 2.06 | 1.27 | 2.99 | 0.93 | 2.42 | 4.16 | 9.89 | 1.09 | 5.24 | 0.76 | | 0.62 | 1.79 | 0.50 | |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | < 0.25 | -- | < 0.050 | -- | -- | -- | < 0.050 | -- | -- | -- | < 0.050 | -- | -- | -- | -- | **0.2** | < 0.050 |
| Sulfate | mg/L | N/A | N/A | -- | **19** | -- | < 5.0 | -- | -- | -- | < 5.0 | -- | -- | -- | < 5.0 | -- | -- | -- | -- | < 5.0 | < 5.0 |
| Sulfide | mg/L | N/A | N/A | -- | < 1.0 | -- | < 1.0 | -- | -- | -- | < 1.0 | -- | -- | -- | **2.1** | -- | -- | -- | -- | < 1.0 | < 1.0 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Manganese | mg/L | N/A | N/A | -- | < 0.100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ferrous Iron | mg/L | N/A | N/A | -- | **0.727** | -- | < 0.10 HF | -- | -- | -- | < 0.10 HF | -- | -- | -- | < 0.010 | -- | -- | -- | -- | < 0.010 | < 0.010 |
| Total Iron | mg/L | N/A | N/A | -- | **6.9** | -- | **0.27** | -- | -- | -- | **1.0** | -- | -- | -- | **1.9** | -- | -- | -- | -- | **0.16** | **0.17** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | < 1.0 | -- | **7.5** | -- | -- | -- | **0.052** | -- | -- | -- | < 0.050 | -- | -- | -- | -- | < 0.050 | < 0.050 |
| Methane | mg/L | N/A | N/A | -- | **83** | -- | **21** | -- | -- | -- | **9.9** | -- | -- | -- | <0.58 | -- | -- | -- | -- | <0.19 | <0.19 |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | **18** | -- | -- | -- | -- | -- | **4.7** | -- | -- | -- | **4.7** | -- | -- | -- | -- | **3.1** | **3.5** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | **3.9** | -- | **7.6** | -- | -- | -- | **1.6** | -- | -- | -- | **1.6** | -- | -- | -- | -- | **1.2** | **1.3** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | **11** | 8.9 | 5.6 | < 5.0 | **15** | **15** | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | **9.8** | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | **9.2** | **13** | **7.6** | < 5.0 | -- | -- | -- | -- | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | < 10 | < 10 | < 10 | < 0.24 | < 0.21 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Acenaphthylene | µg/L | 470 | 3,100 | < 10 | < 10 | < 10 | < 0.24 | < 0.21 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Anthracene | µg/L | 4,700 | 31,000 | < 10 | < 10 | < 10 | < 0.24 | < 0.21 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | < 0.050 | **0.24** | < 0.20 | < 0.24 | < 0.21 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | < 0.050 | **0.47** | < 0.20 | < 0.24 | < 0.21 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | < 0.10 | 0.33 | < 0.20 | < 0.24 | < 0.21 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 10 | < 10 | < 10 | < 0.24 | < 0.21 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 10 | < 10 | < 10 | < 0.24 | < 0.21 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | < 10 | < 10 | < 10 | < 0.24 | < 0.21 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | < 0.10 | **0.63** | < 0.20 | < 0.24 | < 0.21 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | < 10 | < 10 | < 10 | < 2.4 | < 2.1 | < 1.9 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 10 | < 10 | < 10 | < 0.24 | < 0.21 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluorene | µg/L | 1,000* | 4,100 | < 10 | < 10 | < 10 | < 0.24 | < 0.21 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | < 0.050 | **0.53** | < 0.20 | < 0.24 | < 0.21 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 10 | < 10 | < 10 | < 2.4 | < 2.1 | < 1.9 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | < 10 | < 10 | < 10 | < 2.4 | < 2.1 | < 1.9 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Naphthalene | µg/L | 20* | 20* | < 10 | < 10 | < 10 | 0.24 | < 0.21 | < 0.19 | < 0.22 | < 5.0 | 14 | 5.2 | < 5.0 | < 5.0 | **54** | **57** | **7.7** | < 5.0 | < 9.7 | < 9.7 |
| Phenanthrene | µg/L | 470 | 3,100 | < 10 | < 10 | < 10 | < 0.24 | < 0.21 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Phenol | µg/L | 9,390 | 61,000 | < 10 | < 10 | < 10 | < 1.2 | < 1.0 | < 0.95 | < 1.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | < 10 | < 10 | < 10 | < 0.24 | < 0.21 | < 0.19 | < 0.22 | -- | | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Arsenic | µg/L | 50* | 50* | < 50 | < 50 | < 50 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Barium | µg/L | 2,000 | 7,200 | **2,490** | **80** | **1,430** | **1,400** | **1,800** | **1,800** | **1,400** | **1,400** | **1,500** | **1,300** | **1,200** | **1,200** | -- | -- | -- | -- | **930** | **930** |
| Beryllium | µg/L | 31 | 200 | < 10 | < 10 | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | -- | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | < 20 | < 20 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | -- | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 20 | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | -- | -- | -- | -- | < 40 | < 40 |
| Zinc | µg/L | 4,700 | 31,000 | **36** | < 20 | < 20 | < 20 | **22** | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Cyanide | µg/L | 310 | 2,000 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 | -- | -- | -- | -- | **17** | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-200DR | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2/24/2017 | 8/23/2016 | 4/7/2016 | 8/12/2015 | 8/15 DUP | 2/17/2015 | 2/15 DUP | 8/7/2014 | 2/20/2014 | 08/07/13 | 02/08/13 | 11/07/12 | 08/08/12 | 05/17/12 | 02/16/12 | 11/18/11 | 08/11/11 | 05/04/11 | 04/18/11 | 11/09/10 | 08/10/10 | 05/11/10 | 02/24/10 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.53 | 6.49 | 6.77 | 6.33 | | 6.68 | | 7.41 | 6.75 | 6.23 | 6.61 | 6.44 | 6.36 | 6.88 | 6.43 | 6.61 | 6.50 | 6.06 | 6.26 | 6.55 | 6.42 | 6.33 | 6.42 |
| Specific Conductance | µm/cm | N/A | N/A | 454.2 | 536.3 | 590 | 529 | | 488 | | 633 | 569 | 526 | 452 | 510 | 576 | 526 | 535 | 509 | 515 | 512 | 558 | 519 | 506 | 550 | 534 |
| Temperature | °Celsius | N/A | N/A | 21.06 | 26.51 | 24.09 | 25.23 | | 17.44 | | 25.53 | 22.50 | 24.75 | 18.74 | 22.76 | 27.09 | 23.94 | 23.15 | 20.28 | 26.67 | 23.60 | 23.78 | 25.94 | 28.69 | 26.09 | 17.09 |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.21 | 0.24 | 0.36 | 0.12 | | 2.38 | | 0.51 | 0.36 | 0.21 | 1.10 | 0.06 | 0.66 | 0.71 | 0.28 | 0.59 | 1.38 | 0.05 | 1.04 | 0.10 | 0.24 | 0.73 | 3.66 |
| ORP | mV | N/A | N/A | -58.8 | -114.4 | -866.7 | -180.4 | | 94.7 | | -85.9 | -99.2 | -137.6 | 2.7 | -89 | -46.4 | -75.6 | -45.8 | -90.7 | -64.5 | -113.4 | -106.0 | -260.1 | -108.9 | -110.5 | -85.5 |
| Turbidity | NTU | N/A | N/A | 1.51 | 1.4 | 4.38 | 0.7 | | 1.22 | | 4.19 | 1.22 | 0.45 | 3.5 | 1.61 | 2.36 | 2.97 | 1.40 | 3.91 | 2.00 | 1.25 | 3.07 | 4.01 | 0.17 | 2.55 | 2.35 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Ammonia (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | < 0.25 | -- | **0.073 *** | -- | -- | -- | < 0.050 | -- | -- | -- | < 0.050 | -- | -- | -- | < 0.050 |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | < 1.0 | -- | < 5.0 | -- | -- | -- | < 5.0 | -- | -- | -- | < 5.0 | -- | -- | -- | **5.6** |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | < 1.0 | -- | < 1.0 | -- | -- | -- | **1.6** | -- | -- | -- | **7.5** | -- | -- | -- | < 1.0 |
| Dissolved Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Manganese | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **0.618** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **4.48** | -- | 0.83 HF | -- | -- | -- | 0.84 HF | -- | -- | -- | **0.68** | -- | -- | -- | **1.3** |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **97** | -- | **6.9** | -- | -- | -- | **4.3** | -- | -- | -- | **4.3** | -- | -- | -- | **4.8** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | < 1.0 | -- | **120** | -- | -- | -- | **1.4** | -- | -- | -- | **1.1** | -- | -- | -- | **1.1** |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **1600** | -- | **1100** | -- | -- | -- | **1400** | -- | -- | -- | **460** | -- | -- | -- | **770** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **21** | -- | -- | -- | -- | -- | **5.5** | -- | -- | -- | **4.3** | -- | -- | -- | **4.1** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **2.3** | -- | **4.4** | -- | -- | -- | **1.8** | -- | -- | -- | **1.3** | -- | -- | -- | **1.3** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | **110** | **85** | **29** | **36** | **34** | < 5.0 | < 5.0 | **19** | **7.5** | **14** | **3.9** | **2.3** | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **26** |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | **58** | **40** | **20** | **26** | **24** | < 5.0 | < 5.0 | **8.1** | < 5.0 | **5.3** | < 1.0 | **16** | < 1.0 | < 1.0 | < 5.0 | < 5.0 | **5.6** | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **16** | < 5.0 | < 5.0 | < 1.0 | **4.7** | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | **5.2** | **8.0** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **7.2** | < 5.0 | < 5.0 | **2.0** | **13** | **2.0** | < 2.0 | < 5.0 | < 5.0 | < 5.0 | **6.0** | < 5.0 | -- | -- | -- | **6.8** |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | **28** | **24** | **1.5** | **5.0** | < 0.50 | < 10 | < 10 | **14** | **21** | **35** | **81** | **25** | **25** | **15** | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Acenaphthylene | µg/L | 470 | 3,100 | **2.2** | **26** | < 1.0 | < 1.0 | < 1.0 | < 10 | < 10 | < 10 | < 10 | < 10 | **4.9** | **2.8** | **2.8** | **1.8** | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Anthracene | µg/L | 4,700 | 31,000 | **1.9** | **3.6** | **0.069** | **0.058** | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 10 | **6.5** | **0.47** | **0.38** | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | **0.065** | **0.080** | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | 0.052 | 0.12 | < 0.20 | < 1.9 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | 0.12 | < 0.20 | < 1.9 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | 0.11 | < 0.20 | < 1.9 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 1.9 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 10 | < 1.9 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | 0.056 | < 0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 10 | < 1.9 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | **0.15** | < 0.20 | < 1.9 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 19 | < 2.0 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluoranthene | µg/L | 1,000* | 4,100 | **3.0** | **1.3** | **0.7** | **2.0** | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 10 | **5.2** | **2.9** | **2.7** | **1.6** | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluorene | µg/L | 1,000* | 4,100 | **20** | **12** | **1.40** | **0.79** | < 0.10 | < 10 | < 10 | **10** | **15** | **26** | **25** | **18** | **20** | **11** | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | 0.11 | < 0.20 | < 1.9 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 19 | < 2.0 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 19 | < 2.0 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Naphthalene | µg/L | 20* | 20* | **680** | **390** | < 0.50 | < 0.50 | < 0.50 | < 10 | < 10 | < 10 | **140** | **160** | **2,300** | **140** | **4.6** | **2.0** | **5.6** | < 5.0 | **48** | **100** | **33** | **24** | **27** | **6.3** | **25** |
| Phenanthrene | µg/L | 470 | 3,100 | **5.4** | **27** | **0.055** | **0.077** | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 10 | **39** | **1.2** | < 0.20 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 9.7 | < 0.99 | < 0.98 | < 1.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | **3.1** | **1.3** | **0.5** | **2.3** | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 10 | **7.6** | **2.9** | **3.2** | **1.9** | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Barium | µg/L | 2,000 | 7,200 | -- | **1,270** | **1,190** | **1,730** | **1,710** | **682** | **738** | **938** | **948** | **1,230** | **3,200** | **900** | **810** | **690** | **750** | **810** | **730** | **810** | **670** | -- | -- | -- | **540** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | < 20 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | **61.6** | **37** | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | **160** | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | -- | -- | -- | < 40 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10.0 | **16** | < 10.0 | **43** | **34** | **34** | **21** | **54** | **43** | < 10 | **61** | **54** | **24** | **42** | -- | -- | -- | **54** | -- | -- | -- | **42** |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-205D | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/24/17 | DUP - 5 | 08/24/16 | 8/16 DUP | 04/07/16 | 08/12/15 | 02/16/15 | 08/06/14 | 02/19/14 | 02/14 DUP | 08/06/13 | 08/13 DUP | 02/07/13 | 02/13 DUP | 11/07/12 | 11/12 DUP |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.54 | | 6.54 | | 6.71 | 6.60 | 6.81 | 7.38 | 6.79 | | 6.20 | | 6.89 | | 6.70 | |
| Specific Conductance | µm/cm | N/A | N/A | 673.0 | | 727.0 | | 580 | 740 | 855 | 869 | 485 | | 770 | | 625 | | 794 | |
| Temperature | °Celsius | N/A | N/A | 22.92 | | 26.10 | | 18.30 | 26.72 | 18.66 | 23.60 | 21.24 | | 25.48 | | 17.75 | | 18.64 | |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.12 | | 0.53 | | 0.42 | 0.28 | 2.01 | 0.35 | 0.30 | | 1.38 | | 0.47 | | 0.53 | |
| ORP | mV | N/A | N/A | -55.1 | | -75.3 | | -65.2 | -163.5 | -90.1 | -68.9 | -82.0 | | -184.4 | | -90.6 | | -17.8 | |
| Turbidity | NTU | N/A | N/A | 0.90 | | 0.9 | | 0.88 | 2.67 | 3.41 | 5.79 | 1.16 | | 1.87 | | 2.72 | | 0.78 | |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | < 2.5 | -- | < 2.5 | < 2.5 | -- | -- | < 0.050 | < 0.050 | -- | -- |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | < 10 | -- | < 10 | < 10 | -- | -- | < 5.0 | < 5.0 | -- | -- |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | < 1.00 | -- | < 1.0 | < 1.0 | -- | -- | < 1.0 | < 1.0 | -- | -- |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **0.844** | -- | < 0.100 | < 0.100 | -- | -- | < 0.10 HF | < 0.10 HF | -- | -- |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **4.37** | -- | **3.23** | **3.25** | -- | -- | **4.8** | **4.9** | -- | -- |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **77** | -- | **49** | **48** | -- | -- | **93** | **88** | -- | -- |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **3000** | -- | **1700** | **2000** | -- | -- | **2600** | **2100** | -- | -- |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **20** | -- | **15** | **16** | -- | -- | -- | -- | -- | -- |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **4.7** | -- | **3.9** | **3.9** | -- | -- | **2.0** | **2.8** | -- | -- |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | **4,300** | **4,300** | **5200** | **5,400** | **5,100** | **5,200** | **4,400** | **6,700** | **1,700** | **1,600** | **5,700** | **5,400** | **3,400** | **4,000** | **3,300** | **3,200** |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | <250 | <5.0 | < 5.0 | < 250 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 250 | < 250 | < 100 | < 100 | < 100 | < 40 |
| Ethylbenzene | µg/L | 700* | 2,300 | **860** | **950** | **930** | **930** | **990** | **1,100** | **990** | **1,200** | **330** | **320** | **1,400** | **1,200** | **820** | **890** | **930** | **890** |
| Toluene | µg/L | 1,000* | 1,100 | **12** | **14.0** | <250 | 7.6 | < 50 | < 250 | **12** | < 5.0 | < 5.0 | < 5.0 | < 250 | < 250 | < 50 | < 50 | < 50 | < 20 |
| Total Xylenes | µg/L | 31,000 | 200,000 | **580** | **420** | **410** | **430** | **620** | **580** | **560** | **720** | **300** | **290** | **960** | **820** | **400** | **460** | **250** | **240** |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | **120** | **140** | **150** | **130** | **140** | **160** | **130** | **200** | **54** | **57** | **220** | **200** | **89** | **95** | **150** | **170** |
| Acenaphthylene | µg/L | 470 | 3,100 | **1.4** | <1.0 | **1.7** | **1.7** | **1.7** | **1.8** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | < 2.3 | < 0.21 |
| Anthracene | µg/L | 4,700 | 31,000 | **5.3** | **4.9** | **6.1** | **5.9** | **4.5** | **5.6** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **2.9** | **3.1** | **4.4** | **4.4** |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.20 | < 2.0 | < 2.0 | < 2.3 | < 0.21 |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | <0.050 | 0.092 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.20 | < 2.0 | < 2.0 | < 2.3 | < 0.21 |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.20 | < 2.0 | < 2.0 | < 2.3 | < 0.21 |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | < 2.3 | < 0.21 |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | < 2.3 | < 0.21 |
| Chrysene | µg/L | 117 | 392 | <0.050 | <0.050 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | < 2.3 | < 0.21 |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.20 | < 2.0 | < 2.0 | < 2.3 | < 0.21 |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | <10 | <10 | <10 | < 10 | < 50 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 23 | < 2.1 |
| Fluoranthene | µg/L | 1,000* | 4,100 | **1.6** | **1.6** | **1.5** | **1.6** | **1.0** | **1.3** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | < 2.3 | **1.1** |
| Fluorene | µg/L | 1,000* | 4,100 | **29** | **34** | **39** | **33** | **29** | **34** | **31** | **47** | **13** | **13** | **43** | **44** | **24** | **26** | **34** | **38** |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.20 | < 2.0 | < 2.0 | < 2.3 | < 0.21 |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | <10 | <10 | < 10 | < 50 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 23 | < 2.1 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | <10 | <10 | < 10 | < 50 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 23 | < 2.1 |
| Naphthalene | µg/L | 20* | 20* | **3,400** | **3,700** | **6,400** | **6,200** | **4,900** | **4,600** | **4,200** | **6,000** | < 10 | < 10 | **8,100** | **7,500** | **1,500** | **1,700** | **6,400** | **5,700** |
| Phenanthrene | µg/L | 470 | 3,100 | **31** | **37** | **39** | **34** | **30** | **35** | **29** | **44** | **11** | **11** | **43** | **43** | **20** | **22** | **34** | **39** |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | <10 | <10 | 18 | < 50 | < 10 | 18 | 26 | 23 | < 10 | < 10 | < 10 | < 9.9 | **11** | **14** |
| Pyrene | µg/L | 1,000* | 3,100 | **1.7** | **1.5** | **1.6** | **1.7** | **1.1** | **1.4** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | < 2.3 | **1.1** |
| **Inorganic Constituents** | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Arsenic | µg/L | 50* | 50* | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 20 | < 20 | < 20 | < 20 |
| Barium | µg/L | 2,000 | 7,200 | -- | -- | **3150** | **3080** | **3,080** | **3,130** | **3,160** | **3,020** | **2,130** | **2,150** | **3,790** | **3,900** | **3,200** | **3,300** | **3,100** | **3,000** |
| Beryllium | µg/L | 31 | 200 | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 |
| Cadmium | µg/L | 7.8 | 51 | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chromium | µg/L | 100 | 310 | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 |
| Lead | µg/L | 15* | 15* | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | -- | **73.1** | **68.4** | **43.4** | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 |
| Zinc | µg/L | 4,700 | 31,000 | -- | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | -- | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | -- | **26** | **27** | < 10 | < 10 | < 10 | 0.020 | < 10 | < 10 | **12** | **17** | **10** | < 10 | < 10 | **17** |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 2 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-205D (Continued) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/09/12 | 05/17/12 | 05/12 DUP | 02/15/12 | 02/12 DUP | 11/18/11 | 11/18 DUP | 08/11/11 | 05/05/11 | 02/22/11 | 02/11 DUP | 11/10/10 | 08/11/10 | 05/11/10 | 02/24/10 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.14 | 7.13 | | 6.65 | | 5.9 | | 5.60 | 6.57 | 6.6 | | 6.47 | 6.56 | 6.41 | 6.55 |
