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Christopher Jones
Project Manager



SUPPORTING THE **GEORGIA WORLD CONGRESS CENTER**



1955 EVERGREEN BLVD ♦ SUITE 300 ♦ DULUTH, GA 30096 ♦ TEL: (678) 775-3080 ♦ FAX: (678) 775-3138

February 12, 2016

Ms. Antonia Beavers
GEORGIA DEPARTMENT OF NATURAL RESOURCES
Department of Environmental Protection
Land Protection Branch
Response and Remediation Program
2 Martin Luther King, Jr. Drive, S.E., Suite 1054
Atlanta, Georgia 30334-9000

**Subject: Annual Groundwater Sampling Report #10
Northside Drive Landfill Site, Atlanta, Georgia
Purchase Order Number 86420**

Dear Ms. Beavers:

Tetra Tech, Inc. (Tetra Tech) is pleased to submit the enclosed Annual Groundwater Sampling Report #10 for the subject site on behalf of our client, the Georgia World Congress Center (GWCC). Tetra Tech prepared this report in accordance with the requirements specified in the Monitoring and Maintenance (M&M) Plan (Georgia Department of Natural Resources, December 2003, revised July 2005).

Tetra Tech field personnel conducted annual groundwater sampling on December 22 and 23, 2015. Metals regulated by the revised M&M Plan were not detected above laboratory reporting limits. Concentrations of five site regulated polynuclear aromatic hydrocarbons (PAH) were detected above the analytical method's reporting limit. The groundwater sample collected from background monitoring well MM-04 contained phenanthrene above the laboratory reporting limit but below the Type 1 RRS. Phenanthrene was detected in monitoring wells MM-04, MM-02, MWC-3C, MWC-3B, MM-03, and MWC-1B. Anthracene was detected in monitoring well MWC-3C. Naphthalene was detected in monitoring wells MM-03 and MWC-1B. Fluoranthene was detected in monitoring well MWC-1A and pyrene was detected in MWC-1A. Concentrations were not above the Type 1 Risk Reduction Standards (RRS) for any wells but were above background concentrations observed in well MM-04. During field monitoring for organic vapors using a flame ionization detector (FID), zero detections were observed within the headspace or breathing zone of all on-site wells.

On February 3, 2016, Tetra Tech contacted Ms. Antonia Beavers to notify her and Georgia Environmental Protection Division (GA EPD) of these low level detections and to discuss recommendations. We have provided recommendations for additional analysis to calculate these recent PAH detections based on our discussion with GA EPD.

An unknown source of PAH detections has been observed during four previous sampling events (6th, 7th, 8th, and 9th Annual Events). In 2013, Tetra Tech recommended quarterly monitoring of upgradient and offsite wells MM-03 and MWC-1A to determine if the PAHs detected in these wells were due to an off-site release unrelated to the Northside Drive Landfill. Quarterly water level monitoring and limited sampling was initiated in September 2013 and continued to June 2014. Analytical results and groundwater trends for the quarterly events indicate that site contaminants are detected in these two wells

Ms. Antonia Beavers
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most frequently in winter and spring, when groundwater levels are at or near annual highs. Additionally, groundwater trends indicate that the groundwater level within the slurry wall in the vicinity of the dewatering well is below six feet from the top of the slurry wall at its lowest point (the northwest corner, near the dewatering well) and does not indicate any problems with the physical integrity of the slurry wall. A constant dewatering well level inside the slurry wall also suggests that groundwater is not permeating through the slurry wall, and the cap and slurry wall remain intact in the vicinity of the dewatering well. Additional information regarding the 2013-2014 quarterly gauging and sampling event is provided in the Quarterly Groundwater Gauging and Limited Sampling Report which was submitted to GA EPD on August 8, 2014.

As requested by representatives of the GWCC, Tetra Tech has enclosed two hard copies and one electronic copy of the 10th Annual Groundwater Sampling Report. If you have any questions or comments regarding this submittal, please contact me at (678) 775-3081 or Wayne Rosser (GWCC) at (404) 223-4820.

Sincerely,



Christopher Jones
Project Manager

Enclosure

cc: Wayne Rosser, GWCC
Jason Wilson, Tetra Tech
Jason Metzger, GA EPD (letter only)
Joan Sasine, Bryan Cave, LLP. (electronic copy only)

ANNUAL GROUNDWATER SAMPLING REPORT #10
NORTHSIDE DRIVE LANDFILL SITE



GEORGIA
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ATLANTA, GEORGIA

PREPARED FOR:

GEORGIA DEPARTMENT OF NATURAL RESOURCES

DEPARTMENT OF ENVIRONMENTAL PROTECTION, LAND PROTECTION BRANCH,

RESPONSE AND REMEDIATION PROGRAM

2 MARTIN LUTHER KING, JR. DRIVE, S.E., SUITE 1054 EAST

ATLANTA, GEORGIA 30334-9000

PREPARED BY:



1955 EVERGREEN BLVD

BUILDING 200, SUITE 300

DULUTH, GEORGIA 30096

FEBRUARY 2016

CERTIFICATIONS

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate that information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true and accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.



Christopher Jones
Project Manager

I certify that I am a qualified groundwater 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 myself or by a subordinate working under my direction.



Jason Wilson
Georgia P.E. No. 0270298



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ACRONYMS AND ABBREVIATIONS

bgs	Below ground surface
COC	Chain of custody
EPA	U.S. Environmental Protection Agency
ft	Foot/feet
GA DNR	Georgia Department of Natural Resources
GA EPD	Georgia Environmental Protection Division
gal/min	Gallons per minute
GPS	Global positioning system
GWCC	Georgia World Congress Center
J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample
L/min	Liters per minute
LNAPL	Light non-aqueous phase liquid
m	Meter
M&M	Monitoring and maintenance
MSL	Mean sea level
NTU	Nephelometric Turbidity Units
PAHs	Polynuclear aromatic hydrocarbons
PQL	Practical quantitation limits
RRS	Risk Reduction Standards
SESD	Science and Ecosystem Support Division
TAL Metals	Target Analyte List metals
Tetra Tech	Tetra Tech EM, Inc.
µg/L	Micrograms per liter
VRP	Voluntary Remediation Program

1.0 INTRODUCTION

Tetra Tech, Inc. (Tetra Tech) has prepared the 10th Annual Groundwater Sampling Report for the Georgia World Congress Center (GWCC) for activities conducted at the Northside Drive Landfill Site (Site), previously known as the Jones Avenue Site, located in Atlanta, Georgia. The report is being submitted to the Georgia Department of Natural Resources (GA DNR), Environmental Protection Division (GA EPD), Land Protection Branch, Response and Remediation Program in partial fulfillment of requirements presented in the revised Monitoring and Maintenance (M&M) Plan for Type 5 Risk Reduction Standards (RRS) for the Site (GA EPD 2005). Tetra Tech conducted quarterly groundwater sampling at the Site for two years after installation of engineering controls. Following these quarterly sampling events, ten annual groundwater sampling events have been completed, including the most recent annual sampling event conducted on December 22 and 23, 2015.