| Specific Conductance | µm/cm | N/A | N/A | 801 | 766 | | 791 | | 372 | | 778 | 615 | 664 | | 679 | 701 | 690 | 733 |
| Temperature | °Celsius | N/A | N/A | 25.15 | 24.5 | | 21.58 | | 20.37 | | 24.51 | 19.50 | 22.88 | | 23.74 | 23.66 | 21.86 | 11.89 |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.31 | 1.93 | | 0.63 | | 1.19 | | 1.36 | 0.88 | 0.31 | | 0.17 | 1.77 | 0.36 | 0.55 |
| ORP | mV | N/A | N/A | -58.9 | -96.2 | | -95.2 | | -22 | | -9.5 | -77.3 | -91.1 | | -86.1 | -92.4 | -71.0 | -145.5 |
| Turbidity | NTU | N/A | N/A | 6.16 | 3.68 | | 1.05 | | 8.86 | | 4.10 | 2.94 | 3.65 | | 0.91 | 0.1 | 1.06 | 0.87 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | < 0.050 | < 0.050 | -- | -- | -- | -- | < 0.050 | < 0.050 | -- | -- | -- | < 0.050 |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | < 5.0 | < 5.0 | -- | -- | -- | -- | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | **1.8** | **1.8** | -- | -- | -- | -- | < 1.0 | < 1.0 | -- | -- | -- | < 1.0 |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | 0.25 HF | 0.25 HF | -- | -- | -- | -- | < 0.010 | < 0.010 | -- | -- | -- | **1.1** |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | **3.7** | **3.7** | -- | -- | -- | -- | **4.4** | **4.5** | -- | -- | -- | **3.6** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | **1.4** | **1.4** | -- | -- | -- | -- | **1.1** | **1.2** | -- | -- | -- | **1.1** |
| Methane | mg/L | N/A | N/A | -- | -- | -- | **2600** | **2500** | -- | -- | -- | -- | **2100** | **2200** | -- | -- | -- | **1700** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | **4.9** | **5.4** | -- | -- | -- | -- | **4.2** | **4.4** | -- | -- | -- | **3.9** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | **1.7** | **1.8** | -- | -- | -- | -- | **1.2** | **1.2** | -- | -- | -- | **1.2** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | **5,800** | **4,700** | **4,600** | **3,200** | **3,500** | < 250 | < 250 | **3,900** | **3,500** | **1,900** | **2,300** | **3,500** | **3,700** | **3,800** | **4,000** |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 100 | < 100 | < 100 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | **1,400** | **1,100** | **1,000** | **900** | **1,000** | < 250 | < 250 | **970** | **840** | **390** | **720** | -- | -- | -- | **1,500** |
| Toluene | µg/L | 1,000* | 1,100 | < 50 | < 50 | < 50 | < 250 | < 250 | < 250 | < 250 | <250 | <250 | <250 | <250 | -- | -- | -- | **280** |
| Total Xylenes | µg/L | 31,000 | 200,000 | **750** | **660** | **630** | **410** | **350** | < 250 | < 250 | **450** | **530** | <250 | **360** | -- | -- | -- | **1300** |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | **140** | **150** | **120** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Acenaphthylene | µg/L | 470 | 3,100 | < 1.9 | < 2.0 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Anthracene | µg/L | 4,700 | 31,000 | **0.55** | **4.0** | **2.3** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | < 1.9 | < 2.0 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | < 1.9 | < 2.0 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | < 1.9 | < 2.0 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 1.9 | < 2.0 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 1.9 | < 2.0 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | < 1.9 | < 2.0 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | < 1.9 | < 2.0 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | < 19 | < 20 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 1.9 | < 2.0 | **0.35** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluorene | µg/L | 1,000* | 4,100 | **38** | **34** | **26** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | < 1.9 | < 2.0 | < 0.21 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 19 | < 20 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | < 19 | < 20 | < 2.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Naphthalene | µg/L | 20* | 20* | **3,900 D** | **2,100** | **35** | **5,500** | **5,300** | < 250 | **690** | **7,100** | **6,900** | **3,500** | **5,700** | **10,000** | **7,900** | **4,800** | **5,600** |
| Phenanthrene | µg/L | 470 | 3,100 | **36** | **28** | **21** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Phenol | µg/L | 9,390 | 61,000 | < 9.5 | < 10 | **9.8** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | < 1.9 | < 2.0 | **0.47** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Inorganic Constituents** | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Arsenic | µg/L | 50* | 50* | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Barium | µg/L | 2,000 | 7,200 | **3,000** | **2,800** | **2,900** | **2,900** | **2,900** | **130** | **130** | **3,100** | **2,900** | **3,200** | **3,200** | -- | -- | -- | **2,900** |
| Beryllium | µg/L | 31 | 200 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 |
| Copper | µg/L | 630 | 4,100 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | < 20 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | -- | -- | -- | < 40 |
| Zinc | µg/L | 4,700 | 31,000 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Cyanide | µg/L | 310 | 2,000 | **13** | **12** | **13** | **11** | **13** | -- | -- | -- | -- | < 10 | **13** | -- | -- | -- | **12** |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 2 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
mS/cm - millisiemens per centimeter
µS/cm - microsiemens per centimeter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-205DD | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2/24/2017 | 8/24/2016 | 4/6/2016 | 8/11/2015 | 2/17/2015 | 2/17 DUP | 8/6/2014 | 08/14 DUP | 2/19/2014 | 8/8/2013 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 8.50 | 9.29 | 9.31 | 9.17 | 9.65 | | 8.95 | | 7.64 | 11.65 |
| Specific Conductance | µm/cm | N/A | N/A | 383.60 | 296.9 | 300 | 246 | 229 | | 194 | | 141 | 1,302 |
| Temperature | °Celsius | N/A | N/A | 22.85 | 28.17 | 20.84 | 24.87 | 14.74 | | 23.84 | | 22.08 | 22.80 |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.49 | 2.83 | 1.06 | 1.01 | 0.91 | | 0.96 | | 3.42 | 0.25 |
| ORP | mV | N/A | N/A | 26.40 | 55.6 | 50.8 | -101.4 | -49.8 | | -49.2 | | 114.6 | -155.1 |
| Turbidity | NTU | N/A | N/A | 1.29 | 1.0 | 6.89 | 2.4 | 29.9 | | 1.38 | | 5.31 | 7.61 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **0.28** | -- |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **9.3** | -- |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | < 1.0 | -- |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | < 0.100 | -- |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **0.289** | -- |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | < 5.0 | -- |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | < 4 | -- |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **17** | -- |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | -- | -- | **7.9** | -- |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **84** |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **6.0** |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | **2.3** | <0.50 | **0.83** | < 0.50 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | <1.0 | < 1.0 | < 1.0 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31,000 | **0.051** | **0.055** | < 0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Chrysene | µg/L | 117 | 392 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | **0.40** | <0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | <0.50 | 1.1 | < 0.50 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | **0.068** | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| **Inorganic Constituents** | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | **44.2** |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | **30.9** | **44.8** | **24.7** | **33.1** | **29.8** | **22.9** | **21.2** | < 20 | **103** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **14.6** |
| Copper | µg/L | 630 | 4,100 | -- | **14.4** | **11.9** | **12** | < 10 | < 10 | < 10 | < 10 | **12.4** | **11.4** |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | **23.3** |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | < 20 | < 20 | **43.3** | 29.3 | **23.8** | **22.8** | **78.1** | **26.5** |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 2 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-206D | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2/27/2017 | 4/6/2016 | 02/17/15 | 08/05/14 | 02/18/14 | 08/08/13 | 02/08/13 | 11/08/12 | 08/09/12 | 08/12 DUP | 05/15/12 | 02/14/12 | 11/18/11 | 08/11/11 | 05/05/11 | 02/23/11 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.23 | 6.13 | 6.10 | 6.10 | 6.05 | 5.94 | 6.11 | 6.00 | 5.99 | | 6.18 | 6.25 | 6.33 | 5.95 | 6.08 | 6.05 |
| Specific Conductance | µm/cm | N/A | N/A | 518.9 | 530 | 560 | 481 | 453 | 463 | 441 | 456 | 665 | | 477 | 500 | 473 | 328 | 368 | 440 |
| Temperature | °Celsius | N/A | N/A | 21.61 | 22.36 | 13.62 | 24.50 | 21.60 | 26.53 | 21.19 | 21.75 | 29.12 | | 24.98 | 20.30 | 21.99 | 27.97 | 20.45 | 21.61 |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.11 | 0.35 | 0.77 | 0.51 | 0.33 | 1.42 | 0.27 | 0.25 | 0.2 | | 0.22 | 0.22 | 0.31 | 0.93 | 0.58 | 0.19 |
| ORP | mV | N/A | N/A | -4.60 | 18.1 | 17.5 | -0.2 | 11.6 | -196.8 | 10.6 | -6.8 | -65.6 | | -74.4 | -75.7 | -69.8 | 22.1 | -19.2 | -15.4 |
| Turbidity | NTU | N/A | N/A | 11.48 | 5.1 | 55.7 | 2.29 | 4.31 | 3.22 | 22.8 | 4.83 | 5.42 | | 1.42 | 36.9 | 9.82 | 57.3 | 9.9 | 15.9 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | < 0.25 | -- | < 0.050 | -- | -- | -- | -- | < 0.050 | -- | -- | -- | < 0.050 |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | **110** | -- | **99** | -- | -- | -- | -- | **5.6** | -- | -- | -- | **78** |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | < 1.0 | -- | < 1.0 | -- | -- | -- | -- | **8.8** | -- | -- | -- | < 1.0 |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | **4.00** | -- | 15 HF | -- | -- | -- | -- | 4.3 HF | -- | -- | -- | **12** |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | **12.8** | -- | < 0.10 | -- | -- | -- | -- | **7.5** | -- | -- | -- | **22** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | **110** | -- | **70** | -- | -- | -- | -- | **2.3** | -- | -- | -- | **1.3** |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | **54** | -- | **100** | -- | -- | -- | -- | **690** | -- | -- | -- | **100** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | **20** | -- | -- | -- | -- | -- | -- | **4.3** | -- | -- | -- | **4.5** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | **4.4** | -- | **8.0** | -- | -- | -- | -- | **1.4** | -- | -- | -- | **1.5** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | **19** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **1.6** | < 1.0 | **2.7** | **2.7** | **19** | **60** | **50** | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | **89** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **3.3** | < 1.0 | **1.1** | **1.1** | **43** | **120** | **100** | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | **6.3** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 50 | **21** | < 5.0 | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | **11.0** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | **3.8** | < 50 | **34** | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | **30** | **3.3** | < 10 | < 10 | < 10 | < 10 | < 0.20 | **13** | **22** | **34** | **18** | -- | -- | -- | -- | -- |
| Acenaphthylene | µg/L | 470 | 3,100 | **1.5** | **4.3** | < 10 | < 10 | < 10 | < 10 | < 0.20 | **18** | **1.4** | **2.1** | **2.9** | -- | -- | -- | | -- |
| Anthracene | µg/L | 4,700 | 31,000 | **0.55** | **0.10** | < 10 | < 10 | < 10 | < 10 | < 0.20 | < 0.20 | **0.55** | **1.1** | **0.52** | -- | -- | -- | -- | -- |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | **0.081** | **0.11** | **0.10** | **0.14** | **0.13** | < 0.20 | < 0.20 | **0.23** | < 0.19 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.20 | < 0.20 | < 0.19 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.20 | < 0.20 | < 0.19 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 0.20 | < 0.20 | < 0.19 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 0.20 | < 0.20 | < 0.19 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | **0.057** | **0.084** | < 10 | < 10 | < 10 | < 10 | < 0.20 | < 0.20 | < 0.19 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.20 | < 0.20 | < 0.19 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | < 1.9 | < 2.0 | < 2.1 | -- | -- | -- | -- | -- |
| Fluoranthene | µg/L | 1,000* | 4,100 | **1.3** | **0.54** | < 10 | < 10 | < 10 | < 10 | < 0.20 | **1.0** | **1.3** | **1.8** | **1.1** | -- | -- | -- | -- | -- |
| Fluorene | µg/L | 1,000* | 4,100 | **9.50** | **1.9** | < 10 | < 10 | < 10 | < 10 | < 0.20 | **8.3** | **8.0** | **13** | **5.3** | -- | -- | -- | -- | -- |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.20 | < 0.20 | < 0.19 | < 0.20 | < 0.21 | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | < 1.9 | < 2.0 | < 2.1 | -- | -- | -- | -- | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | < 1.9 | < 2.0 | < 2.1 | -- | -- | -- | -- | -- |
| Naphthalene | µg/L | 20* | 20* | **530** | < 0.50 | < 10 | < 10 | < 10 | < 10 | < 0.20 | **3.4** | **28** | **170 D** | **180** | **1,300** | **990** | < 5.0 | **54** | < 5.0 |
| Phenanthrene | µg/L | 470 | 3,100 | **3.5** | **0.059** | < 10 | < 10 | < 10 | < 10 | < 0.20 | **1.1** | **0.52** | **2.9** | **1.8** | -- | -- | -- | -- | -- |
| Phenol | µg/L | 9,390 | 61,000 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 0.98 | < 1.0 | < 0.96 | < 0.99 | < 1.1 | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | **3.3** | **3.6** | < 10 | < 10 | < 10 | < 10 | < 0.20 | **4.2** | **1.9** | **2.4** | **3.3** | -- | -- | -- | -- | -- |
| **Inorganic Constituents** | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Barium | µg/L | 2,000 | 7,200 | -- | **49** | **120** | **143** | **62** | **86** | < 89 | **62** | **1,900** | **1,900** | **470** | **2,700** | **1,900** | **55** | **250** | **170** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 40 | < 40 | **110** | **110** | **52** | **130** | **110** | < 40 | **44** | < 40 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **23** | **18** | **15** | **42** | -- | -- | -- | **15** |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-207D | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/23/17 | 04/06/16 | 02/17/15 | 08/05/14 | 02/20/14 | 08/08/13 | 02/11/13 | 11/06/12 | 08/09/12 | 05/17/12 | 02/15/12 | 11/17/11 | 08/10/11 | 05/05/11 | 02/23/11 | 02/11 DUP | 11/09/11 | 08/10/10 | 05/11/10 | 03/17/10 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.80 | 7.01 | 6.85 | 7.26 | 7.00 | 6.31 | 6.57 | 10.62 | 5.91 | 6.92 | 6.63 | 6.54 | 6.37 | 6.65 | 6.48 | 6.48 | 9.74 | 6.50 | 6.24 | 6.51 |
| Specific Conductance | µm/cm | N/A | N/A | 543.10 | 0.500 | 0.499 | 0.584 | 0.493 | 506 | 526 | 326 | 529 | 469 | 473 | 452 | 494 | 473 | 394 | 394 | 231 | 482 | 467 | 485 |
| Temperature | °Celsius | N/A | N/A | 22.93 | 18.23 | 18.85 | 26.61 | 19.20 | 24.43 | 22.17 | 22.25 | 26.91 | 24.10 | 20.66 | 21.49 | 26.36 | 19.18 | 18.29 | 18.29 | 26.91 | 28.31 | 23.02 | 17.29 |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.11 | 0.78 | 1.67 | 1.03 | 0.59 | 1.28 | 0.83 | 0.11 | 0.25 | 0.34 | 3.96 | 0.35 | 0.54 | 0.71 | 0.45 | 0.45 | 1.02 | 2.82 | 0.29 | 0.5 |
| ORP | mV | N/A | N/A | -85.10 | -67.9 | -58.5 | -82.2 | 183.5 | -212.1 | -94.9 | -46.7 | -81.2 | -77.3 | -83.4 | -83.3 | -77.2 | -112.4 | -81.6 | -81.6 | -14.8 | -74.6 | -58.7 | -75.4 |
| Turbidity | NTU | N/A | N/A | 8.45 | 9.4 | 45.9 | 5.38 | 10.4 | 1.32 | 8.71 | 25 | 32.0 | 50.1 | 9.17 | 7.83 | 9.41 | 7.49 | 9.41 | 9.41 | 5.4 | 2.3 | 0.65 | 22.6 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | < 0.25 | -- | < 0.050 | -- | -- | -- | < 0.050 | -- | -- | -- | < 0.050 | < 0.050 | -- | -- | -- | < 0.050 |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | **4.4** | -- | < 5.0 | -- | -- | -- | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | < 1.0 | -- | < 1.0 | -- | -- | -- | **2.2** | -- | -- | -- | < 1.0 | **1.3** | -- | -- | -- | < 1.0 |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | < 0.100 | -- | 2.5 HF | -- | -- | -- | 1.1 HF | -- | -- | -- | **0.96** | **0.55** | -- | -- | -- | **1.1** |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | **0.687** | -- | **8.8** | -- | -- | -- | **5.4** | -- | -- | -- | **4.1** | **4.5** | -- | -- | -- | **5.4** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | **22** | -- | **59** | -- | -- | -- | **1.1** | -- | -- | -- | **0.79** | **0.88** | -- | -- | -- | **0.67** |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | **48** | -- | **2000** | -- | -- | -- | **1200** | -- | -- | -- | **470** | **530** | -- | -- | -- | **58** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | **19** | -- | -- | -- | -- | -- | **4.9** | -- | -- | -- | **4.9** | **4.3** | -- | -- | -- | **4.0** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | **5.4** | -- | **7.4** | -- | -- | -- | **1.7** | -- | -- | -- | **1.6** | **1.4** | -- | -- | -- | **1.3** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | ***2.9*** | < 1.0 | **1.8** | **1.2** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **18** |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **1.8** | < 1.0 | **1.8** | **1.8** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | **1.4** | **1.4** | < 10 | < 10 | < 10 | **14** | **8.0** | **2.7** | **7.0** | **9.3** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | < 1.0 | < 10 | < 10 | < 10 | < 10 | **0.69** | **0.50** | **0.76** | **1.5** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Anthracene | µg/L | 4,700 | 31,000 | <0.050 | **0.055** | < 10 | < 10 | < 10 | < 10 | 0.24 | < 0.20 | **0.24** | **0.25** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | **0.21** | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.20 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | **0.29** | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.20 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | **0.30** | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.20 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | **0.43** | < 10 | < 10 | < 10 | < 10 | < 0.20 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | **0.38** | < 10 | < 10 | < 10 | < 10 | < 0.20 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | **0.23** | < 10 | < 10 | < 10 | < 10 | < 0.20 | < 0.20 | < 0.19 | 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | **0.35** | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.20 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | < 1.9 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluoranthene | µg/L | 1,000* | 4,100 | **1.1** | **0.68** | < 10 | < 10 | < 10 | < 10 | **2.0** | **1.4** | **2.0** | **1.7** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Fluorene | µg/L | 1,000* | 4,100 | **0.54** | **0.28** | < 10 | < 10 | < 10 | **11** | **6.5** | **2.0** | **5.4** | **3.1** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | **0.38** | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.20 | < 0.20 | < 0.19 | < 0.22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | < 1.9 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | < 1.9 | < 2.2 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Naphthalene | µg/L | 20* | 20* | <0.50 | < 0.50 | < 10 | < 10 | < 10 | < 10 | **7.8** | **2.7** | **8.4** | **3.3** | **21** | **15** | < 5.0 | **8.8** | **61** | **64** | < 5.0 | < 5.0 | < 5.0 | **22** |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | **0.061** | < 10 | < 10 | < 10 | < 10 | < 0.20 | < 0.20 | **0.22** | **0.28** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Phenol | µg/L | 9,390 | 61,000 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 0.99 | < 0.99 | < 0.97 | < 1.1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | **2.0** | **1.1** | < 10 | < 10 | < 10 | < 10 | **2.9** | **1.9** | **2.6** | **2.9** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | < 50 | < 50 | **40** | **41** | < 20 | < 20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Barium | µg/L | 2,000 | 7,200 | -- | **2,450** | **2,890** | **2,950** | **1,980** | **2,920** | **3,300** | **230** | **2,600** | **2,200** | **2,400** | **2,400** | **2,400** | **2,300** | **2,300** | **2,100** | -- | -- | -- | **2,300** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 20 | **37** | **27** | **44** | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | < 20 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | **12** | **19** | **25** | **36** | < 10 | **19** | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | **54** | < 20 | < 20 | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | -- | -- | -- | < 40 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | **31** | **62** | **57** | **98** | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10 | **3.6** | **4.3** | **2** | **23** | **22** | < 10 | **29** | **24** | **14** | -- | -- | -- | **19** | **19** | -- | -- | -- | 53 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-300D | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/22/17 | 04/06/16 | 02/17/15 | 08/04/15 | 02/18/14 | 02/05/13 | 11/06/12 | 08/07/12 | 05/15/12 | 02/09/12 | 11/18/11 | 08/11/11 | 05/04/11 | 02/22/11 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.11 | 6.13 | 6.05 | 6.03 | 6.02 | 6.04 | 5.98 | 5.46 | 6.66 | 6.53 | 6.2 | 6.16 | 6.13 | 6.23 |
| Specific Conductance | µm/cm | N/A | N/A | 540 | 292 | 384 | 378 | 158 | 399 | 396 | 420 | 431 | 518 | 390 | 453 | 419 | 421 |
| Temperature | °Celsius | N/A | N/A | 20.70 | 17.77 | 16.29 | 24.89 | 20.89 | 20.37 | 20.90 | 22.72 | 23.84 | 16.90 | 19.76 | 25.76 | 21.39 | 21.81 |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.11 | 0.79 | 0.88 | 0.37 | 0.86 | 1.00 | 2.41 | 1.12 | 0.13 | 1.11 | 0.32 | 0.33 | 0.24 | 0.16 |
| ORP | mV | N/A | N/A | 5.30 | 66.1 | 21.6 | 14.2 | 96.1 | 23.6 | -18.6 | 16.3 | -78.8 | -55.7 | -63.6 | 150.5 | -90.6 | -32.6 |
| Turbidity | NTU | N/A | N/A | 3.69 | 0.83 | 0.44 | 2.67 | 0.88 | 2.48 | 3.12 | 0.90 | 0.21 | 9.72 | 5.06 | 9.12 | 4.20 | 0.79 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | < 0.25 | < 0.050 | -- | -- | -- | < 0.050 | -- | -- | -- | < 0.050 |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | **2.0** | < 5.0 | -- | -- | -- | < 5.0 | -- | -- | -- | **5.1** |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | < 1.0 | < 1.0 | -- | -- | -- | **1.4** | -- | -- | -- | < 1.0 |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | < 0.100 | 6.8 HF | -- | -- | -- | 9.1 HF | -- | -- | -- | **3.8** |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | **0.425** | **6.3** | -- | -- | -- | **9.5** | -- | -- | -- | **4.6** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | < 5.0 | **55** | -- | -- | -- | **0.98** | -- | -- | -- | **0.63** |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | **5** | **32** | -- | -- | -- | **650** | -- | -- | -- | **1.2** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | **19** | **23** | -- | -- | -- | **5.7** | -- | -- | -- | **4.2** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | **9.5** | **7.4** | -- | -- | -- | **1.7** | -- | -- | -- | **1.4** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | < 0.50 | < 10 | < 10 | < 10 | < 0.19 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | < 1.0 | < 10 | < 10 | < 10 | < 0.19 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| Anthracene | µg/L | 4,700 | 31,000 | <0.050 | < 0.050 | < 10 | < 10 | < 10 | < 0.19 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.19 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.19 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.19 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | < 0.10 | < 10 | < 10 | < 10 | < 0.19 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | < 0.050 | < 10 | < 10 | < 10 | < 0.19 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | < 0.050 | < 10 | < 10 | < 10 | < 0.19 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.19 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | < 10 | < 10 | < 10 | < 10 | < 1.9 | < 2.0 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | < 0.10 | < 10 | < 10 | < 10 | < 0.19 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | < 0.10 | < 10 | < 10 | < 10 | < 0.19 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.19 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | < 10 | < 10 | < 10 | < 10 | < 1.9 | < 2.0 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | < 10 | < 10 | < 10 | < 10 | < 1.9 | < 2.0 | < 2.0 | < 2.2 | -- | -- | -- | -- | -- |
| Naphthalene | µg/L | 20* | 20* | <0.50 | < 0.50 | < 10 | < 10 | < 10 | < 0.19 | < 0.20 | < 0.20 | < 0.22 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Phenanthrene | µg/L | 470 | 3,100 | <0.050 | < 0.050 | < 10 | < 10 | < 10 | < 0.19 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| Phenol | µg/L | 9,390 | 61,000 | <10 | < 10 | < 10 | < 10 | < 10 | < 0.97 | < 1.0 | < 1.0 | < 1.1 | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | <0.050 | < 0.050 | < 10 | < 10 | < 10 | < 0.19 | < 0.20 | < 0.20 | < 0.22 | -- | -- | -- | -- | -- |
| **Inorganic Constituents** | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | < 50 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Barium | µg/L | 2,000 | 7,200 | -- | **1,270** | **1,550** | **1,520** | **619** | **1,500** | **1,600** | **1,700** | **1,500** | **1,700** | **1,600** | **1,600** | **1,700** | **1,500** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | **15.1** | **11.3** | < 10.0 | **18** | **19** | **19** | **17** | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | **52.1** | < 5.0 | < 5.0 | **20.3** | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | **55.8** | **25.3** | **25.1** | < 20.0 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Zinc | µg/L | 4,700 | 31,000 | -- | **770** | **52.2** | **88.4** | **39.1** | **28** | **22** | **27** | **25** | -- | -- | -- | -- | -- |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.00020 | < 0.00020 | < 0.00020 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10.0 | < 0.010 | < 0.010 | < 0.010 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-301D | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/21/17 | 08/23/16 | 04/07/16 | 08/13/15 | 02/17/15 | 08/07/14 | 02/20/14 | 08/07/13 | 02/07/13 | 02/13 DUP | 11/07/12 | 11/12 DUP | 08/09/12 | 05/16/12 | 05/12 DUP | 02/16/12 | 02/12 DUP | 11/15/11 | 08/10/11 | 05/04/11 | 02/24/11 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.06 | 6.12 | 6.07 | 6.13 | 6.10 | 7.28 | 6.26 | 5.62 | 6.33 | | 6.12 | | 5.82 | 6.38 | | 5.96 | | 6.07 | 6.07 | 5.99 | 6.29 |
| Specific Conductance | µm/cm | N/A | N/A | 774 | 352.7 | 842 | 586 | 747 | 748.0 | 598.0 | 572 | 526 | | 566 | | 619 | 637 | | 547 | | 529 | 478 | 459 | 402 |
| Temperature | °Celsius | N/A | N/A | 20.53 | 27.77 | 17.10 | 22.07 | 13.45 | 23.12 | 18.36 | 22.03 | 16.68 | | 18.79 | | 24.00 | 24.49 | | 20.44 | | 23.5 | 24.18 | 20.40 | 21.09 |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.29 | 0.20 | 0.29 | 0.05 | 3.51 | 0.18 | 0.48 | 0.41 | 0.64 | | 0.21 | | 1.27 | 0.25 | | 1.98 | | 0.37 | 1.31 | 0.54 | 0.29 |
| ORP | mV | N/A | N/A | -17.00 | -47.9 | -82.9 | -104.9 | -98.3 | -160.5 | -78.2 | -190.8 | -82.6 | | -167.4 | | 3.0 | -65.8 | | -65.9 | | -128.9 | -98.1 | -71.8 | -25.7 |
| Turbidity | NTU | N/A | N/A | 0.50 | 3.6 | 3.24 | 0.86 | 1.41 | 0.00 | 7.12 | 0.4 | 0.68 | | 0.91 | | 4.32 | 5.56 | | 3.23 | | 7.68 | 4.96 | 4.38 | 9.27 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | < 0.25 | -- | < 0.050 | < 0.050 | -- | -- | -- | -- | -- | < 0.050 | < 0.050 | -- | -- | -- | < 0.050 |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **18** | -- | **32** | **55** | -- | -- | -- | -- | -- | **27** | **23** | -- | -- | -- | **26** |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **2.6** | -- | **2.0** | **2.4** | -- | -- | -- | -- | -- | **12** | **12** | -- | -- | -- | < 1.0 |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **4.31** | -- | 7.0 HF | 7.1 HF | -- | -- | -- | -- | -- | 5.7 HF | 4.9 HF | -- | -- | -- | **2.8** |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **5.20** | -- | **7.3** | **7.0** | -- | -- | -- | -- | -- | **5.9** | **5.8** | -- | -- | -- | **3.5** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **91** | -- | **58** | **56** | -- | -- | -- | -- | -- | **1.3** | **1.2** | -- | -- | -- | **0.51** |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **43** | -- | **26** | **24** | -- | -- | -- | -- | -- | **47** | **44** | -- | -- | -- | **4.7** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **20** | -- | -- | -- | -- | -- | -- | -- | -- | **6.0** | **5.8** | -- | -- | -- | **4.6** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **2.0** | -- | **5.4** | **3.8** | -- | -- | -- | -- | -- | **1.9** | **1.9** | -- | -- | -- | **1.6** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | **9.3** | <5.0 | < 5.0 | < 5.0 | **9.2** | **6.0** | < 5.0 | < 5.0 | **2.3** | **2.3** | **2.7** | < 5.0 | **2.2** | < 10 | < 5.0 | < 50 | < 50 | < 10 | **12** | **270** | **84** |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 10 | < 2.0 | < 10 | < 5.0 | -- | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **17** | **24** | **24** | **43** | **49** | **13** | **36** | **37** | < 50 | < 50 | **22** | **18** | <25 | < 10 |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 1.0 | < 1.0 | 1.2 | < 5.0 | < 1.0 | < 10 | < 5.0 | < 50 | < 50 | < 10 | < 10 | <25 | **58** |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 10 | < 2.0 | < 10 | < 5.0 | < 50 | < 50 | < 10 | < 10 | **130** | **51** |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | **0.75** | **0.97** | **0.58** | **0.51** | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | **0.26** | **0.24** | < 0.19 | < 2.2 | < 2.2 | -- | -- | -- | -- | -- | -- |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | <1.0 | < 1.0 | < 1.0 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | < 0.20 | < 0.20 | < 0.19 | < 2.2 | < 2.2 | -- | -- | -- | -- | -- | -- |
| Anthracene | µg/L | 4,700 | 31,000 | **0.25** | **0.16** | **0.17** | **0.13** | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | < 0.20 | < 0.20 | < 0.19 | < 2.2 | < 2.2 | -- | -- | -- | -- | -- | -- |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 2.0 | < 2.0 | < 0.20 | < 0.20 | < 0.19 | < 2.2 | < 2.2 | -- | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 2.0 | < 2.0 | < 0.20 | < 0.20 | < 0.19 | < 2.2 | < 2.2 | -- | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 2.0 | < 2.0 | < 0.20 | < 0.20 | < 0.19 | < 2.2 | < 2.2 | -- | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | < 0.20 | < 0.20 | < 0.19 | < 2.2 | < 2.2 | -- | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | < 0.20 | < 0.20 | < 0.19 | < 2.2 | < 2.2 | -- | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | < 0.20 | < 0.20 | < 0.19 | < 2.2 | < 2.2 | -- | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 2.0 | < 2.0 | < 0.20 | < 0.20 | < 0.19 | < 2.2 | < 2.2 | -- | -- | -- | -- | -- | -- |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 2.0 | < 2.1 | < 1.9 | < 22 | < 22 | -- | -- | -- | -- | -- | -- |
| Fluoranthene | µg/L | 1,000* | 4,100 | **0.16** | <0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | < 0.20 | < 0.21 | < 0.19 | < 2.2 | < 2.2 | -- | -- | -- | -- | -- | -- |
| Fluorene | µg/L | 1,000* | 4,100 | **3.8** | **0.77** | **2.7** | **2.3** | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | **1.3** | **1.8** | < 0.19 | < 2.2 | < 2.2 | -- | -- | -- | -- | -- | -- |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 2.0 | < 2.0 | < 0.20 | < 0.21 | < 0.19 | < 2.2 | < 2.2 | -- | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 2.0 | < 2.0 | < 1.9 | < 22 | < 22 | -- | -- | -- | -- | -- | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 2.0 | < 2.0 | < 1.9 | < 22 | < 22 | -- | -- | -- | -- | -- | -- |
| Naphthalene | µg/L | 20* | 20* | **430** | <0.50 | **81** | < 0.50 | < 10 | **120** | < 10 | < 10 | **410** | **460** | **1,400** | < 0.20 | **1,300** D | 3,500 | 1,400 | **1,400** | **1,200** | **1,100** | **720 *** | **900** | **390** |
| Phenanthrene | µg/L | 470 | 3,100 | **1.3** | <0.050 | **0.87** | **0.23** | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | **1.0** | **1.2** | < 0.19 | < 2.2 | < 2.2 | -- | -- | -- | -- | -- | -- |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 0.99 | < 0.99 | < 0.97 | < 11 | < 11 | -- | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | **0.11** | **0.91** | **0.070** | **0.080** | < 10 | < 10 | < 10 | < 10 | < 2.0 | < 2.0 | < 0.20 | < 0.20 | < 0.19 | < 2.2 | < 2.2 | -- | -- | -- | -- | -- | -- |
| **Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- |
| Barium | µg/L | 2,000 | 7,200 | -- | **50.2** | **264** | **771** | **713** | **851** | **1870** | **2100** | **1700** | **1600** | **2500** | **2200** | **2400** | **2400** | **2400** | **2500** | **2600** | **2500** | **2100** | **2300** | **1400** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 20 | **43.4** | < 20 | < 20 | < 20 | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | < 20.0 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- | -- |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- | -- |
| Total Cyanide | µg/L | 310 | 2,000 | -- | <10 | **121** | **43** | **87** | **106** | **62** | **83** | **84** | **81** | **93** | **96** | < 10 | **85** | **91** | **96** | **86** | -- | -- | -- | **97** |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-302D | | | | | | | | | | | MW-302DD | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/21/17 | 04/07/16 | 08/12/15 | 02/18/15 | 08/07/14 | 02/19/14 | 08/08/13 | 02/08/13 | 11/07/12 | 11/15/11 | 02/24/11 | 02/23/17 | 08/24/16 | 04/07/16 | 08/12/15 | 02/17/15 | 08/07/14 | 02/19/14 | 02/19/14 DUP | 08/08/13 | 08/13 DUP |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 5.69 | 5.72 | 5.67 | 5.67 | 5.93 | 5.79 | 5.73 | 5.91 | 5.83 | 6.11 | 6.51 | 7.46 | 7.49 | 7.50 | 7.47 | 7.77 | 7.54 | 7.58 | | 7.31 | |
| Specific Conductance | µm/cm | N/A | N/A | 1028.2 | 1202 | 1.068 | 1.173 | 0.957 | 1.052 | 1690 | 1502 | 1862 | 1432 | 1069 | 557.3 | 677.3 | 0.732 | 0.616 | 0.665 | 0.678 | 0.595 | | 677 | |
| Temperature | °Celsius | N/A | N/A | 22.62 | 24.69 | 26.87 | 15.17 | 28.41 | 23.33 | 24.19 | 13.32 | 20.79 | 21.39 | 21.05 | 22.27 | 23.42 | 21.98 | 26.20 | 14.48 | 29.20 | 20.22 | | 23.24 | |
| Dissolved Oxygen | mg/L | N/A | N/A | 6.21 | 0.20 | 0.18 | 0.58 | 0.55 | 0.54 | 0.45 | 0.94 | 0.17 | 0.22 | 0.09 | 0.21 | 0.29 | 0.16 | 0.26 | 1.18 | 0.56 | 0.20 | | 0.87 | |
| ORP | mV | N/A | N/A | 25.1 | -113.3 | -64.0 | -45.4 | 3.2 | -12.0 | -32.5 | -8.3 | -77.1 | -89 | -74 | -167.7 | -296.3 | -240.1 | -215.9 | -169.5 | -136.6 | -141.5 | | -202.9 | |
| Turbidity | NTU | N/A | N/A | 12.65 | 5.22 | 4.07 | 4.33 | 15.3 | 8.87 | 9.42 | 9.2 | 2.25 | 6.67 | 8.62 | 2.64 | 6.8 | 2.96 | 31.9 | 4.42 | 2.85 | 1.95 | | 4.82 | |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | | | | | | | | | | | | |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | < 2.5 | -- | < 0.050 | -- | -- | < 0.050 | -- | -- | -- | -- | -- | -- | < 0.25 | < 0.25 | -- | -- |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **470** | -- | **1.0** | -- | -- | **400** | -- | -- | -- | -- | -- | -- | **28.0** | **27.0** | -- | -- |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | < 1.0 | -- | < 1.0 | -- | -- | < 1.0 | -- | -- | -- | -- | -- | -- | < 1.0 | < 1.0 | -- | -- |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **6.04** | -- | **31 HF** | -- | -- | **9.3** | -- | -- | -- | -- | -- | -- | **0.112** | **0.112** | -- | -- |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **6.84** | -- | < 0.10 | -- | -- | **15** | -- | -- | -- | -- | -- | -- | **1.25** | **1.27** | -- | -- |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **190** | -- | **30** | -- | -- | **0.99** | -- | -- | -- | -- | -- | -- | **6.4** | **5.6** | -- | -- |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **35** | -- | **44** | -- | -- | **24** | -- | -- | -- | -- | -- | -- | **100** | **98** | -- | -- |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **24** | -- | -- | -- | -- | **4.2** | -- | -- | -- | -- | -- | -- | **16** | **17** | -- | -- |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | **2.4** | -- | **10** | -- | -- | **1.4** | -- | -- | -- | -- | -- | -- | **2.2** | **2.9** | -- | -- |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | **5.4** | < 5.0 | **15** | **12** | < 5.0 | **550** | < 5.0 | **15** | **5.9** | **34** | **25** | **6.4** | **24** | **20** | **11** | **13** | **7.6** | **35** | **35** | **810** | **780** |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 2.0 | < 2.0 | -- | -- | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | < 5.0 | 5.8 | < 5.0 | **32** | **31** | **11** | **12** | **5.4** | < 5.0 | < 5.0 | <5.0 | **33** | **48** | **30** | **45** | < 5.0 | **15** | **14** | **55** | **55** |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | < 5.0 | **19** | **12** | < 5.0 | **610** | **49** | **1.4** | **16** | **36** | < 5.0 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **17** | **16** |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | **6.8** | **16** | **13** | < 5.0 | **170** | **39** | **10** | **15** | **21** | < 5.0 | <5.0 | **6.8** | **5.4** | < 5.0 | < 5.0 | **7.2** | **17** | **16** | **61** | **63** |
| Semivolatile Organic Compounds | | | | | | | | | | | | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | **2.5** | **0.75** | **4.6** | < 10 | < 10 | < 10 | < 10 | < 0.24 | **7.0** | -- | -- | <0.50 | **1.4** | **1.1** | **1.0** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | **7.2** | **1.5** | **21** | **17** | < 10 | < 10 | **42** | < 0.24 | **29** | -- | -- | <1.0 | **1.2** | < 1.0 | **1.8** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31,000 | **1.9** | < 0.050 | **4.1** | < 10 | < 10 | < 10 | < 10 | < 0.24 | **3.5** | -- | -- | <0.050 | **0.066** | **0.057** | **0.083** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | < 0.050 | **0.053** | **0.26** | **0.069** | **0.18** | **0.31** | < 0.24 | **0.21** | -- | -- | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.20 |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | < 0.050 | < 0.050 | **0.28** | **0.053** | **0.19** | **0.27** | < 0.24 | < 0.20 | -- | -- | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.20 | < 0.20 |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | < 0.10 | < 0.10 | **0.22** | < 0.10 | **0.17** | < 0.20 | < 0.24 | < 0.20 | -- | -- | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.20 |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 0.24 | < 0.20 | -- | -- | <0.10 | <0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 0.24 | < 0.20 | -- | -- | <0.050 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Chrysene | µg/L | 117 | 392 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 0.24 | **0.21** | -- | -- | <0.050 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.20 | < 0.24 | < 0.20 | -- | -- | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | 0.13 | < 0.20 | < 0.20 |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.4 | < 2.0 | -- | -- | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | **0.96** | **0.20** | **2.2** | < 10 | < 10 | < 10 | < 10 | < 0.24 | **2.1** | -- | -- | <0.10 | <0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | **6.8** | **0.11** | **9.0** | **12** | < 10 | < 10 | **15** | < 0.24 | **18** | -- | -- | **0.24** | **0.77** | **0.55** | **0.68** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | < 0.050 | < 0.050 | **0.087** | < 0.050 | **0.080** | < 0.20 | < 0.24 | < 0.20 | -- | -- | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | 0.072 | < 0.20 | < 0.20 |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.4 | < 2.0 | -- | -- | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 2.4 | < 2.0 | -- | -- | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | **5.5** | < 0.50 | **170** | **120** | **130** | **300** | **200** | < 0.24 | **250** | **170** | **13** | <0.50 | **22** | **73** | < 0.050 | < 10 | < 10 | < 10 | < 10 | **180** | **140** |