This report evaluates the performance of the remedial controls implemented in July 2003 as part of the criteria for Type 5 RRS of the Georgia Hazardous Site Response Regulations, Chapter 391-3-19-.07(10) (GA DNR 2003a). The GA EPD has determined that Type 5 standards apply to the Site, and that Type 1 RRS are to be met outside of the boundary of engineering controls. The performance criteria used to evaluate the remedial controls are provided in the Type 1 RRS of the Georgia Hazardous Site Response Regulations, Chapter 391-3-19-.07(6) (GA EPD 2003b). This evaluation was supported by a groundwater sampling event conducted on December 22 and 23, 2015 to monitor the nature and extent of potential groundwater contamination outside the boundary of engineering controls at the Site.

1.1 SITE DESCRIPTION

The Site was formerly listed on the State of Georgia's Hazardous Site Inventory pursuant to the Georgia Hazardous Site Response Act, but is now part of the Georgia Voluntary Remediation Program (VRP). Two tax parcels on the south side of John Street owned by the state of Georgia were combined into one tax parcel (tax parcel identification number 14- 0082-006-12-1). Six monitoring wells (MM-02, MWC-3C, MWC-3B, MWC-1A, MWC-1B, and MWC-1C) are located on property owned by The Housing Authority of the City of Atlanta, Georgia on the north side of John Street at tax parcel identification number 14-0082-0006-008-9.

The landfill portions of the Site (also referred to as "landfill") were remediated using engineering and institutional controls, and a conservation easement. The engineering controls involved the installation of a soil-bentonite slurry wall and an engineered cap as illustrated in the approved "Revised As-Built Drawings"

dated October 2003 (GA EPD 2003c). The institutional controls that were implemented consisted of a deed notice and a restrictive covenant, which included the M&M Plan (GA EPD 2005).

1.2 REPORT ORGANIZATION

Section 1.0 of this report provides a brief site description, the report's organization, and the groundwater sampling program objectives. Section 2.0 describes the groundwater sampling investigation activities performed as part of the 10th Annual Groundwater Sampling Event, which includes discussion of groundwater standards, sampling locations, and sampling procedures. Section 3.0 provides the analytical results of the current Sampling Event. Section 4.0 provides an evaluation of the data from a statistical viewpoint. Section 5.0 presents a review of the non-residential use of the property. Section 6.0 provides conclusions and recommendations based on the 10th Annual Groundwater Sampling Event. Section 7.0 presents deviations from the revised M&M Plan. Section 8.0 presents a list of references used in this report.

This report also includes seven (7) enclosures and two (2) attachments. Enclosure 1 contains figures illustrating the site location, a potentiometric map, and groundwater levels outside of the slurry wall. Enclosure 2 provides tables summarizing the analytes regulated for groundwater at this site, historical summaries of field parameter measurements, analytical results for metals, and analytical results for polynuclear aromatic hydrocarbons (PAHs). Enclosure 3 contains a copy of the Tetra Tech logbook notes. Enclosure 4 presents completed groundwater sampling field data sheets created by Tetra Tech for each groundwater monitoring well. Enclosure 5 provides a photographic log from the most recent landfill inspection; this log was also included in the Quarters-46/47 Landfill Maintenance and Inspection Report. Enclosure 6 presents the chain of custody (COC) provided to the laboratory with the samples. Enclosure 7 provides data validation for the analytical results received from the laboratory. Attachment A provides analytical results from the laboratory. Attachment B provides a certification letter from the laboratory stating that the laboratory is approved according to Chapter 391-3-26-.05.

1.3 OBJECTIVES

Tetra Tech conducted two years of quarterly sampling between March 2004 and December 2005 in accordance with the revised M&M Plan (GA EPD 2005). Subsequently, the frequency of groundwater sampling was reduced to once annually. The purpose of this ongoing annual sampling program is to evaluate the performance of the remedial controls, and to establish existing conditions and background data that may be used for statistical analysis, if warranted.

The specific objectives of the annual groundwater sampling efforts are to identify and/or evaluate the following potential conditions:

- A release to groundwater of regulated substances from the landfill at concentrations above background and/or the Type 1 RRS of the Georgia Hazardous Site Response Regulations of Chapter 391-3-19-.07
- Migration of existing concentrations of regulated substances to locations outside of the landfill

The annual sampling event also involves the measurement of groundwater levels both inside and outside the slurry wall.

2.0 GROUNDWATER SAMPLING INVESTIGATION ACTIVITIES

This section describes the applicable regulatory standards, procedures, and methods used by Tetra Tech to collect, analyze and evaluate the groundwater samples collected during the sampling event conducted on December 22 and 23, 2015.

2.1 GROUNDWATER STANDARDS

Based on historical data collected during previous sampling events conducted by GA EPD, the regulated analytes for the Site include polynuclear aromatic hydrocarbons (PAHs) and metals. The Georgia Type 1 RRS for regulated substances, presented in the Georgia Hazardous Site Response Regulations, Chapter 391-3-19-.07 (GA EPD 2003a) were used as the groundwater standards for this Sampling Event. Table 1 of Enclosure 2 lists the regulated analytes for the Site, the frequency at which they continue to be monitored during the annual sampling program, the Type 1 RRS, and the laboratory analytical methods used to measure the concentrations of each analyte in the samples.