| Phenanthrene | µg/L | 470 | 3,100 | **11** | **0.058** | **21** | **15** | < 10 | **17** | **21** | < 0.24 | **26** | -- | -- | <0.050 | **0.13** | **0.19** | **0.17** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | < 10 | **< 10** | < 10 | < 10 | < 10 | < 10 | < 1.2 | < 0.99 | -- | -- | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | **19** | **28** |
| Pyrene | µg/L | 1,000* | 3,100 | **1.2** | **0.39** | **2.7** | < 10 | < 10 | < 10 | < 10 | < 0.24 | **2.6** | -- | -- | <0.050 | **0.12** | **0.066** | **0.058** | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| **Inorganic Constituents** | | | | | | | | | | | | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 20 | < 20 | -- | -- | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | **55.3** | **60.6** | **68.7** | **71.5** | **48** | **26.3** | **24** | **26** | **130** | **210** | -- | **808** | **865** | **819** | **757** | **654** | **546** | **554** | **601** | **613** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 4.0 | < 4.0 | -- | -- | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chromium | µg/L | 100 | 310 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 20 | < 20 | < 20 | < 20 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | **73.1** | < 20.0 | < 20.0 | < 20 | < 20 | < 20 | < 40 | < 40 | < 40 | < 40 | -- | **36.1** | **35.8** | < 0.0200 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | **35** | **124** | < 20 | **31.2** | **43.3** | < 20 | < 20 | -- | -- | -- | < 20 | < 20 | **0.0686** | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10 | < 10 | **0.017** | **0.189** | **0.425** | **382** | < 10 | < 10 | -- | **32** | -- | < 10 | < 10 | **42** | **24** | **69** | **38** | **39** | **70** | **63** |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-303D (Abandoned) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 08/07/13 | 03/13/13 | 11/08/12 | 08/09/12 | 05/17/12 | 02/16/12 | 11/16/11 | 08/09/11 | 05/03/11 | 03/14/11 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | | | | |
| pH | SU | N/A | N/A | 6.61 | 6.94 | 6.45 | 6.44 | 7.01 | 6.94 | 6.81 | 6.43 | 6.42 | 5.64 |
| Specific Conductance | µm/cm | N/A | N/A | 147 | 133 | 125 | 176 | 170 | 152 | 183 | 172 | 156 | 194 |
| Temperature | °Celsius | N/A | N/A | 26.22 | 19.19 | 18.9 | 25.32 | 25.72 | 20.25 | 23.04 | 23.71 | 20.77 | 21.97 |
| Dissolved Oxygen | mg/L | N/A | N/A | 0.12 | 2.72 | 0.71 | 0.48 | 3.49 | 3.17 | 0.18 | 0.11 | 0.07 | 0.08 |
| ORP | mV | N/A | N/A | -75.6 | -104.1 | -65.1 | -85.4 | 72.5 | -88.1 | -120.3 | 158.5 | -87.2 | 13.0 |
| Turbidity | NTU | N/A | N/A | 2.32 | 9.97 | 0.72 | 1.79 | 2.36 | 9.85 | 9.8 | 6.52 | 20.1 | 21.4 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | | | | |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | < 0.050 | -- | -- | -- | < 0.050 | -- | -- | -- | < 0.050 |
| Sulfate | mg/L | N/A | N/A | -- | **5.0** | -- | -- | -- | < 5.0 | -- | -- | -- | < 5.0 |
| Sulfide | mg/L | N/A | N/A | -- | **1.2** | -- | -- | -- | **1.9** | -- | -- | -- | < 1.0 |
| Ferrous Iron | mg/L | N/A | N/A | -- | < 0.10 HF | -- | -- | -- | 0.90 HF | -- | -- | -- | **0.38** |
| Total Iron | mg/L | N/A | N/A | -- | **1.6** | -- | -- | -- | **2.6** | -- | -- | -- | **1.7** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | **10** | -- | -- | -- | **0.33** | -- | -- | -- | **0.18** |
| Methane | mg/L | N/A | N/A | -- | **130** | -- | -- | -- | **680** | -- | -- | -- | **6.9** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | **18** | -- | -- | -- | **6000** | -- | -- | -- | **4.8** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | **8.5** | -- | -- | -- | **1.8** | -- | -- | -- | **1.5** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | **31** | **5.0** | **30** | **3.1** | < 1.0 | **16** | **20** | **34** | **40** | **56** |
| Carbon Disulfide | µg/L | 329 | 1,700 | < 5.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | -- | -- | -- | -- | -- |
| Ethylbenzene | µg/L | 700* | 2,300 | **6.0** | **1.2** | **6.3** | < 1.0 | < 1.0 | < 5.0 | < 5.0 | **6.2** | **8.6** | **10** |
| Toluene | µg/L | 1,000* | 1,100 | < 5.0 | < 1.0 | **3.0** | < 1.0 | < 1.0 | < 5.0 | < 5.0 | < 5.0 | **5.2** | **9.1** |
| Total Xylenes | µg/L | 31,000 | 200,000 | **14** | < 2.0 | **14** | < 2.0 | < 2.0 | **8.8** | **15** | **30** | **49** | **54** |
| Semivolatile Organic Compounds | | | | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | < 10 | **0.33** | **1.8** | < 0.19 | < 0.23 | -- | -- | -- | -- | -- |
| Acenaphthylene | µg/L | 470 | 3,100 | < 10 | < 0.19 | < 0.19 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- |
| Anthracene | µg/L | 4,700 | 31,000 | < 10 | < 0.19 | < 0.19 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | < 0.20 | < 0.19 | < 0.19 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | < 0.20 | < 0.19 | < 0.19 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | < 0.20 | < 0.19 | < 0.19 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | < 10 | < 0.19 | < 0.19 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | < 10 | < 0.19 | < 0.19 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- |
| Chrysene | µg/L | 117 | 392 | < 10 | < 0.19 | < 0.19 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | < 0.20 | < 0.19 | < 0.19 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | < 10 | < 1.9 | 3.2 | < 1.9 | < 2.3 | -- | -- | -- | -- | -- |
| Fluoranthene | µg/L | 1,000* | 4,100 | < 10 | < 0.19 | < 0.19 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- |
| Fluorene | µg/L | 1,000* | 4,100 | < 10 | < 0.19 | 0.3 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | < 0.20 | < 0.19 | < 0.19 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- |
| 2-Methylphenol | µg/L | 780 | 5,100 | < 10 | < 1.9 | < 1.9 | < 1.9 | < 2.3 | -- | -- | -- | -- | -- |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | < 10 | < 1.9 | < 1.9 | < 1.9 | < 2.3 | -- | -- | -- | -- | -- |
| Naphthalene | µg/L | 20* | 20* | **31** | < 0.19 | **43** | < 0.19 | < 0.23 | **28** | **42** | **110 *** | **170** | **140** |
| Phenanthrene | µg/L | 470 | 3,100 | < 10 | < 0.19 | 1.8 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- |
| Phenol | µg/L | 9,390 | 61,000 | < 10 | < 0.97 | < 0.97 | < 0.97 | < 1.1 | -- | -- | -- | -- | -- |
| Pyrene | µg/L | 1,000* | 3,100 | < 10 | < 0.19 | < 0.19 | < 0.19 | < 0.23 | -- | -- | -- | -- | -- |
| **Inorganic Constituents** | | | | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | < 20 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Arsenic | µg/L | 50* | 50* | < 50 | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Barium | µg/L | 2,000 | 7,200 | **649** | **630** | **610** | **760** | **640** | **730** | **830** | **760** | **830** | **850** |
| Beryllium | µg/L | 31 | 200 | < 10 | < 4.0 | < 4.0 | < 4.0 | < 4.0 | -- | -- | -- | -- | -- |
| Cadmium | µg/L | 7.8 | 51 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | -- | -- | -- | -- | -- |
| Chromium | µg/L | 100 | 310 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | 11 | < 10 |
| Copper | µg/L | 630 | 4,100 | < 10 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 | 20 | < 20 |
| Lead | µg/L | 15* | 15* | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | < 20. | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 | < 40 |
| Zinc | µg/L | 4,700 | 31,000 | **32.5** | < 20 | < 20 | < 20 | < 20 | -- | -- | -- | -- | -- |
| Mercury | µg/L | 2* | 2* | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | -- | -- | -- | -- | -- |
| Total Cyanide | µg/L | 310 | 2,000 | < 10 | **66** | < 10 | < 10 | < 10 | < 10 | -- | -- | -- | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
HF - Holding time of 15 minutes was exceeded
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-305D | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/27/17 | 08/25/16 | 04/07/16 | 08/13/15 | 02/18/15 | 08/07/14 | 02/20/14 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | |
| pH | SU | N/A | N/A | 12.36 | 12.13 | 12.13 | 12.28 | 12.56 | 12.30 | 11.97 |
| Specific Conductance | µm/cm | N/A | N/A | 5070.3 | 648.7 | 5,247 | 2,966 | 3,696 | 2,987 | 2,224 |
| Temperature | °Celsius | N/A | N/A | 21.05 | 26.70 | 23.92 | 26.30 | 11.21 | 23.22 | 22.08 |
| Dissolved Oxygen | mg/L | N/A | N/A | 3.56 | 0.76 | 4.63 | 0.34 | 3.06 | 0.29 | 0.46 |
| ORP | mV | N/A | N/A | -47.4 | -105.2 | -44.3 | -183.3 | 13.1 | -152.2 | -161.3 |
| Turbidity | NTU | N/A | N/A | 1.46 | 5.4 | 2.89 | 2.3 | 2.48 | 3.15 | 2.09 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | < 2.5 |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | < 10 |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | < 1.0 |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | < 0.100 |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | < 0.100 |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | < 5.0 |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **13** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **17** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | -- | -- | **4.1** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | **9,600** | **22,000** | **14,000** | **3,700** | **11,000** | **9,300** | **12,000** |
| Carbon Disulfide | µg/L | 329 | 1,700 | <250 | <250 | < 5.0 | < 5.0 | < 500 | < 500 | < 500 |
| Ethylbenzene | µg/L | 700* | 2,300 | **250** | **770** | **290** | **49** | < 500 | < 500 | < 500 |
| Toluene | µg/L | 1,000* | 1,100 | **5,000** | **12,000** | **6,900** | **1,600** | **4,500** | **3,900** | **5,600** |
| Total Xylenes | µg/L | 31,000 | 200,000 | **960** | **3,000** | **1100** | **270** | < 500 | < 500 | **810** |
| Semivolatile Organic Compounds | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | **3.3** | **13** | **2.5** | **2.7** | < 10 | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | **51** | **200** | **51** | **12** | **73** | **79** | **78** |
| Anthracene | µg/L | 4,700 | 31,000 | **1.5** | **7.9** | **9.1** | **3.4** | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | **0.099** | **0.21** | **0.14** | **1.3** | **0.64** | **2.6** | **0.45** |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | **0.077** | **0.91** | **0.49** | **1.90** | **0.16** |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | **0.12** | <0.10 | **0.16** | **1.1** | **0.45** | **1.6** | **0.18** |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | **0.15** | < 1.0 | **0.36** | < 10 | < 10 | < 10 |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | < 0.050 | **0.24** | < 10 | < 10 | < 10 |
| Chrysene | µg/L | 117 | 392 | **0.076** | **0.16** | **0.11** | **1.0** | < 10 | < 10 | < 10 |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | **0.18** | < 1.0 | **0.32** | < 0.10 | < 0.10 | < 0.10 |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | <10 | < 50 | < 50 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | **1.1** | **4.1** | **1.1** | **4.3** | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | **9.0** | **46** | **7.2** | **7.8** | **21** | **24** | **22** |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | **0.12** | < 0.050 | **0.32** | **0.13** | **0.56** | < 0.050 |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 50 | < 50 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 50 | < 50 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | **3,500** | **9,600** | **3600** | **220** | **1,300** | **1,100** | **2,000** |
| Phenanthrene | µg/L | 470 | 3,100 | **9.3** | **52** | **10** | **16** | **33** | **39** | **37** |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | < 50 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | **1.1** | **5.1** | **1.5** | **5.7** | < 10 | < 10 | < 10 |
| **Inorganic Constituents** | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | **606** | **450** | **140** | **236** | **136** | **130** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Cadmium | µg/L | 7.8 | 51 | -- | < 10 | < 10 | < 50.0 | < 50.0 | < 50.0 | < 50 |
| Chromium | µg/L | 100 | 310 | -- | **19.7** | < 5.0 | **169** | **107** | **112** | **245** |
| Copper | µg/L | 630 | 4,100 | -- | **17.6** | < 10 | **139** | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-306D | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/24/17 | 08/23/16 | 04/07/16 | 08/14/15 | 02/18/15 | 08/06/14 | 02/19/14 |
| **ield Groundwater Quality Parameters** | | | | | | | | | | |
| pH | SU | N/A | N/A | 11.42 | 11.57 | 12.03 | 12.01 | 12.23 | 11.91 | 11.97 |
| Specific Conductance | µm/cm | N/A | N/A | 1574.6 | 2094.7 | 3,670 | 3,275 | 2,321 | 3,425 | 2,351 |
| Temperature | °Celsius | N/A | N/A | 22.85 | 30.70 | 22.10 | 24.76 | 16.24 | 25.73 | 22.44 |
| Dissolved Oxygen | mg/L | N/A | N/A | 5.42 | 5.70 | 4.89 | 3.40 | 7.05 | 1.02 | 3.09 |
| ORP | mV | N/A | N/A | -28.8 | 10.7 | 10.1 | -114.5 | 41.8 | -133.0 | -99.4 |
| Turbidity | NTU | N/A | N/A | 0.66 | 0.9 | 0.79 | 1.75 | 4.17 | 1.29 | 0.48 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | < 2.5 | -- | < 2.5 |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | < 10 | -- | < 10 |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | < 1.0 | -- | < 1.0 |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | < 0.100 | -- | < 0.100 |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | < 0.100 | -- | < 0.100 |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | < 5.0 | -- | < 5.0 |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | **96** | -- | **460** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | **22** | -- | **20** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | **9.7** | -- | **7.6** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | <5.0 | **190** | **440** | **570** | **790** | **1,200** | **1,400** |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Ethylbenzene | µg/L | 700* | 2,300 | **5.9** | **23** | **87** | **110** | **130** | **230** | **360** |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | **7.2** | **18** | **32** | **37** | **60** | **96** |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | **18** | **61** | **79** | **130** | **190** | **340** |
| Semivolatile Organic Compounds | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | **1.3** | **7.2** | < 50 | **23** | **29** | **41** | **28** |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | <1.0 | < 1.0 | < 1.0 | < 10 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31,000 | **0.053** | **0.21** | **0.31** | **0.51** | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 10 |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 |
| Chrysene | µg/L | 117 | 392 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | **0.11** | **0.16** | **0.19** | **0.32** | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | **0.57** | **1.8** | **2.5** | **5.5** | < 10 | **10** | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 10 | < 10 | < 10 | 14 | **11** |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | **1.1** | **63** | **6.5** | **31** | < 10 | **190** |
| Phenanthrene | µg/L | 470 | 3,100 | **0.46** | **1.5** | **2.3** | **5.0** | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | **97** |
| Pyrene | µg/L | 1,000* | 3,100 | **0.12** | **0.19** | **0.25** | **0.39** | < 10 | < 10 | < 10 |
| **Inorganic Constituents** | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | **109** | **170** | **349** | **229** | **415** | **271** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chromium | µg/L | 100 | 310 | -- | **28.5** | **278** | **29.6** | **296** | **264** | **20** |
| Copper | µg/L | 630 | 4,100 | -- | **30.0** | **28.8** | **26.3** | **16.8** | **12.8** | < 10 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | **28.8** | **21.9** | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-307D | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/22/17 | 08/23/16 | 04/06/16 | 08/14/15 | 02/18/15 | 08/06/14 | 02/20/14 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | |
| pH | SU | N/A | N/A | 12.32 | 12.22 | 12.46 | 12.39 | 13.85 | 12.43 | 12.27 |
| Specific Conductance | µm/cm | N/A | N/A | 8534.9 | 835.6 | 9983 | 7857 | 9568 | 9533 | 7342 |
| Temperature | °Celsius | N/A | N/A | 21.33 | 28.70 | 22.8 | 23.76 | 15.28 | 24.29 | 23.38 |
| Dissolved Oxygen | mg/L | N/A | N/A | 1.54 | 2.74 | 1.92 | 5.24 | 1.08 | 2.24 | 4.92 |
| ORP | mV | N/A | N/A | -40.90 | -96.7 | -18.63 | -110.9 | -80.7 | -131.1 | -115.7 |
| Turbidity | NTU | N/A | N/A | 3.83 | 3.4 | 3.12 | 4.18 | 2.46 | 9.69 | 1.58 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | < 2.5 | -- | < 12 |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | < 10 | -- | < 50 |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | < 1.00 | -- | < 1.0 |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | < 0.100 | -- | < 0.100 |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | < 0.100 | -- | < 0.100 |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | < 5.0 | -- | < 5.0 |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | **79** | -- | **21** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | **24** | -- | **20** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | **8.2** | -- | **9.4** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **6** |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **14** |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **15** |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **16** |
| Semivolatile Organic Compounds | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | **1.3** | **1.3** | **2.1** | **2.2** | < 10 | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | <1.0 | < 1.0 | < 1.0 | < 10 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31,000 | **0.29** | **0.29** | **0.26** | **0.25** | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | **0.27** |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | **0.3** |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | **0.16** |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 10 |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 |
| Chrysene | µg/L | 117 | 392 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 | **0.58** |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Fluoranthene | µg/L | 1,000* | 4,100 | **0.27** | **0.30** | **0.25** | **0.24** | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | **0.42** | **0.53** | **0.61** | **0.78** | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 0.050 | < 0.050 | **0.32** |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | **1.7** | **3.2** | **3.5** | **5.7** | < 10 | 11 | **47** |
| Phenanthrene | µg/L | 470 | 3,100 | **2.6** | **2.7** | **3.2** | **3.0** | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | **0.30** | **0.35** | **0.28** | **0.29** | < 10 | < 10 | < 10 |
| **Inorganic Constituents** | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | **1,210** | **1,140** | **1,140** | **1,140** | **1,140** | **1,140** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chromium | µg/L | 100 | 310 | -- | **72.2** | **68.4** | **65.4** | **33.9** | **78.3** | **68.8** |
| Copper | µg/L | 630 | 4,100 | -- | **10.6** | **14.4** | **14.7** | < 10.0 | < 10.0 | < 10 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