2.2 GROUNDWATER SAMPLING LOCATIONS

Tetra Tech collected water level measurements from the following nine groundwater monitoring wells and the landfill dewatering well, which are located in and around the landfill, as shown in Figure 1 in Enclosure 1:

- MM-04 – the up gradient, background monitoring well for site groundwater, located on the southeastern corner of the site, near the intersection of Bush Street and Gray Street.
- MM-01 – located near the western boundary of the site, along Northside Drive

- MM-02 – located on the northwestern corner of the western end of John Street, near the intersection of Northside Drive and John Street
- MWC-3B, MWC-3C – located just outside the northwestern corner of the site, by the intersection of John Street and Northside Drive
- MM-03 – located on the northern boundary of the site along John Street, midway between Northside Drive and Gray Street
- MWC-1A, MWC-1B, MWC-1C – located on the northeastern corner of the site, at the intersection of John Street and Gray Street
- Dewatering well – located within the limits of the engineering controls of the landfill slurry wall near the northwest corner of the landfill

Tetra Tech also collected groundwater samples from all of the wells except the dewatering well. It should be noted that monitoring well MWC-1A was previously classified as dry due to insufficient water (≤ 6 inches) during sampling events conducted in December 2006 to December 2010. Redeveloping the well in November 2011 may have removed the blockage, which allowed the well to be sampled in subsequent monitoring events. In addition, the demolition of the Herndon Homes Apartment complex located just north of these wells may have altered the groundwater recharge and flow characteristics on the northern perimeter of the site.

In accordance with the M&M plan, the site monitoring wells were gauged starting with the background well MM-04, and continuing (in the order shown) with site monitoring wells MM-01, MM-02, MWC-3C, MWC-3B, MM-03, MWC-1A, MWC-1C and MWC-1B (GA EPD 2005).

2.2.1 Geographic Locations of Monitoring Wells and Site Landmarks

The geographic locations of the monitoring wells were determined in November 2003 using a global positioning system (GPS) consisting of a Trimble™ TSC1™ data collector and GPS Pathfinder® Pro XRS receiver. The coordinates of the existing wells were used to show the well locations on Figure 1. The locations of property monuments were also determined using this equipment. The GPS coordinates for the monuments on the northern perimeter of the site were updated in December 2011 during the quarterly inspection conducted on December 7, 2011 to alleviate problems with locating the monuments using only the figures during previous quarterly inspections. The horizontal accuracy of the locations of the groundwater monitoring wells was determined to be plus or minus (\pm) one meter (m). A Georgia-registered land surveyor using traditional field survey techniques determined the elevation of monitoring wells at the site within an accuracy of ± 0.01 foot.

Groundwater elevations inside and outside of the slurry wall were also compared during this 10th Annual Event (see Figures 3 and 4 in Enclosure 1).

2.3 GROUNDWATER SAMPLING AND ANALYSIS PROCEDURES

During sampling activities conducted on December 22 and 23, 2015, Tetra Tech collected groundwater samples from nine monitoring wells. Tetra Tech collected groundwater samples using the U.S. Environmental Protection Agency (EPA) Region 4 Science and Ecosystem Support Division (SESD) “Traditional Multiple Volume Purge” method, in accordance with the EPA Region 4 SESD Field Branches Quality System and Technical Procedure (FBQSTP) for Groundwater Sampling, dated March 6, 2013 (EPA 2013). Groundwater samples were collected in partial fulfillment of the revised M&M Plan; see Section 7.0 for deviations from the revised M&M Plan.

2.3.1 Well Redevelopment in November 2011

In an attempt to reduce the increased turbidity observed in the groundwater samples during the 5th Annual Sampling Event, Tetra Tech performed redevelopment on all of the wells on-site, with the exception of the dewatering well, in November 2011. Wells were purged using a Waterra Hydrolift II inertial pump (Hydrolift II), which utilizes a motor-driven actuator to oscillate the tubing and foot valve assembly up and down to force trapped water and fine sediments upwards through the tubing. The simultaneous pumping and surging action is believed to draw fine sediments into the tubing and remove them from the well (Waterra 2011).

Wells subjected to redevelopment were pumped with the Hydrolift II until the purged water became clear, then the wells were surged and purged a second time until the purged water became clear again. Purged water was contained in 55-gallon drums on-site to await analytical results and was later appropriately disposed (see Section 2.3.2.6).

2.3.2 Measuring Depth to Groundwater

During the 10th Annual Sampling Event, the depth to groundwater was measured in wells MM-04, MM-01, MM-02, MWC-3B, MWC-3C, MM-03, MWC-1A, MWC-1B, MWC-1C, and the dewatering well using an oil-water interface probe capable of measuring depth to groundwater and detecting the presence of light non-aqueous-phase liquids (LNAPL). The top of each well casing was used as the measurement reference point. Groundwater level measurements were recorded to the nearest 0.01 foot. The probe was decontaminated prior to initial use and between wells (see Section 2.3.5, Sampling Decontamination Procedures for more

information). The depths to groundwater were recorded on the Groundwater Sampling Data Sheets (see Enclosure 4).

2.3.3 Air Monitoring Near Monitoring Wells

After removing the monitoring well's protective manhole cover and casing cap, but prior to measuring the groundwater level, the breathing zone was checked for organic vapors using a photoionization detector (PID), calibrated in the field prior to use. No elevated readings were observed in the breathing zone or in the well headspace. Air monitoring screening results are presented in the logbook notes in Enclosure 3 and on the Groundwater Sampling Data Sheets in Enclosure 4.

2.3.4 Measuring Water Quality Parameters

Water quality parameters were measured using a YSI-556 multi-parameter water quality meter with a flow-through cell and a Hach 2100Q turbidity meter. The water quality and turbidity meters were calibrated in the field prior to initiating sampling activities each day. The specified water quality parameters (pH, temperature, specific conductivity, and turbidity) were measured in the field during the purging period of each well. The data is presented in Table 2 of Enclosure 2, as well as in the Groundwater Sampling Data Sheets in Enclosure 4. Groundwater generated during well purging was contained in 55-gallon drums placed on-site to await analytical results.

Although the water quality meter was calibrated prior to use, this particular unit recorded pH at levels higher than what is normally observed at the site wells. Tetra Tech contacted the equipment rental company to have the unit replaced. Tetra Tech followed up with the equipment rental company and they stated that the cable was damaged which likely caused erroneous readings; therefore, pH readings recorded on December 22, 2015 may be incorrect.

2.3.5 Collection of Groundwater Samples

Collection of samples for laboratory analysis utilized a peristaltic pump at all sampling locations. Purging activities were complete after a minimum of three (3) well casing volumes were removed and water quality parameters stabilized, in accordance with Section 3.2.2 of the revised M&M Plan (GA EPD 2005) at the following locations: MM-04, MM-01, MM-02, MWC-3C, MWC-3B, MM-03, and MWC-1A. Low-flow sampling techniques were implemented at wells MWC-1B and MWC-1C; therefore samples were collected after water quality parameters stabilized. At all sampling locations, tubing used in sample collection was certified-clean TeflonTM-lined polyethylene tubing. Samples were collected from all monitoring wells

(excluding the dewatering well) using the sampling procedures outlined in the beginning of Section 2.3 in this report.

2.3.5.1 Placement of Sample Tubing

During groundwater sampling activities, the depth to the pump intake for each sample was recorded on the Groundwater Sampling Data Sheets (see Enclosure 4). Sample tubing was placed in the water column in accordance with the EPA Region 4 SESD FBQSTP for Groundwater Sampling, which recommends the pump intake be placed just below the water column when purging via the traditional multiple volume method (EPA 2013). At MWC-1B and MWC-1C, where low-flow sampling techniques were implemented, tubing was placed at the approximate mid-section of the screened interval (EPA 2013).

2.3.5.2 Purge Rates

For all site wells, purge rates did not exceed aquifer recharge rates and flow rates ranged from 0.154 to 0.610 liters per minute (L/min). It should be noted that purge rates for all wells were slowed to rates below 0.5 L/min during sample collection. In general, purge rates were based on drawdown and aquifer recharge rates measured during purging. Water quality parameters were measured and recorded but not used for determination of purge rates.

2.3.5.3 Sampling Order

Sample containers were filled in order of decreasing volatility of the intended analytical parameters and were preserved immediately upon collection. Field groundwater measurements, the method of purging and sampling, sampling personnel, the date and time of sample collection, the analytical parameters requested, and other pertinent information were recorded in the sampling logbook, on the groundwater sampling data sheets, and on the COC forms (see Enclosures 3, 4, and 6).

2.3.5.4 Duplicate Sample

One field duplicate sample was collected at monitoring well MM-03. The original MM-03 sample was collected after water quality parameters stabilized and three well volumes had been removed. Upon completion, all tubing associated with the original sample collection was removed and replaced prior to collecting the field duplicate. A duplicate set of sample containers was collected in the same order of decreasing volatility of the intended analytical parameters and labeled MM-03-DUP.

2.3.5.5 Post-Sampling Activities

After collection, sample containers were labeled, preserved, and placed on ice in coolers to maintain their temperature at 4 degrees Celsius. Appropriate EPA-approved COC procedures were followed. Samples were packaged and shipped as specified in the M&M Plan (GA EPD 2005). The COC form completed for the collected samples is presented in Enclosure 6.

Groundwater purged from the monitoring wells during the 10th Annual Groundwater Sampling Event was placed in three 55-gallon drums, which were stored near the maintenance building located on the southeastern side of the parking lot. After the analytical results from the groundwater samples collected from the monitoring wells established that regulated analyte concentrations in the groundwater were below RRS values and published Georgia Instream Water Quality Standards, the purged water was discharged to the on-site storm water system in accordance with the revised M&M Plan requirements (GA EPD 2005).

2.3.6 Groundwater Sample Analytical Methods

Gulf Coast Analytical Laboratories (GCAL), located in Baton Rouge, Louisiana, analyzed the groundwater samples for PAHs, Target Analyte List (TAL) metals, and mercury using three methods. The PAHs were analyzed by EPA SW-846 Method 8270D with SIM analysis (by gas chromatography/mass spectrometry with selective ion monitoring). The metals (with the exception of mercury) were analyzed by EPA SW-846 Method 6020A (inductively coupled plasma/mass spectrometry). Mercury was analyzed by EPA SW-846 Method 7470A (cold vapor atomic absorption). All analytical methods were obtained from the same source document and are equally valid for use.

Analytical methods used prior to the 9th Annual Groundwater Sampling Event (conducted in January 2015), adhered to the methods as defined in the M&M Plan (EPA SW-846 Method 8310 for PAHs, EPA SW-846 Method 6010C for metals and EPA SW-846 Method 7470A for mercury). During laboratory procurement activities for the 9th Annual Groundwater Sampling Event, Tetra Tech learned that analytical laboratories are phasing out the 8310 PAH method and Method 6010C for metals. These methods were replaced with Method 8270D-SIM for PAHs and Method 6020A for metals. Laboratories contend these methods are better choices to eliminate interferences and therefore no longer support Method 8310 for PAHs and Method 6010C for metals. In correspondence dated December 11, 2014, GA EPD accepted the change in analytical methods for PAHs and metals on the condition that laboratory reporting limits remain unchanged from previous reports.

2.3.7 Sampling Decontamination Procedures

The Tetra Tech field team used pre-cleaned and dedicated sampling equipment for the 10th Annual Groundwater Sampling Event. In instances where equipment was required to come into contact with groundwater from multiple wells, decontamination procedures were conducted in accordance with the EPA Region 4 SESD FBQSTP for Field Equipment Cleaning and Decontamination, dated December 18, 2015 (EPA 2015) prior to introducing the equipment into the water column.

2.3.7.1 Well Sounders and Tapes

Before starting, and between use at each well, equipment went through the following decontamination procedure:

1. Well sounders and tapes were rinsed with phosphate-free, laboratory-grade detergent (Luminox®) and analyte-free water.
2. The sounders and tapes were then rinsed with analyte-free deionized water (ultra-pure lab-grade water was used during the 10th Annual Groundwater Sampling Event)

2.3.7.2 Automatic Sampler Tubing

New tubing was used for each well; therefore, no decontamination of tubing was required.

3.0 GROUNDWATER SAMPLING INVESTIGATION RESULTS

This section presents the field and laboratory analytical results of the groundwater samples collected during the 10th Annual Groundwater Sampling Event. The fixed laboratory analytical data package prepared by GCAL located in Baton Rouge, Louisiana is presented in Attachment A.

3.1 Detections of Site Regulated Substances Above Practical Quantitation Limits

Analytical results for MM-03, MM-03-DUP, and MWC-1B indicated that concentrations of naphthalene were detected at levels above EPA SW-846 Method 8270 PQLs, but below Type 1 RRS values. The analyte phenanthrene was detected in wells MM-04, MM-02, MWC-3C, MWC-3B, MM-03, MM-03-DUP, MWC1B at levels above EPA SQ-846 Method 8270D-SIM PQLs, but below Type 1 RRS values.