**Appendix F**
**Historical Data Summary - Bedrock Groundwater Analytical Data**
**November 2001 through February 2017**
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

| Parameter | Units | Type 2 RRS | Type 4 RRS | MW-308D | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 02/22/17 | 08/23/16 | 04/05/16 | 08/12/15 | 02/16/15 | 08/06/14 | 02/19/14 |
| **Field Groundwater Quality Parameters** | | | | | | | | | | |
| pH | SU | N/A | N/A | 12.24 | 4.01 | 12.25 | 12.40 | 13.35 | 12.14 | 11.66 |
| Specific Conductance | µm/cm | N/A | N/A | 422.50 | 416.2 | 3898 | 2905 | 2920 | 2026 | 1612 |
| Temperature | °Celsius | N/A | N/A | 23.21 | 29.66 | 19.99 | 25.43 | 17.87 | 22.47 | 23.89 |
| Dissolved Oxygen | mg/L | N/A | N/A | 2.59 | 4.01 | 4.24 | 3.17 | 3.50 | 2.38 | 0.94 |
| ORP | mV | N/A | N/A | -4.00 | -32.5 | 55.8 | -88.4 | -12.7 | -107.9 | -112.6 |
| Turbidity | NTU | N/A | N/A | 5.62 | 3.7 | 236 | 0.49 | 3.42 | 3.53 | 102 |
| **Laboratory Results - Natural Attenuation Parameters** | | | | | | | | | | |
| Nitrogen, Nitrate (as N) | mg/L | N/A | N/A | -- | -- | -- | -- | < 2.5 | -- | < 2.5 |
| Sulfate | mg/L | N/A | N/A | -- | -- | -- | -- | **19** | -- | **12** |
| Sulfide | mg/L | N/A | N/A | -- | -- | -- | -- | < 1.00 | -- | < 1.0 |
| Ferrous Iron | mg/L | N/A | N/A | -- | -- | -- | -- | < 0.100 | -- | < 0.100 |
| Total Iron | mg/L | N/A | N/A | -- | -- | -- | -- | < 0.100 | -- | **1.65** |
| Carbon Dioxide | mg/L | N/A | N/A | -- | -- | -- | -- | < 5.0 | -- | < 5.0 |
| Methane | mg/L | N/A | N/A | -- | -- | -- | -- | **47** | -- | **140** |
| Dissolved Nitrogen | mg/L | N/A | N/A | -- | -- | -- | -- | **17** | -- | **18** |
| Dissolved Oxygen | mg/L | N/A | N/A | -- | -- | -- | -- | **5.6** | -- | **4.1** |
| **Laboratory Results - Organic Constituents** | | | | | | | | | | |
| Volatile Organic Compounds | | | | | | | | | | |
| Benzene | µg/L | 5* | 9 | **11** | **13** | **24** | **23** | **8.2** | < 5.0 | **6.8** |
| Carbon Disulfide | µg/L | 329 | 1,700 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Ethylbenzene | µg/L | 700* | 2,300 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **5.8** |
| Toluene | µg/L | 1,000* | 1,100 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Total Xylenes | µg/L | 31,000 | 200,000 | <5.0 | <5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | **5.4** |
| Semivolatile Organic Compounds | | | | | | | | | | |
| Acenaphthene | µg/L | 2,000* | 6,100 | <0.50 | <0.50 | < 0.50 | < 0.50 | < 10 | < 10 | < 10 |
| Acenaphthylene | µg/L | 470 | 3,100 | <1.0 | <1.0 | < 1.0 | < 1.0 | < 10 | < 10 | < 10 |
| Anthracene | µg/L | 4,700 | 31,000 | **0.078** | <0.050 | 0.051 | < 0.050 | < 10 | < 10 | < 10 |
| Benzo[a]anthracene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | 0.087 | < 0.050 | < 0.050 | < 0.050 | < 0.050 |
| Benzo[a]pyrene | µg/L | 0.2* | 0.39 | <0.050 | <0.050 | 0.12 | < 0.050 | < 0.050 | < 0.050 | < 0.050 |
| Benzo[b]fluoranthene | µg/L | 1.17 | 3.92 | <0.10 | <0.10 | 0.15 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| Benzo[g,h,i]perylene | µg/L | 10 | 10 | <0.10 | <0.10 | 0.21 | < 0.10 | < 10 | < 10 | < 10 |
| Benzo[k]fluoranthene | µg/L | 11.7 | 39.2 | <0.050 | <0.050 | 0.15 | < 0.050 | < 10 | < 10 | < 10 |
| Chrysene | µg/L | 117 | 392 | <0.050 | <0.050 | 0.091 | < 0.050 | < 10 | < 10 | < 10 |
| Dibenz(a,h)anthracene | µg/L | 0.3* | 0.39 | <0.10 | <0.10 | 0.16 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| 2,4-Dimehylphenol | µg/L | 700* | 700* | <10 | <10 | < 10 | < 10 | < 10 | 16 | 25 |
| Fluoranthene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 10 |
| Fluorene | µg/L | 1,000* | 4,100 | <0.10 | <0.10 | < 0.10 | < 0.10 | < 10 | < 10 | < 10 |
| Indeno[1,2,3-cd]pyrene | µg/L | 1.17 | 3.92 | <0.050 | <0.050 | 0.19 | < 0.050 | < 0.050 | < 0.050 | < 0.050 |
| 2-Methylphenol | µg/L | 780 | 5,100 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| 3 & 4 Methylphenol | µg/L | 78 | 510 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Naphthalene | µg/L | 20* | 20* | <0.50 | <0.50 | 0.87 | < 0.50 | < 10 | < 10 | < 10 |
| Phenanthrene | µg/L | 470 | 3,100 | **0.060** | <0.050 | 0.058 | 0.086 | < 10 | < 10 | < 10 |
| Phenol | µg/L | 9,390 | 61,000 | <10 | <10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Pyrene | µg/L | 1,000* | 3,100 | <0.050 | <0.050 | < 0.050 | < 0.050 | < 10 | < 10 | < 10 |
| **Inorganic Constituents** | | | | | | | | | | |
| Antimony | µg/L | 6.3 | 40 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Arsenic | µg/L | 50* | 50* | -- | < 50 | < 50 | < 50 | < 50 | < 50 | < 50 |
| Barium | µg/L | 2,000 | 7,200 | -- | **220** | **189** | **115** | **124** | **99.2** | **106** |
| Beryllium | µg/L | 31 | 200 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Cadmium | µg/L | 7.8 | 51 | -- | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 |
| Chromium | µg/L | 100 | 310 | -- | **36.5** | **31.4** | **30.7** | **33.9** | **26.8** | **25.7** |
| Copper | µg/L | 630 | 4,100 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Lead | µg/L | 15* | 15* | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |
| Nickel | µg/L | 100 | 2,000 | -- | < 20 | < 20 | < 20 | < 20 | < 20 | < 20 |
| Zinc | µg/L | 4,700 | 31,000 | -- | < 20 | **37.7** | < 20 | < 20 | < 20 | < 20 |
| Mercury | µg/L | 2* | 2* | -- | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 | < 0.20 |
| Total Cyanide | µg/L | 310 | 2,000 | -- | < 10 | < 10 | < 10 | < 10 | < 10 | < 10 |