The analyte fluoranthene was also detected in monitoring well MWC-1A at levels above EPA SW-846 Method 8270 PQLs, but below Type 1 RRS values. Table 3 and 4 in Enclosure 2 provides a summary of all analytical results from the 10th Annual Groundwater Sampling Event. The concentrations of site regulated substances detected above PQLs during the 10th Annual Event are summarized in the table below:

Analyte	Concentration	Well	Type 1 RRS
Fluoranthene	0.330 µg/L	MWC-1A	1,000 µg/L
Phenanthrene	0.136 µg/L	MM-04	6.4 µg/L
	0.172 µg/L	MM-02	
	0.421 µg/L	MWC-3C	
	0.117 µg/L	MWC-3B	
	0.250 µg/L	MM-03	
	0.259 µg/L	MM-03-DUP	
	0.239 µg/L	MWC-1B	
Anthracene	0.114 µg/L	MWC-3C	6.6 µg/L
Pyrene	1.74 µg/L	MWC-1A	1,000 µg/L
Naphthalene	2.39 µg/L	MM-03	20 µg/L
	2.50 µg/L	MM-03-DUP	
	7.42 µg/L	MWC-1B	

Notes:

µg/L micrograms per liter
 DUP duplicate

3.2 Analytical Methods

The PAHs were analyzed by EPA SW-846 Method 8270D-SIM (by gas chromatography/mass spectrometry with selective ion monitoring). The metals (with the exception of mercury) were analyzed by EPA SW-846 Method 6020A (inductively coupled plasma/mass spectrometry). Mercury was analyzed by EPA SW-846 Method 7470A (cold vapor atomic absorption). All analytical methods were obtained from the same source document and are equally valid for use. Section 7.0 discusses the results of Tetra Tech's data evaluation procedures. Enclosure 7 presents the data validation report prepared following the 10th Annual Groundwater Sampling Event.

3.3 Summary

A summary of the analytical results for the samples collected during the sampling event are presented in Tables 3 and 4 (Metals and PAHs, respectively) in Enclosure 2 of this report. According to the groundwater potentiometric surface map prepared by Tetra Tech using groundwater levels measured during the December 2015 sampling event, the groundwater flow continues to move in a northwesterly direction (see Figure 2 in Enclosure 1) outside of the slurry wall. Additionally, groundwater levels outside of the slurry wall are depicted in cross section Figures 3 and 4 of Enclosure 1. The dewatering well water level, depicted in Table 2 of Enclosure 2, has remained stable since monitoring activities began 10 years ago, suggesting that the landfill cap and slurry wall are intact within the vicinity of the dewatering well.

4.0 DATA EVALUATION

This section presents an evaluation of the data collected during the 10th Annual Groundwater Sampling Event in an effort to determine if the analytical results signify a release from the landfill to the groundwater surrounding the slurry wall or if groundwater is infiltrating either the slurry wall or engineered cap. The revised M&M Plan stipulates that data evaluation must be performed to determine the likelihood of a release occurring from the landfill to the surrounding groundwater for site-regulated analytes detected in monitoring wells, but not the background monitoring well. The GA EPD has determined that Type 5 standards apply to the Site, and that Type 1 RRS are to be met outside of the boundary of engineering controls. The performance criteria used to evaluate the remedial controls are provided in the Type 1 RRS of the Georgia Hazardous Site Response Regulations, Chapter 391-3-19-.07(6) (GA EPD 2003b). Furthermore, compliance with Chapter 391-3-19-.07(6) stipulates that concentrations of regulated substances shall not exceed the background or detection limit concentration (GA EPD 2003b).

4.1 Analytical Data Validation and Tabulation

See Enclosure 7 for evaluation of data quality validation and tabulation of data received from the laboratory.

4.2 Outlier Evaluation

Outliers are described as the extreme (high or low) values that are widely divergent from the main body of data, and may arise from mistakes such as transcription, data-coding errors, instrument breakdown, calibration problems, and power failures (GA EPD 2005). In general, outliers are obvious mistakes that must be corrected, when possible.

Tetra Tech does not believe that the concentrations of regulated analytes detected above reporting limits for samples collected during the 10th Annual Groundwater Sampling Event are outliers. Evidence for this statement is supported by similar concentrations of similar constituents in the four previous sampling events (6th, 7th, 8th, and 9th Annual Sampling Events. Analytical results detected contaminants in wells MM-04, MM-02, MWC-3C, MWC-3B, MWC-1A, and MWC-1B. However, contaminants found in the shallow aquifer, such as flouranthene and pyrene in MWC-1A, were not detected in the nearby deeper well MWC-1B. Analytical results identified naphthalene and phenanthrene in well MWC-1B and no regulated substances were detected in the deep well, MWC-1C.

In general, PAH constituents are dense non-aqueous phase liquid (DNAPL) meaning they tend to sink when in water. Detections of these constituents in the upper aquifer in the wells within close proximity of the slurry wall (north and northeast portion of the site) and the background well, combined with the observed northwesterly groundwater flow direction, suggest these contaminants may have originated outside the slurry wall.

4.3 Statistical Tests

Statistical tests cannot be performed on the given data set because only one regulated analyte detected in on-site monitoring wells was detected in background monitoring well MM-04. In accordance with the revised M&M Plan, professional judgment was used to assess the data set without the use of statistical calculations because these calculations contain little value when detections below reporting limits are included.

4.4 Professional Judgment

Tetra Tech believes the detection of regulated analytes are not outliers or statistical anomalies. Tetra Tech conducted quarterly groundwater level gauging events in September 2013, December 2013, March 2014, and June 2014 in an effort to better establish groundwater trends. A review of potentiometric contour maps generated from data collected during these events indicates groundwater consistently flowed in a northwesterly direction outside of the slurry wall. Furthermore, the average fluctuation in levels for all site wells from September 2013 to June 2014 was observed to be 0.70 feet, with the greatest fluctuation occurring in MM-02 (a difference of 2.19 feet). Additional information regarding the 2013-2014 quarterly gauging and sampling event is provided in the Quarterly Groundwater Gauging and Limited Sampling Report dated August 8, 2014 (Tetra Tech, 2014).

Tetra Tech has observed an unknown source of PAH detections during the four previous sampling events (6th, 7th, 8th, and 9th Annual Events). Detected concentrations have remained below Type 1 RRS values and at or near the limit of quantitation. Quarterly groundwater trends established in 2013 indicate that site contaminants were detected most frequently in winter and spring, when groundwater levels were at or near annual highs. The groundwater has consistently flowed to the northwest, which indicates that the contaminants detected in wells MM-04, MWC-1A, and MWC-1B likely originated from a source outside the landfill.