Notes:
**Analyte was detected above laboratory detection limit**
**Analyte concentration exceeds the Type 4 RRS (RRS applicable to the well location)**
*Highest RRS equals Type 1 RRS; therefore, the cleanup goal becomes the Type 1 RRS for this chemical
ft AMSL - feet Above Mean Sea Level
RRS - Risk Reduction Standard
SU - Standard Units
µS/cm - microsiemens per centimeter
µg/L - micrograms per liter
mg/L - milligrams per liter
mV - millivolts
NTU - nephelometric turbidity units
N/A - RRS are not applicable to this parameter
-- Not Analyzed
Values are listed with the laboratory-reported number of significant figures, which varies between different constituents within the same groundwater sample, and between the same constituent in different wells.

# COI Concentration Trend Graphs (CD ONLY)

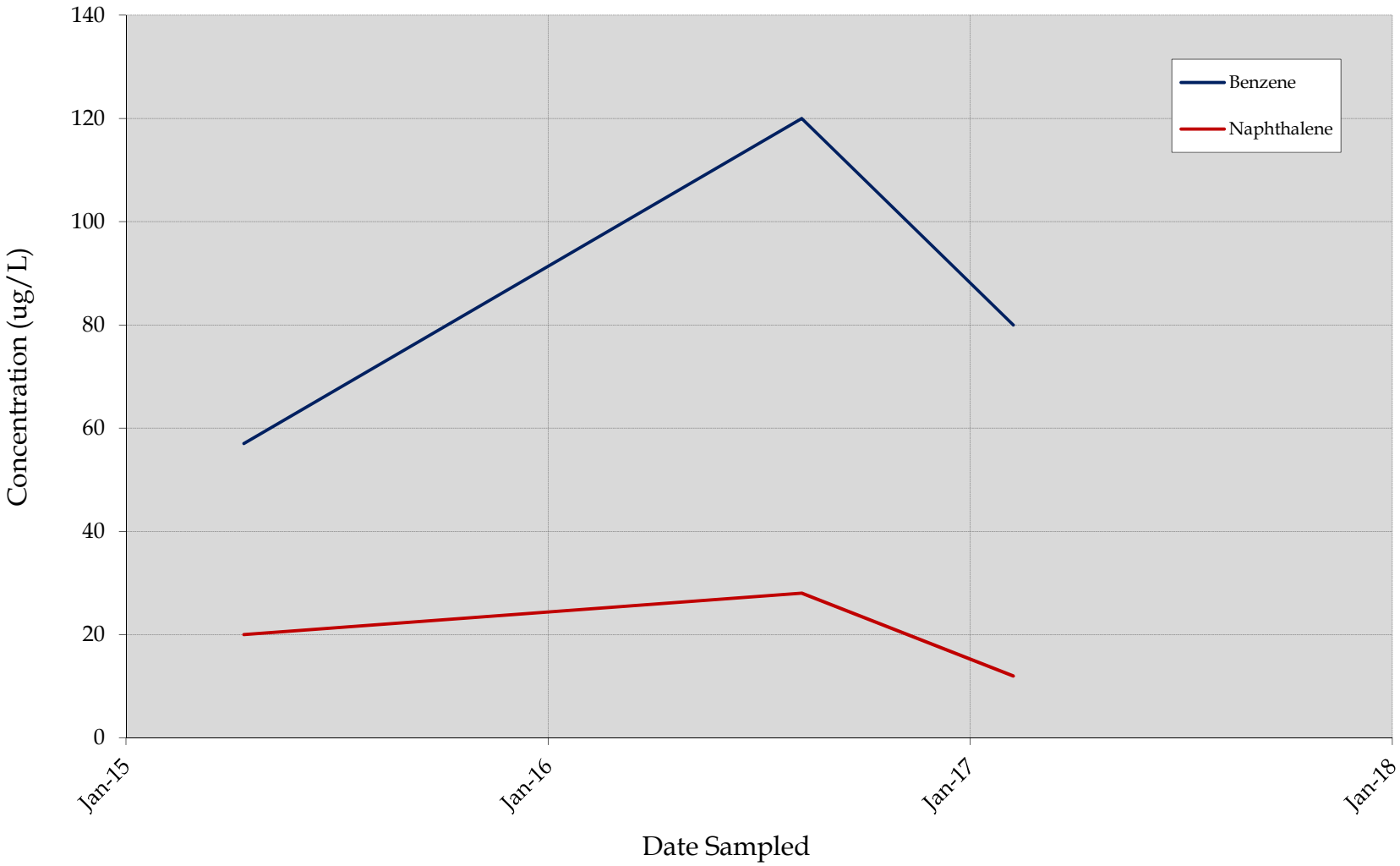
*Appendix G*

*Project No. 0366660*
*Atlanta Gas Light Company*

**Environmental Resources Management**
3200 Windy Hill Road SE, Suite 1500W
Atlanta, Georgia 30339
(678) 486-2700

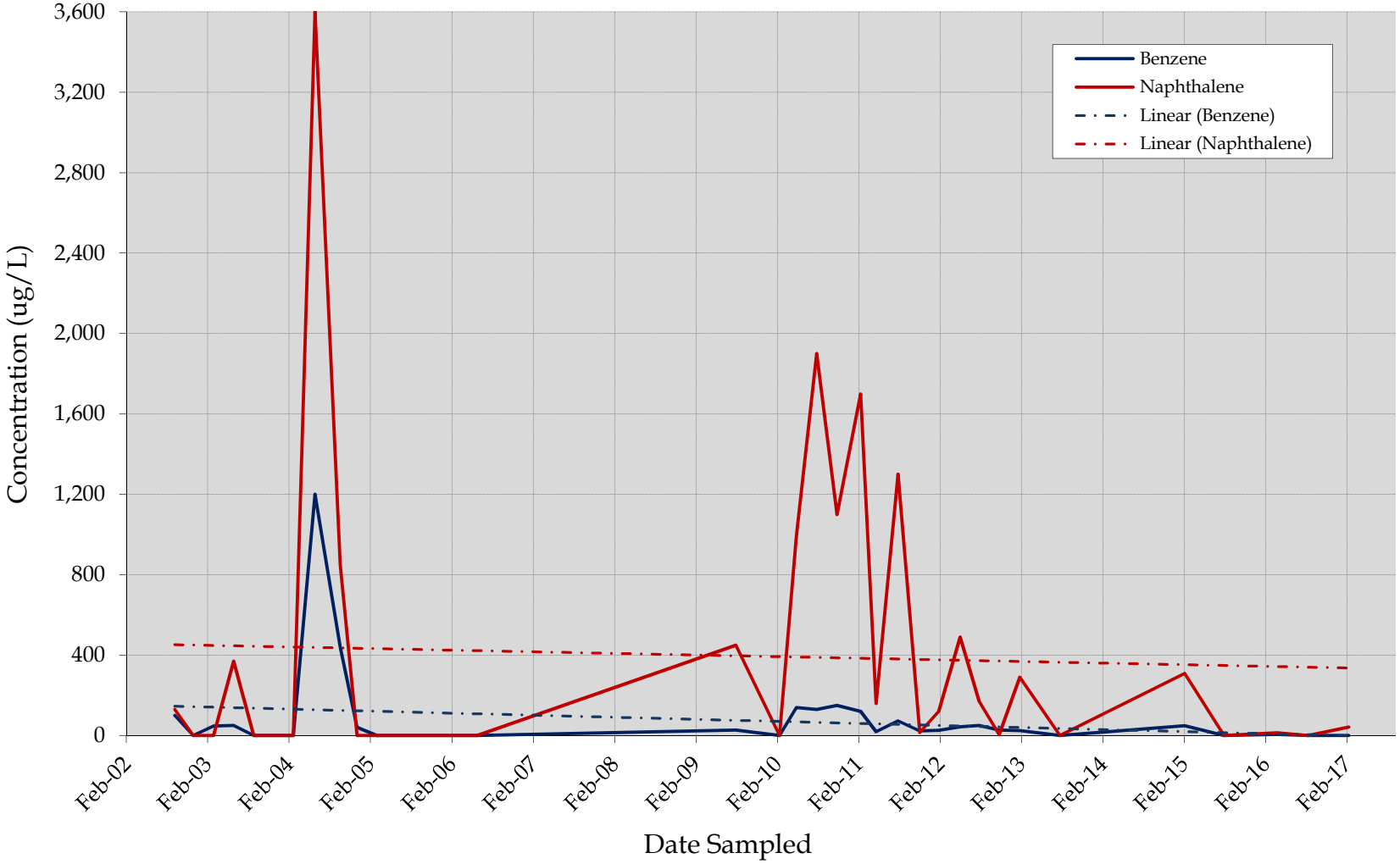
# Appendix G
## COI Concentration Trend Graphs
### Atlanta Gas Light Company
### Former Manufactured Gas Plant Site
### Macon, Georgia

# AMW-15



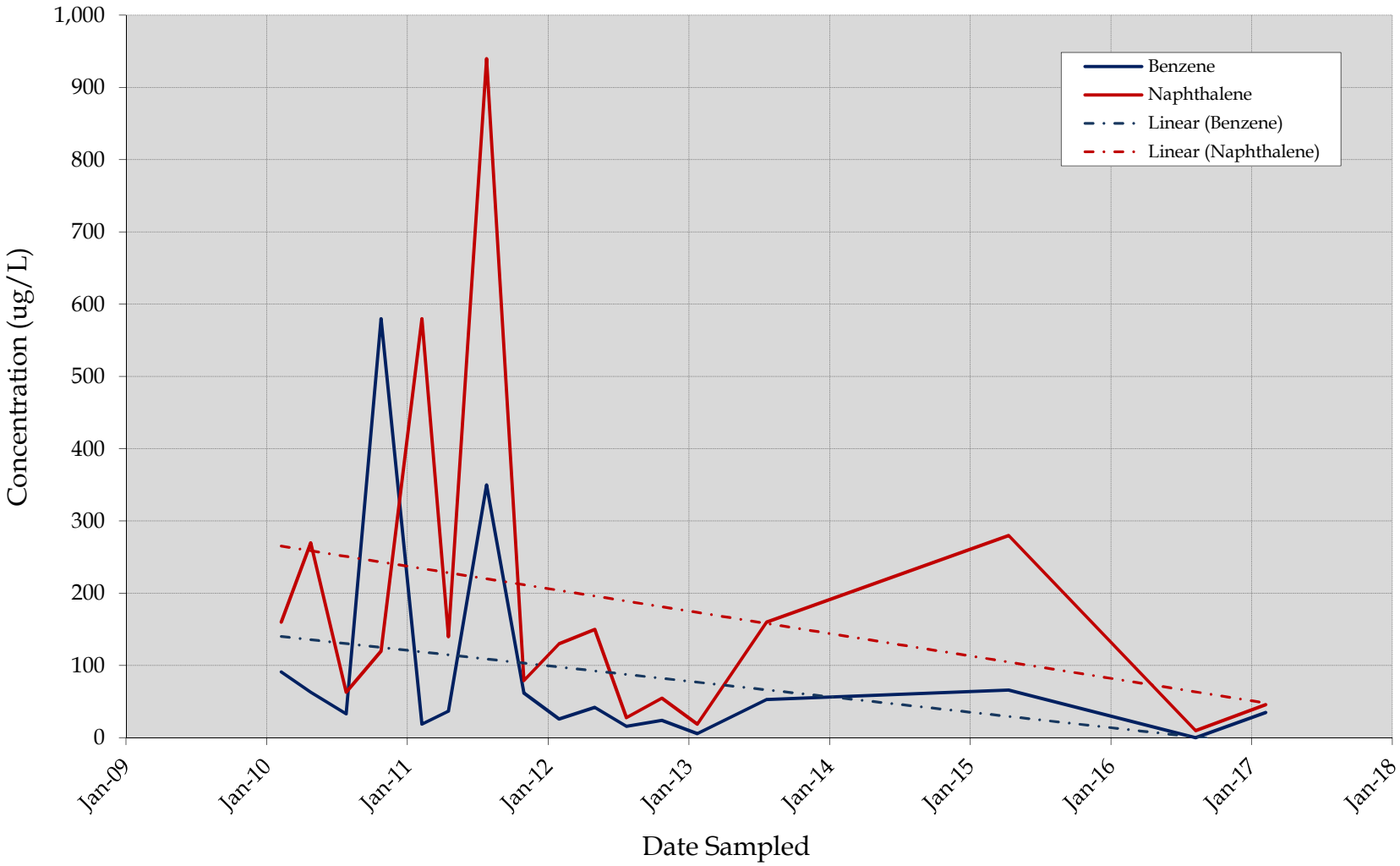
# Appendix G
## COI Concentration Trend Graphs
### Atlanta Gas Light Company
### Former Manufactured Gas Plant Site
### Macon, Georgia

# MW-101



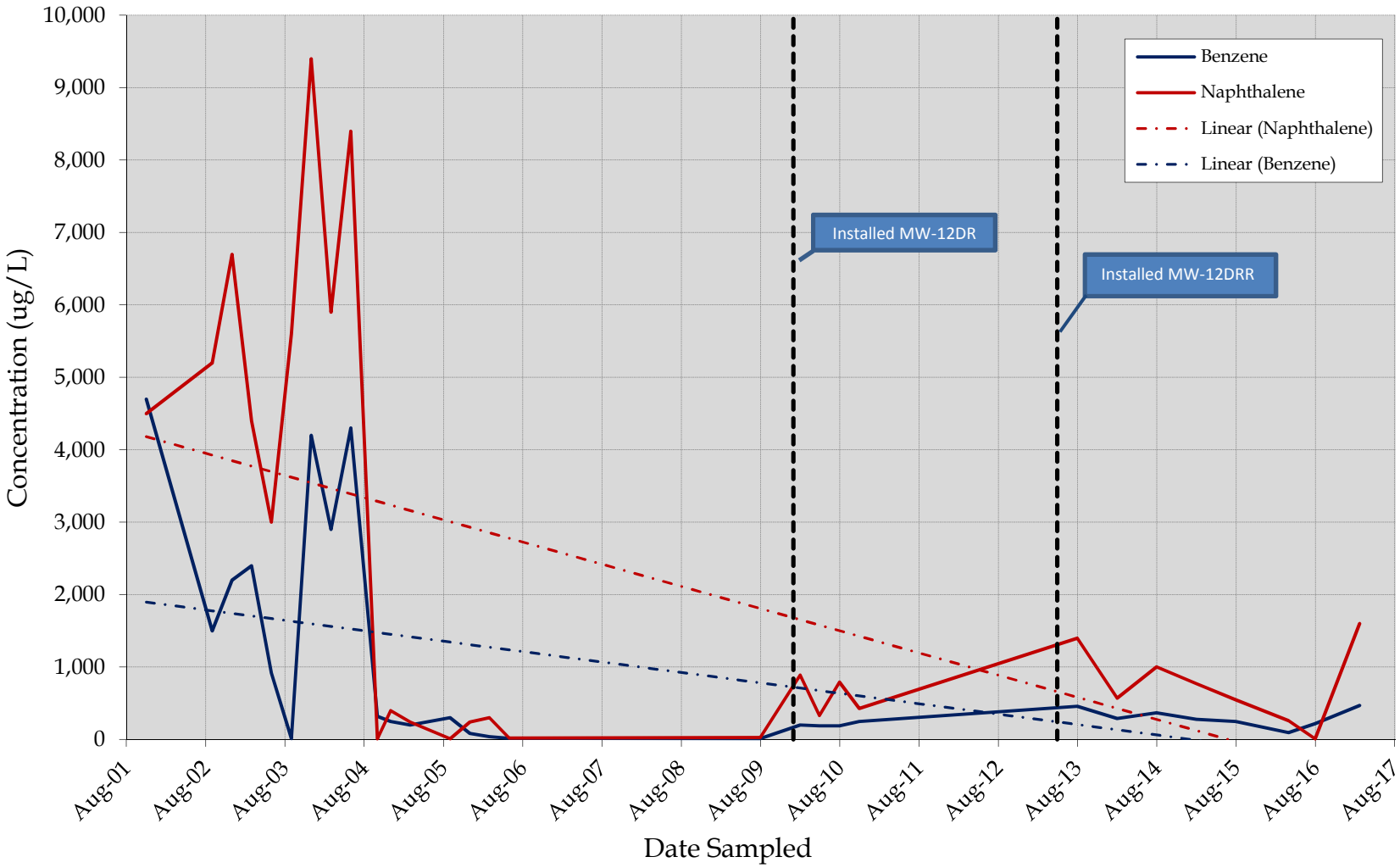
# Appendix G
## COI Concentration Trend Graphs
### Atlanta Gas Light Company
### Former Manufactured Gas Plant Site
### Macon, Georgia

# MW-205



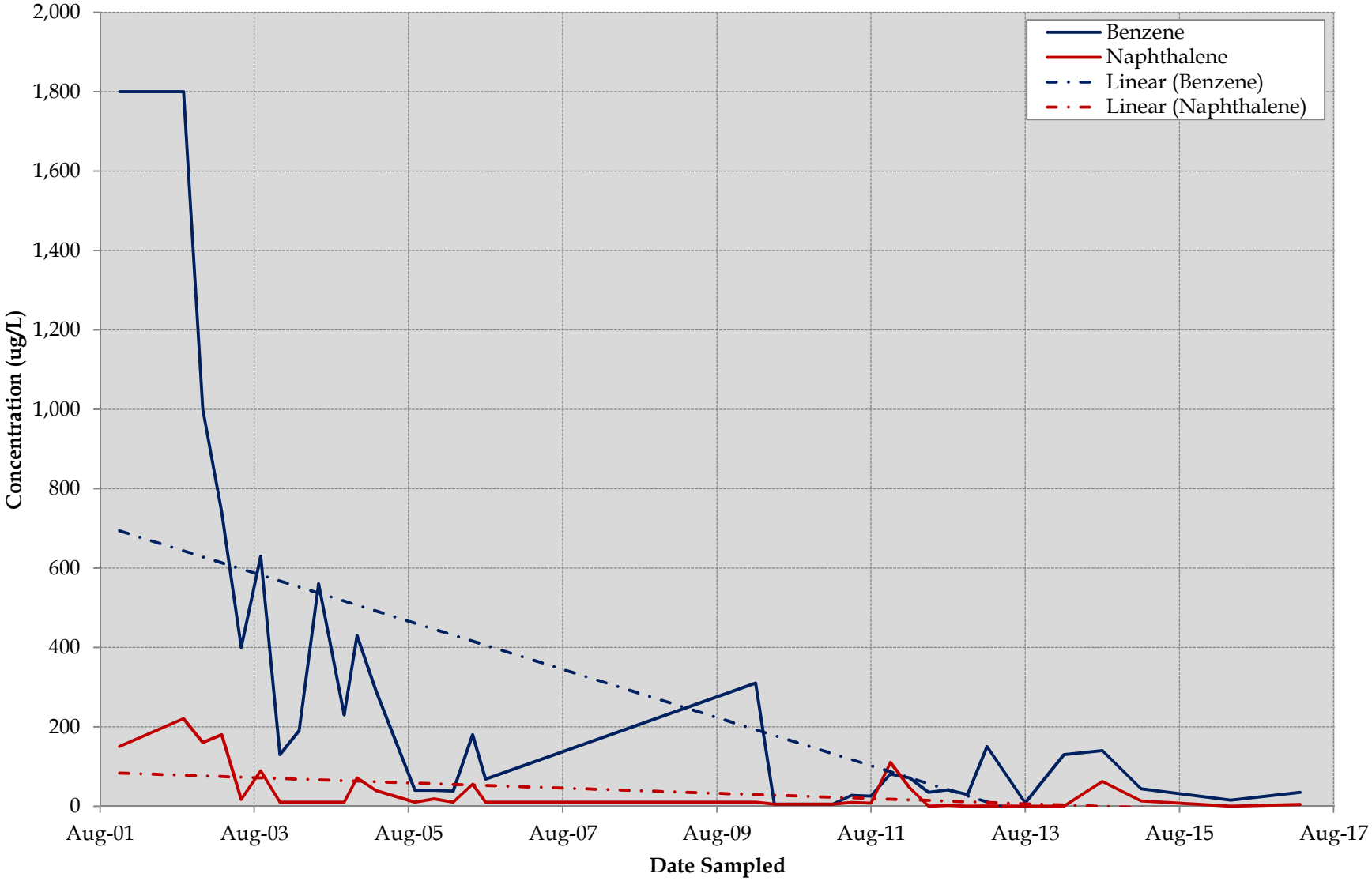
# Appendix G
## COI Concentration Trend Graphs
### Atlanta Gas Light Company
### Former Manufactured Gas Plant Site
### Macon, Georgia

# MW-12DRR



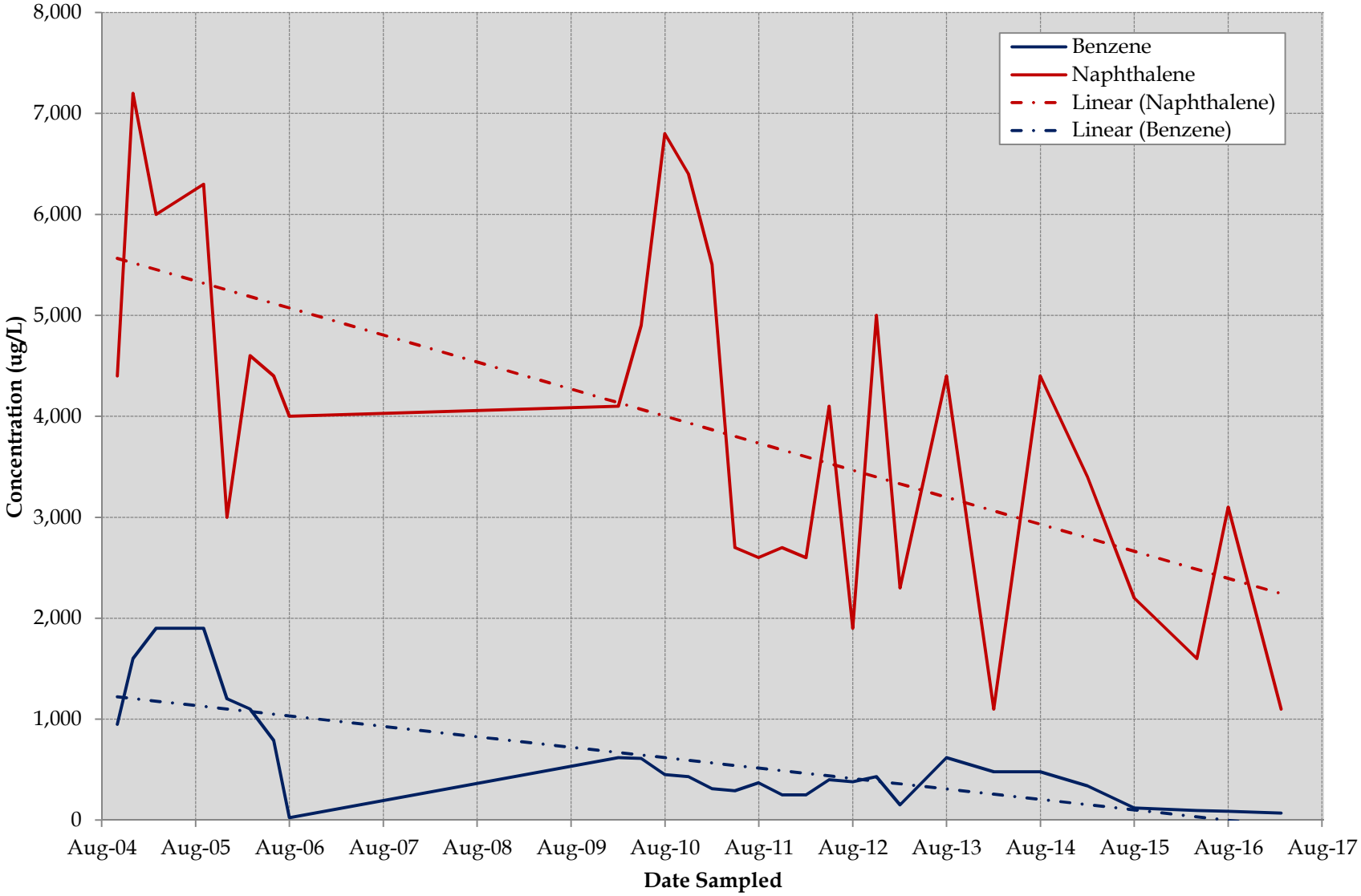
# Appendix G
## COI Concentration Trend Graphs
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

# MW-12DD



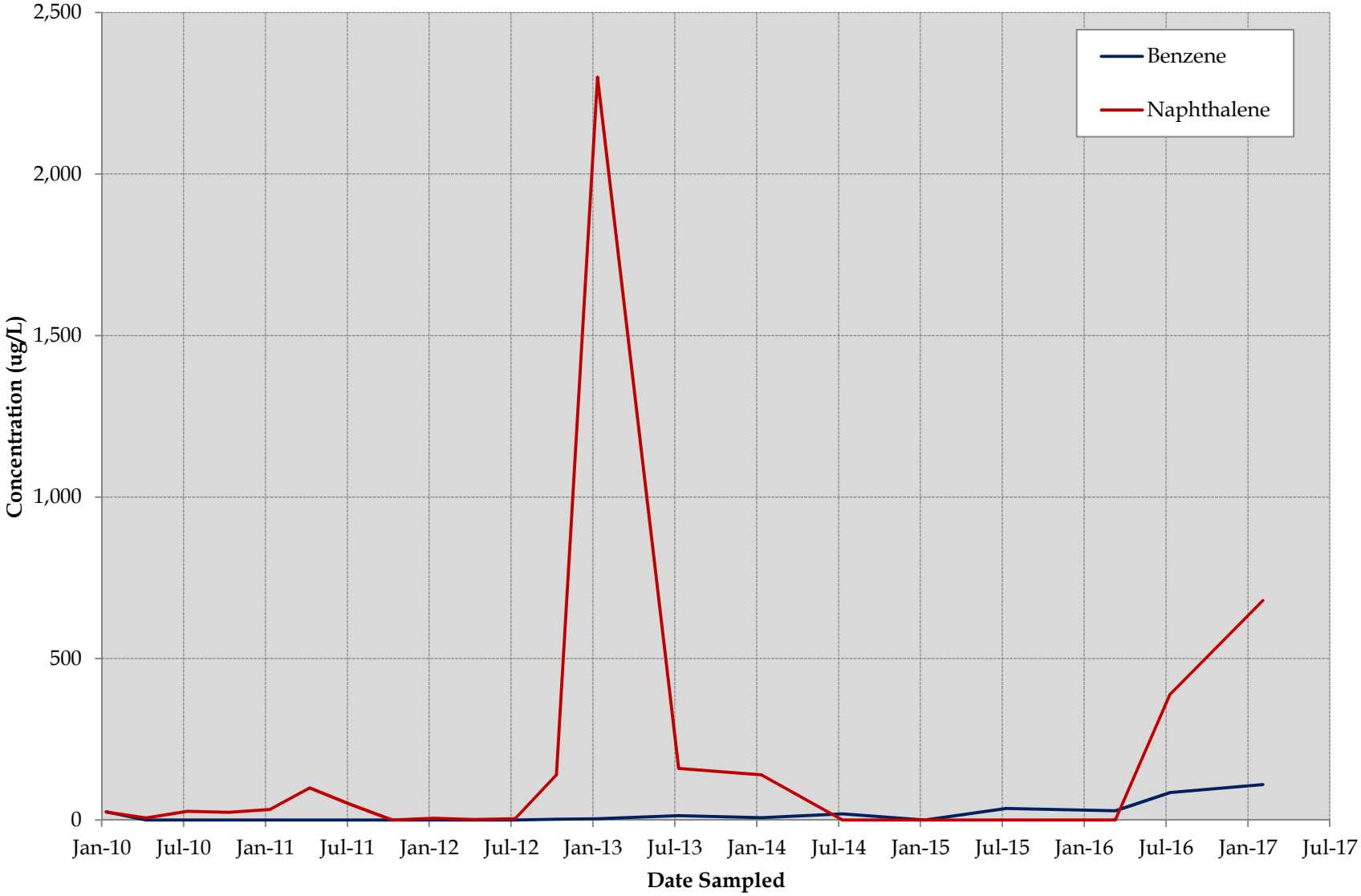
# Appendix G
## COI Concentration Trend Graphs
### Atlanta Gas Light Company
### Former Manufactured Gas Plant Site
### Macon, Georgia

# MW-110D



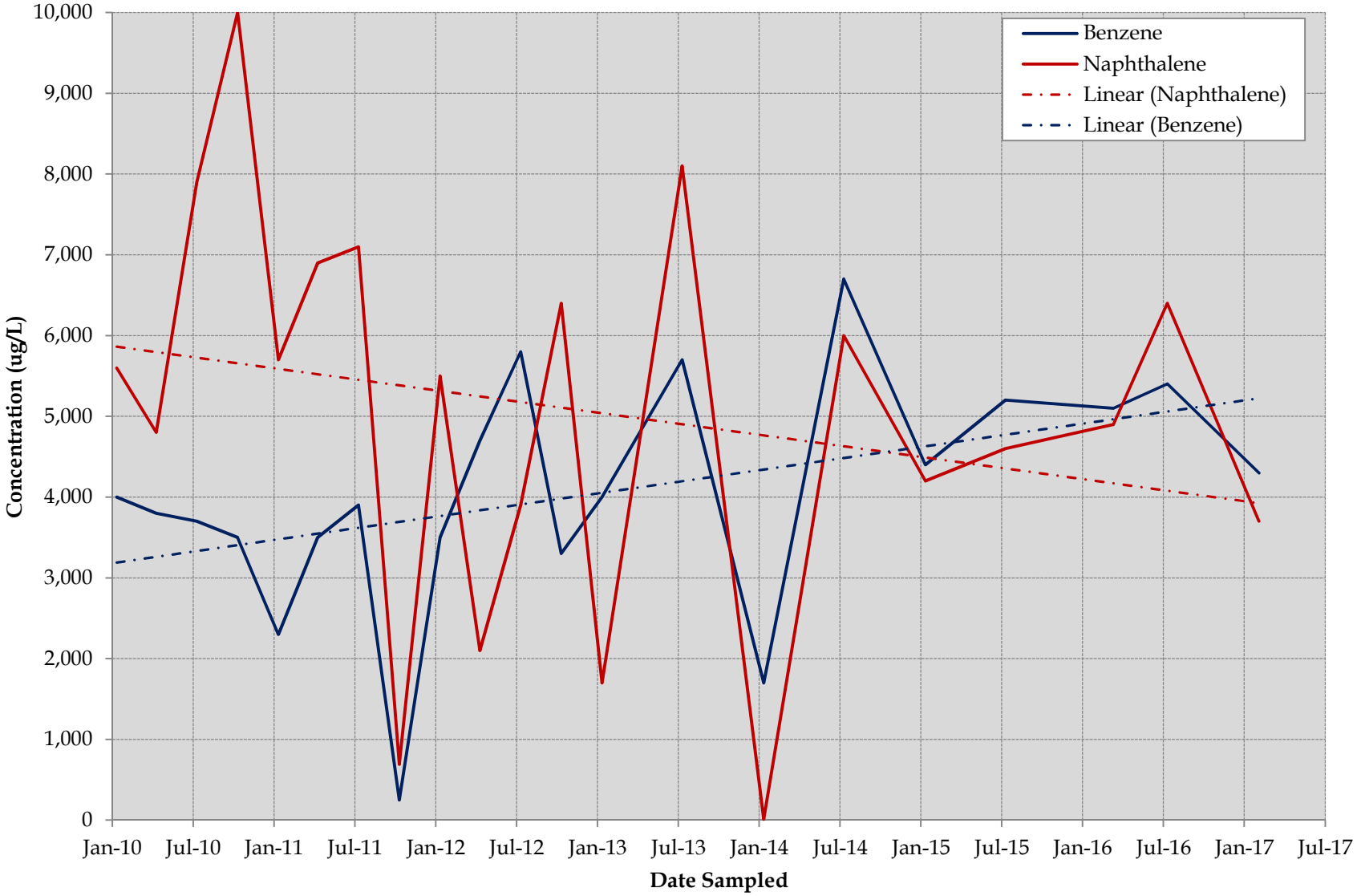
# Appendix G
## COI Concentration Trend Graphs
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

# MW-200DR



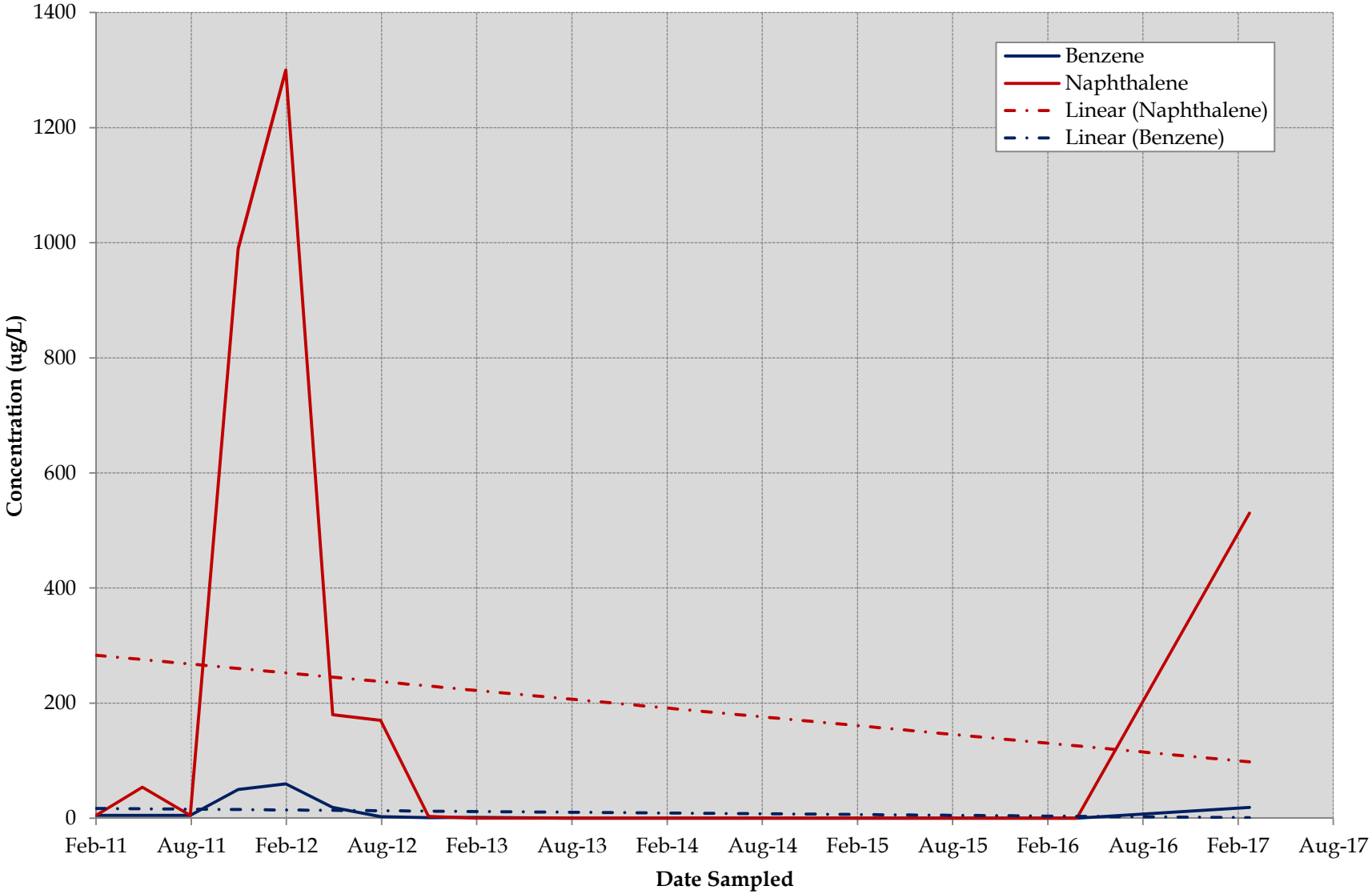
# Appendix G
## COI Concentration Trend Graphs
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

# MW-205D



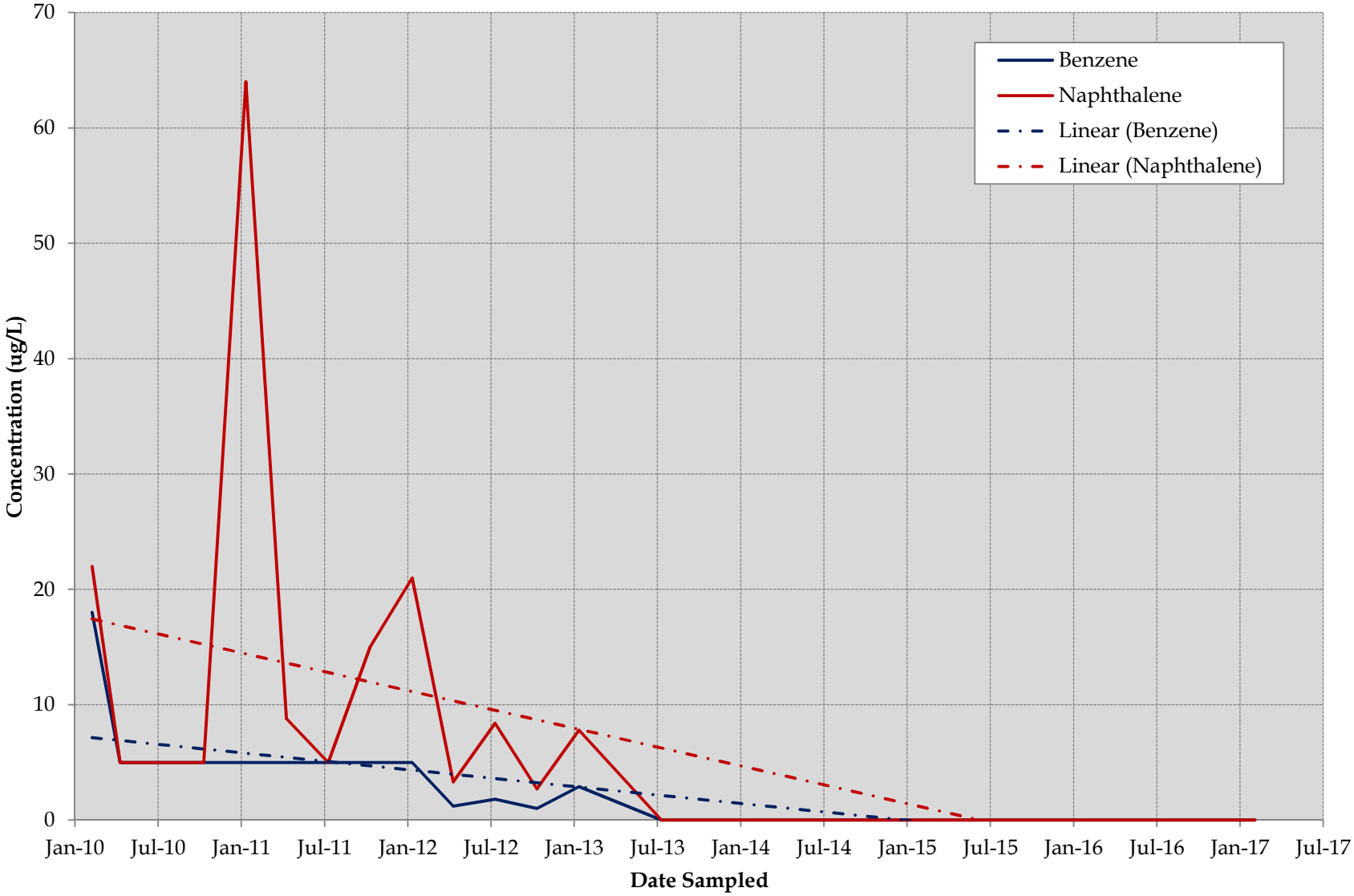
# Appendix G
## COI Concentration Trend Graphs
### Atlanta Gas Light Company
### Former Manufactured Gas Plant Site
### Macon, Georgia