Tetra Tech also reviewed the quarterly dewatering well water levels within the landfill slurry wall and cap partition. The groundwater trend indicates that the groundwater level within the slurry wall in the vicinity of the dewatering well is below six feet from the top of the slurry wall at its lowest point (the northwest corner, near the dewatering well) and does not indicate any problems with the physical integrity of the slurry wall.

Since the historical dewatering well levels inside the slurry wall have remained fairly steady, the surface flow from the overlying parking lot does not appear to be penetrating through the landfill cap. A constant dewatering well level inside the slurry wall also suggests that groundwater is not permeating through the slurry wall and the cap and slurry wall remain intact in the vicinity of the dewatering well.

4.5 Potential Causes for Elevated Concentrations During This Event

The groundwater sample collected from background monitoring well MM-04 contained phenanthrene above the laboratory reporting limit but below the Type 1 RRS. Fluoranthene, anthracene, pyrene, and naphthalene were also detected in six additional wells at low levels above background concentrations (MM-04) but below Type 1 RRS. Tetra Tech examined potential causes which may have contributed to the detection of concentrations of regulated substances above PQLs in Site monitoring wells including a change in site features, changes to groundwater levels within the slurry wall, a change in the analytical method, and the presence of an unknown source of PAHs outside the landfill.

Site features have changed from previous years when no contaminants were detected, with the most notable change involving the demolition and removal of Herndon Homes, formerly located just north of the landfill. The removal of paving and buildings may have affected groundwater flow patterns (both horizontally and vertically). Data collected during annual sampling events during the months of December and January (from 2006 to the current reporting period) suggest water levels measured in wells in the northeastern corner have remained fairly static, since the demolition was completed with little change regarding upward and downward migration.

The groundwater level within the slurry wall was assessed, to the extent possible, near the dewatering well to verify that the groundwater level inside the slurry wall was lower than outside its perimeter. A water level equal to or greater than the slurry wall would suggest a breach in the slurry wall.

Historical groundwater trends indicate that the groundwater level within the slurry wall in the vicinity of the dewatering well consistently remains below six feet from the top of the slurry wall at its lowest point (the northwest corner, near the dewatering well) and does not indicate any problems with the physical integrity of the slurry wall. Since the historical dewatering well levels inside the slurry wall have remained fairly steady, the surface flow from the overlying parking lot does not appear to be penetrating through the landfill cap. A constant dewatering well level inside the slurry wall also suggests that groundwater is not permeating through the slurry wall and the cap and slurry wall remain intact in the vicinity of the dewatering well.

Analytical methods used prior to the 9th Annual Groundwater Sampling Event (conducted in January 2015), adhered to the methods as defined in the M&M Plan (EPA SW-846 Method 8310 for PAHs, EPA SW-846 Method 6010C for metals and EPA SW-846 Method 7470A for mercury). These methods were replaced with Method 8270D-SIM for PAHs and Method 6020A for metals. Laboratories contend these methods are better choices to eliminate interferences and therefore the laboratories no longer perform Method 8310 for PAHs and Method 6010C for metals. The low-level contamination may have been undetected due to interferences during previous sampling events and the revised analytical method may have detected it due to less interferences

Detections of PAHs in the background well suggest that there may be a source of PAHs outside of the slurry wall and landfill. The new low-level detections may indicate that some contaminants may have been present in groundwater at very low levels since monitoring began at the Site, but were only now detected by the improved method, which removes interferences at low levels. Tetra Tech recommends sampling for semi-volatile organic compounds (SVOC) by SW-846 Method 8270D and 8270D-SIM in MM-04 (the background well), MM-03, and MWC-1A to determine if additional SVOCs are present and to establish a baseline with the revised analytical method.

5.0 NON-RESIDENTIAL USAGE OF PROPERTY

As stipulated in the revised M&M Plan, any use of the landfill must preserve the integrity and effectiveness of the soil cap and liner system of the landfill. Currently, the landfill site is only used for non-residential purposes. A parking lot has been constructed on top of the landfill, and the associated features also extend to the east and to the south of the landfill. To the north of the landfill, the former Herndon Homes have been demolished and the property is currently a fenced-in, unoccupied grassy area containing clusters of trees. These features ensure the landfill use remains non-residential. Although the parking lot may act as a staging area for events on occasion, at no time will GWCC allow the staging activities to penetrate the asphalt cover, concrete cap, the soil cap, or soil-bentonite slurry wall.

5.1 Non-Residential Use Inspection Results

The quarterly engineering inspections performed during 2015 by the Tetra Tech Professional Engineer verified that the use of the landfill remained non-residential. Tetra Tech reviewed existing contracts and lease agreements, and Tetra Tech spoke to the GWCC Maintenance/Physical Plant Manager to verify that the use of the property has remained non-residential. Currently, the conservation easement is in place and the uses of the property conform to the restrictions placed on the property. The signed certification signifying the veracity of the statements made in this section is included in the page following the cover page of this document.

6.0 CONCLUSIONS AND RECOMMENDATIONS

During the 10th Annual Groundwater Sampling Event, five site regulated PAHs including phenathrene, anthracene, naphthalene, fluoranthene, and pyrene was detected in site wells. All concentrations were below Type I RRS values and at or near the limit of quantitation.

Review of the dewatering well level within the landfill slurry wall and cap partition indicates that the groundwater level within the slurry wall in the vicinity of the dewatering well is below six feet from the top of the slurry wall at its lowest point (the northwest corner, near the dewatering well) and does not appear to pose a threat of release in this area. Since the historical dewatering well levels inside the slurry wall have remained fairly steady, the surface flow from the overlying parking lot is not believed to be penetrating through the landfill cap. A constant dewatering well level inside the slurry wall also suggests that groundwater is not permeating through the slurry wall and the cap and slurry wall remain intact near the dewatering well.

The low-level contamination has likely been present and the revised analytical method can better detect it due to less interferences. Tetra Tech will continue to monitor concentrations to establish trends. In addition, Tetra Tech recommends sampling for semi-volatile organic compounds (SVOC) by SW-846 Method 8270D and 8270D-SIM in MM-04 (the background well), MM-03, and MWC-1A to determine if additional SVOCs are present and to establish a baseline with the revised analytical method.

Tetra Tech has conducted ten annual groundwater sampling events. During this time, laboratory analytical results have remained consistent and below Type I RRS values. Tetra Tech recommends reducing the sampling frequency to once every other year, with the next groundwater monitoring event occurring in December 2017. Tetra Tech will continue to conduct quarterly landfill maintenance and inspections.

In addition, as required by the revised M&M Plan, please note the contact information below.

Georgia World Congress Center

Wayne Rosser
Maintenance/Physical Plant Manager
285 Andrew Young International Blvd, NW
Atlanta, Georgia 30313-1591
(404) 223-4820
Fax: (404) 223-4813

Tetra Tech, Inc.

Christopher Jones
Project Manager
1955 Evergreen Blvd
Bldg 200 Suite 300
Duluth, Georgia 30096
(678) 775-3081 Fax (678) 775-3138

7.0 DEVIATIONS FROM THE M&M PLAN/GA EPD COMMENTS

This section was added to the report to describe any deviations from the revised M&M Plan that occurred during the current sampling event. This section will serve as an official record for any such deviations.

1. The dewatering well was not sampled; therefore, field parameters were not measured at this location as described in Section 3.1.2 of the revised M&M Plan: “The groundwater monitoring plan will consist of the following activities: Measurements of field parameters...for all groundwater monitoring wells and the dewatering well...”
2. In correspondence with GA EPD dated December 11, 2014, GA EPD requested that Method 6020 and Method 6010 be analyzed on at least one of the samples. Tetra Tech was unable to comply because the laboratory did not support Method 6010. Tetra Tech contacted several other local laboratories; however, they have phased out that method as well.
3. Three well volumes were not removed from MWC-1B and MWC-1C. In correspondence with GA EPD dated September 12, 2014, GA EPD approved the use of Tubing-Screened-Interval (low flow/low stress) sampling techniques for these two wells. Sampling was conducted in accordance with section 3.2.2, *Groundwater Sampling*, SESD-PROC-301-R3.

8.0 REFERENCES

- Environmental Resources Management (ERM)-Southeast, Incorporated (Inc.). 1996. "Preliminary Site Assessment of Herndon Homes." January.
- Georgia Department of Natural Resources, Environmental Protection Division (GA EPD). 2003a. "Criteria for Type 5 Standards, Rules for Hazardous Site Response, Chapter 391-3-19-.07 (10)". June.
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- GA EPD. 2005. "Monitoring and Maintenance Plan for Type 5 Risk Reduction Standards, Northside Drive Landfill." Georgia Department of Natural Resources, Environmental Protection Division (GA EPD), Hazardous Waste Division. Revised July 2005.
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- Tetra Tech, 2001a. "Field Investigation Report Phases I-IV, Revision 3, Northside Drive Landfill, Atlanta, Fulton County, Georgia." Prepared for GA EPD, Atlanta, Georgia. February.
- Tetra Tech, 2001b. "Construction Specifications, Landfill Cap and Slurry Wall, Northside Drive Landfill, Atlanta, Fulton County, Georgia." Prepared for GA EPD. Atlanta, Georgia.
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EPA, Region 4 Science and Ecosystem Support Division (SESD). 2015. Field Equipment Cleaning and Decontamination, Number SESDPROC-205-R2. December 18. 18 Pages. On-Line Address: http://www.epa.gov/sites/production/files/2016-01/documents/field_equipment_cleaning_and_decontamination205_af.r3.pdf

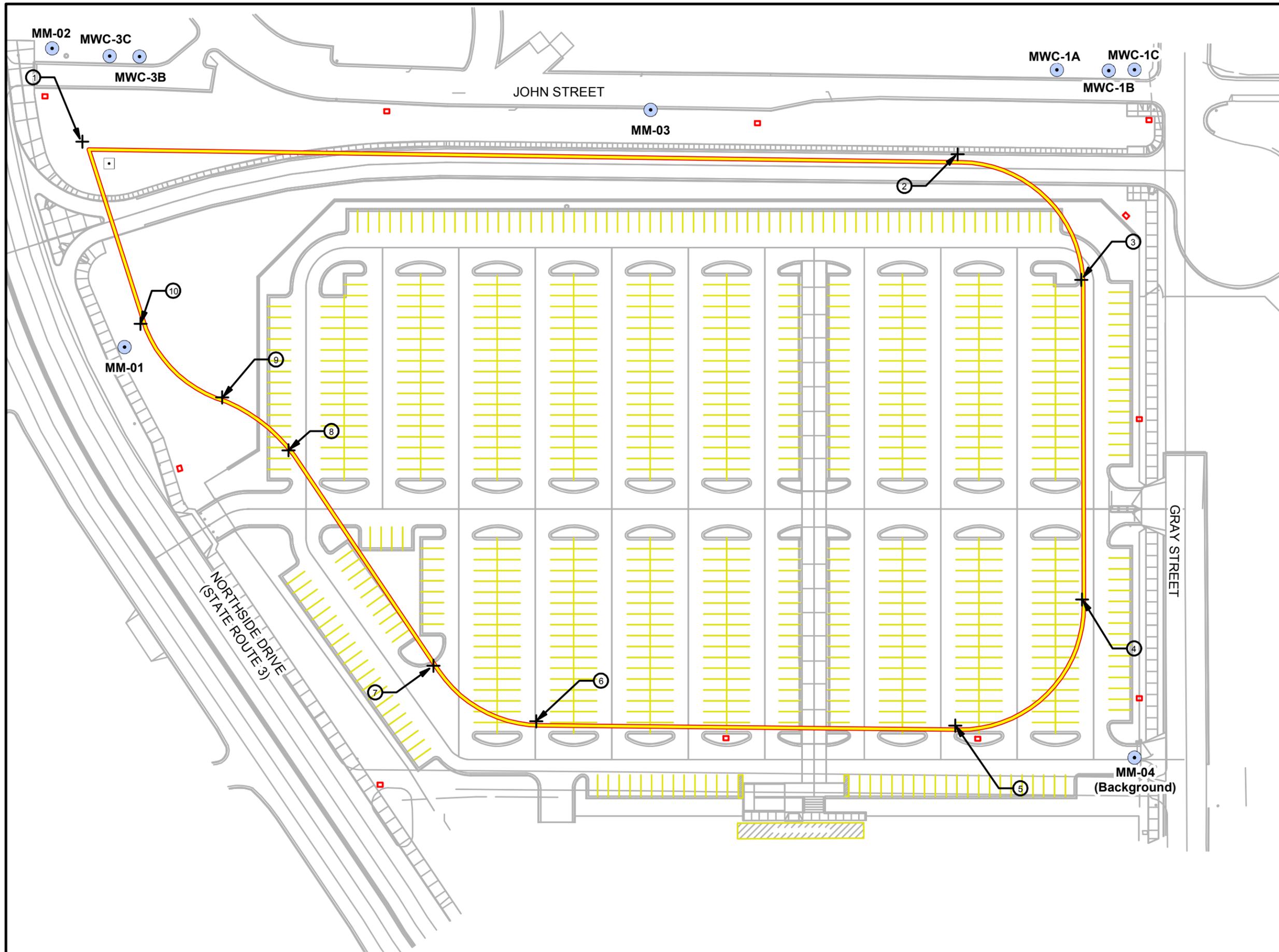
EPA, Region 4 SESD. 2013. Groundwater Sampling, Number SESDPROC-301-R3. March 6. 31 Pages. Accessed on-line at: <http://www.epa.gov/sites/production/files/2015-06/documents/Groundwater-Sampling.pdf>