# MW-206D



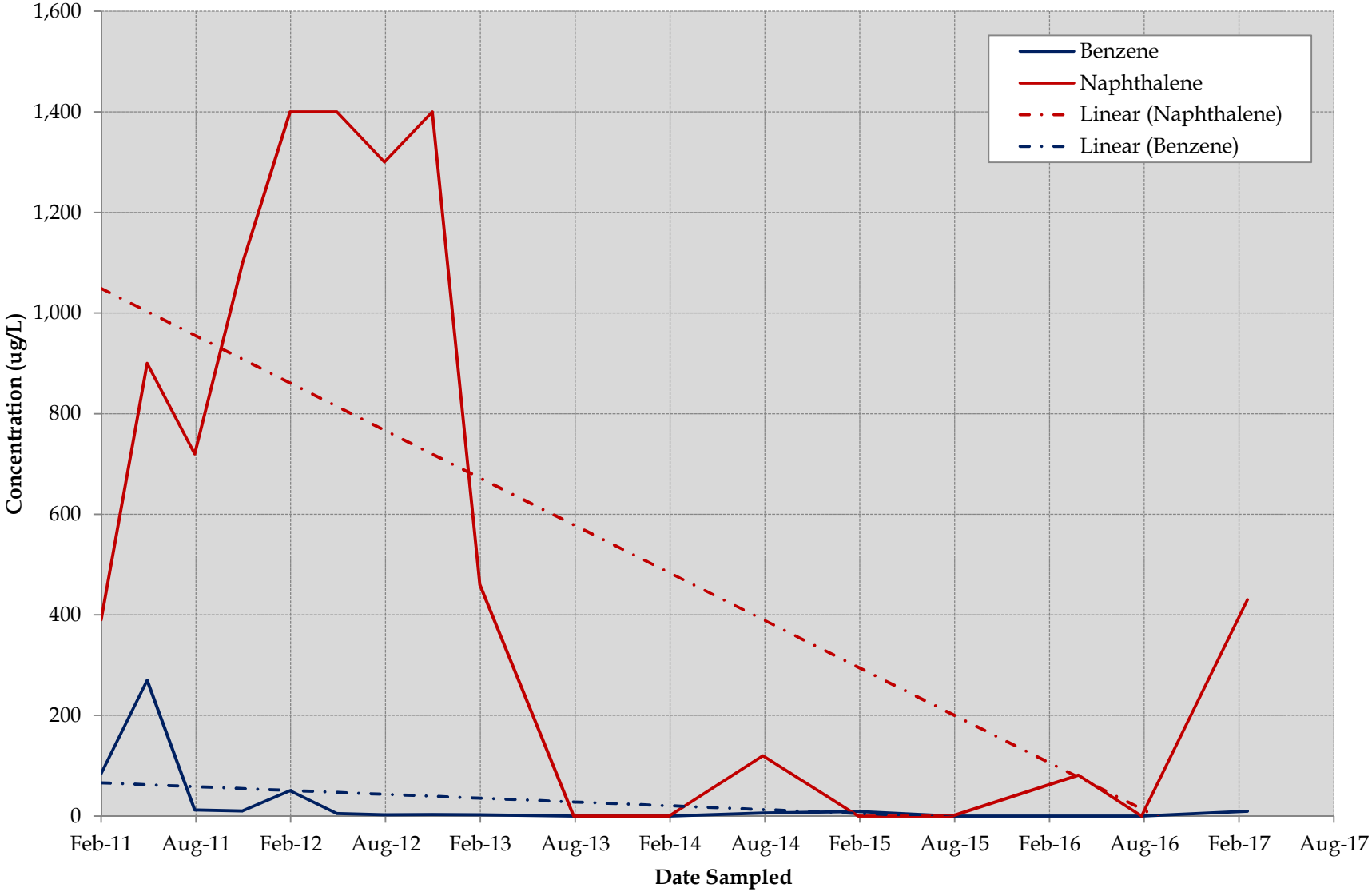
# Appendix G
## COI Concentration Trend Graphs
### Atlanta Gas Light Company
### Former Manufactured Gas Plant Site
### Macon, Georgia

# MW-207D



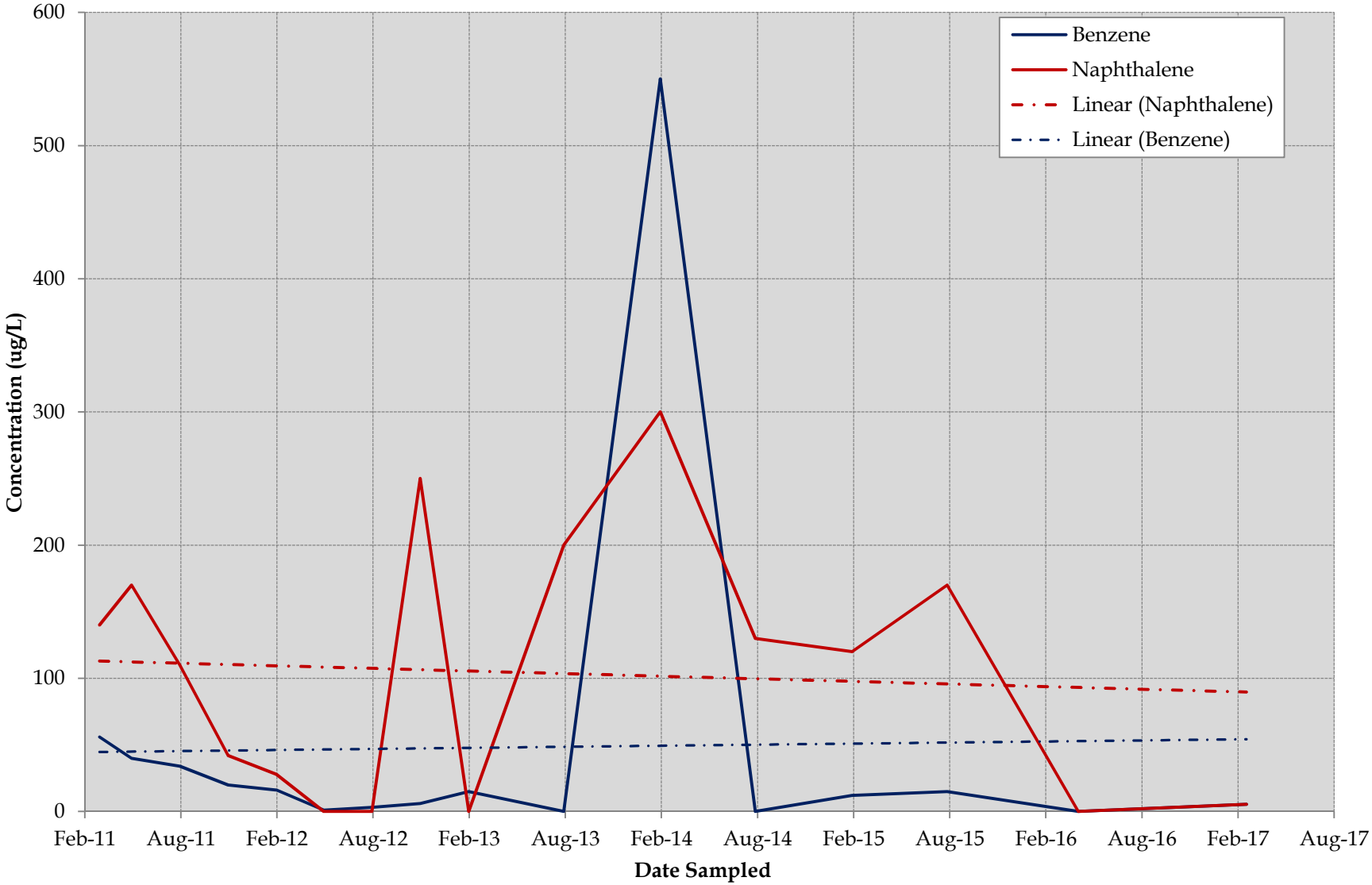
# Appendix G
## COI Concentration Trend Graphs
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

# MW-301D



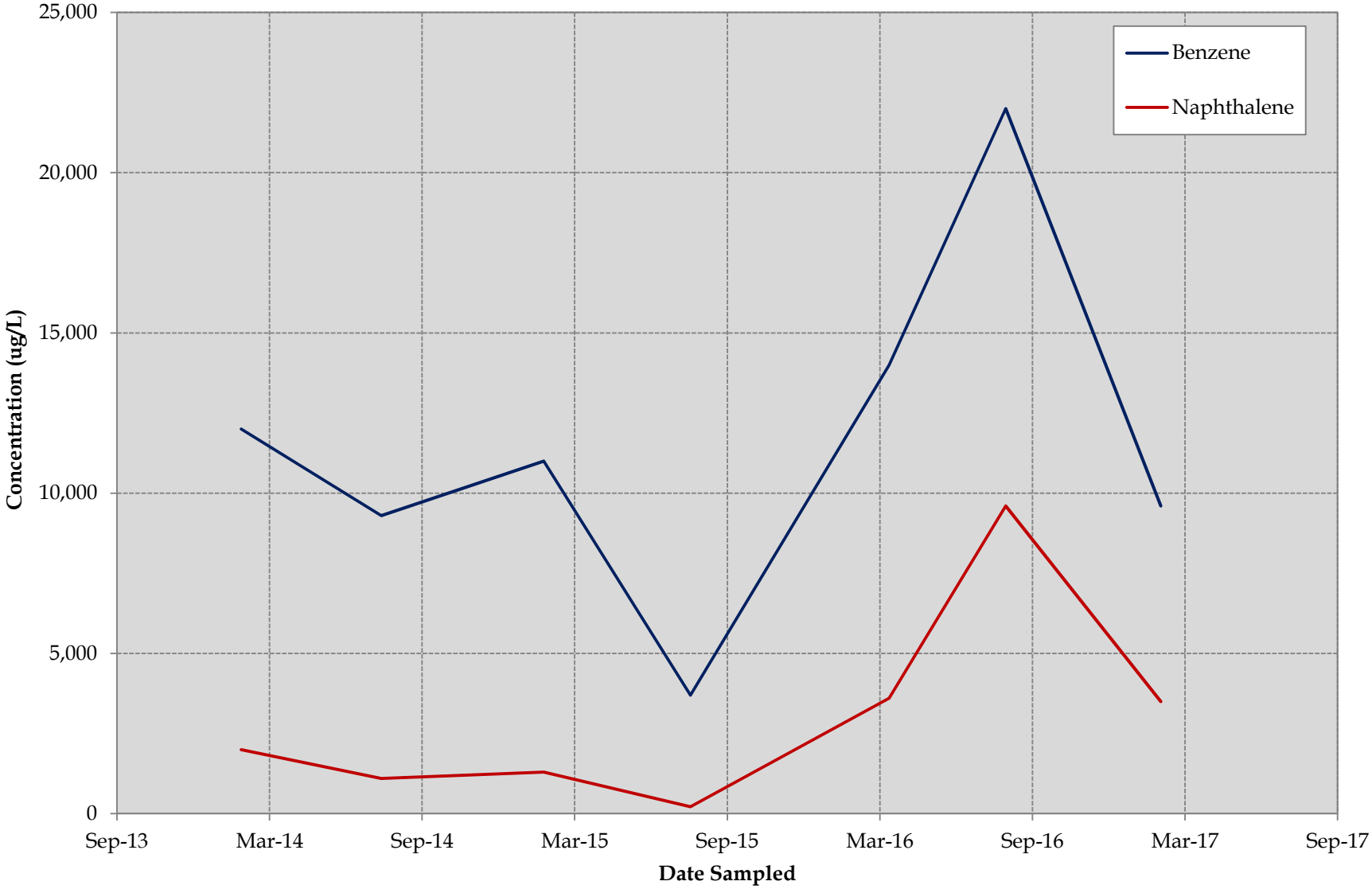
# Appendix G
## COI Concentration Trend Graphs
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

# MW-302D



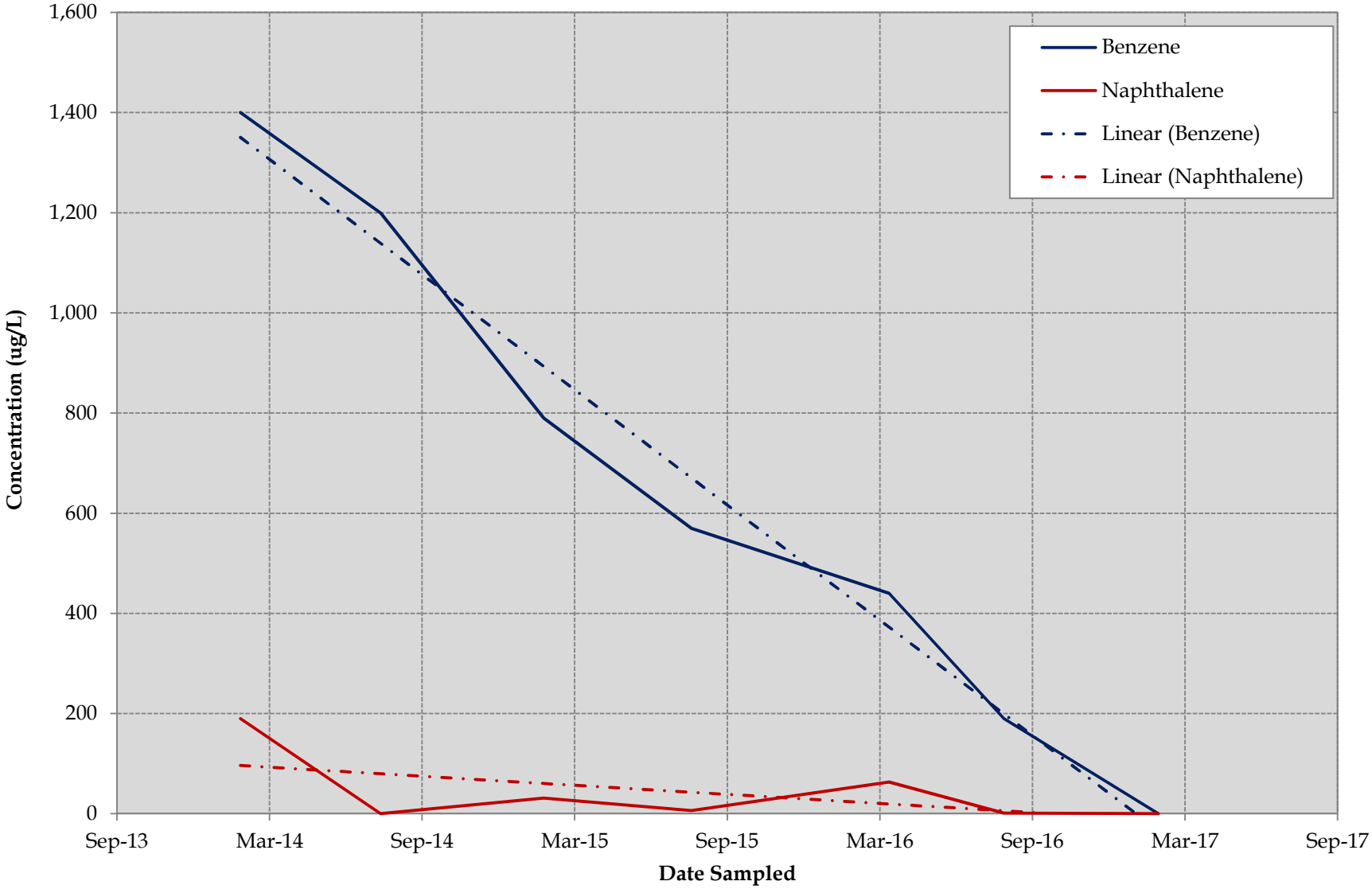
# Appendix G
## COI Concentration Trend Graphs
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

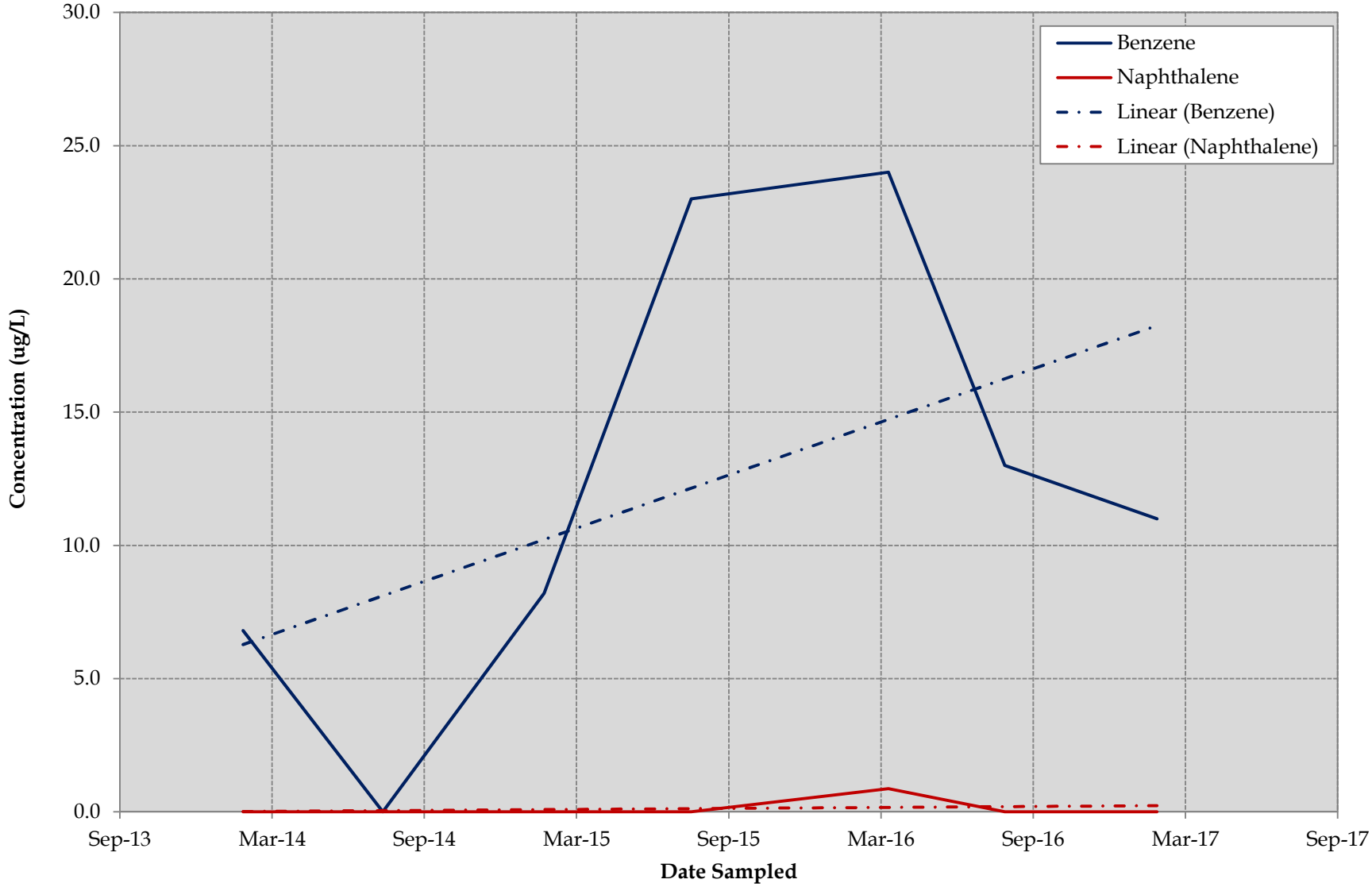
# MW-305D



# Appendix G
## COI Concentration Trend Graphs
### Atlanta Gas Light Company
### Former Manufactured Gas Plant Site
### Macon, Georgia

# MW-306D



# Appendix G
## COI Concentration Trend Graphs
**Atlanta Gas Light Company**
**Former Manufactured Gas Plant Site**
**Macon, Georgia**

# MW-308D