Waterra. 2011. "Well Development." Accessed on February 2, 2012. On-Line Address: http://www.waterra.com/pages/Applications/well_develop2011.html

ENCLOSURE 1

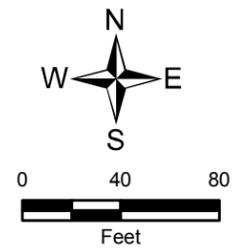
FIGURES

(Four Pages)



Legend

- Dewatering Well
- Existing Monitoring Well
- Property Monument
- Slurry wall
- # Reference Points



Map Source:
Modified from Williams-Russell & Johnson, Inc.



FIGURE 1

Site Location and Layout

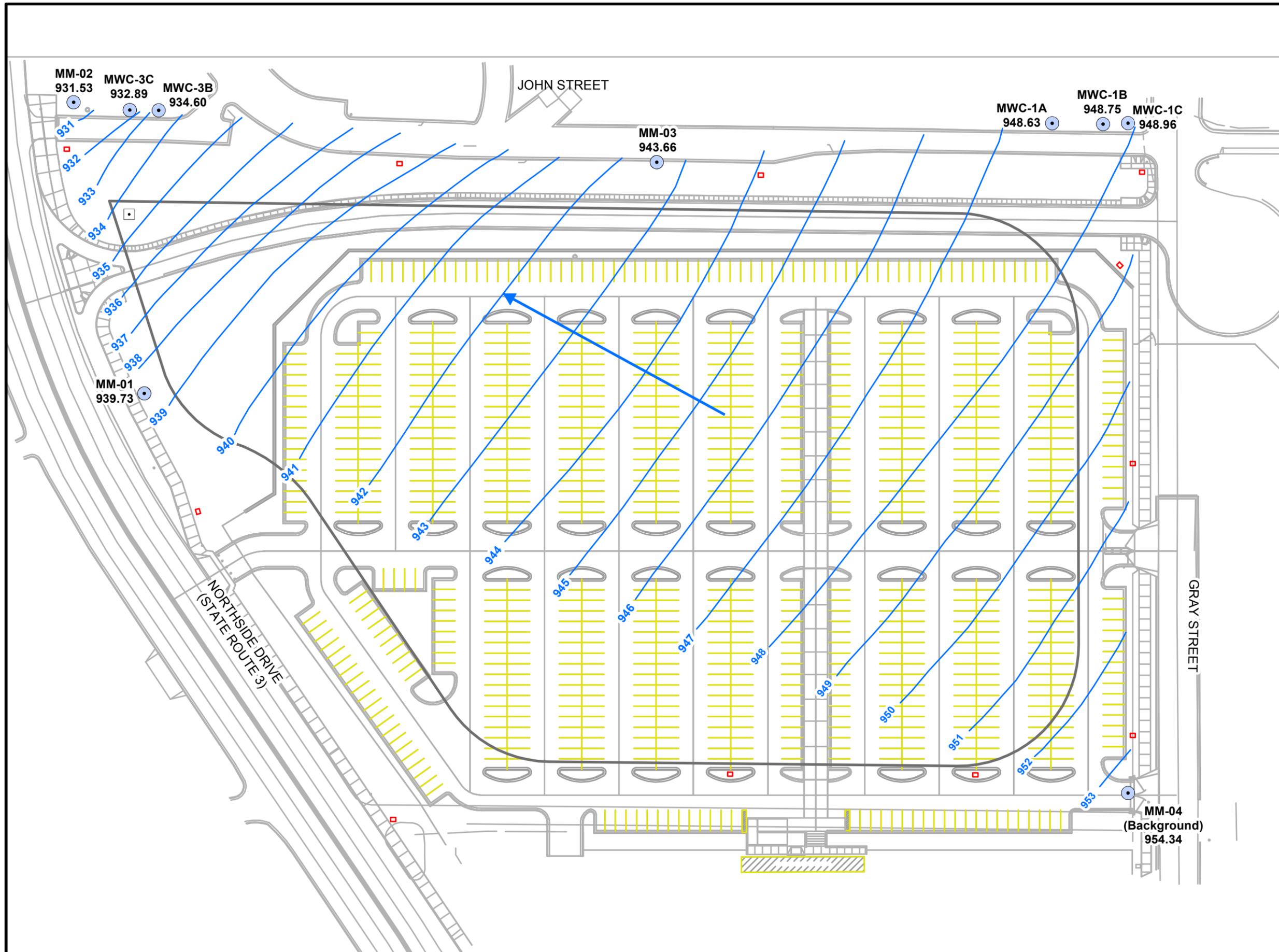
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December 22-23, 2015
Northside Drive Landfill Site

Client: Georgia World Congress Center

City: Atlanta **County:** Fulton **State:** Georgia

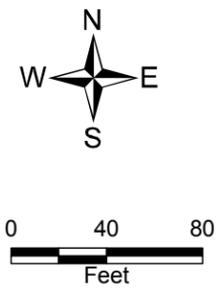
TETRA TECH

Date: 1/25/2016
Analyst: helen.mayoral



Legend

-  Dewatering Well
-  Existing Monitoring Well
-  Groundwater Contour
-  Groundwater Flow Direction
-  Property Monument
-  Slurry wall
- 932** Groundwater elevations according to height above mean sea level, measured from the well top of casing



Map Source:
Modified from Williams-Russell & Johnson, Inc.

FIGURE 2 Potentiometric Map

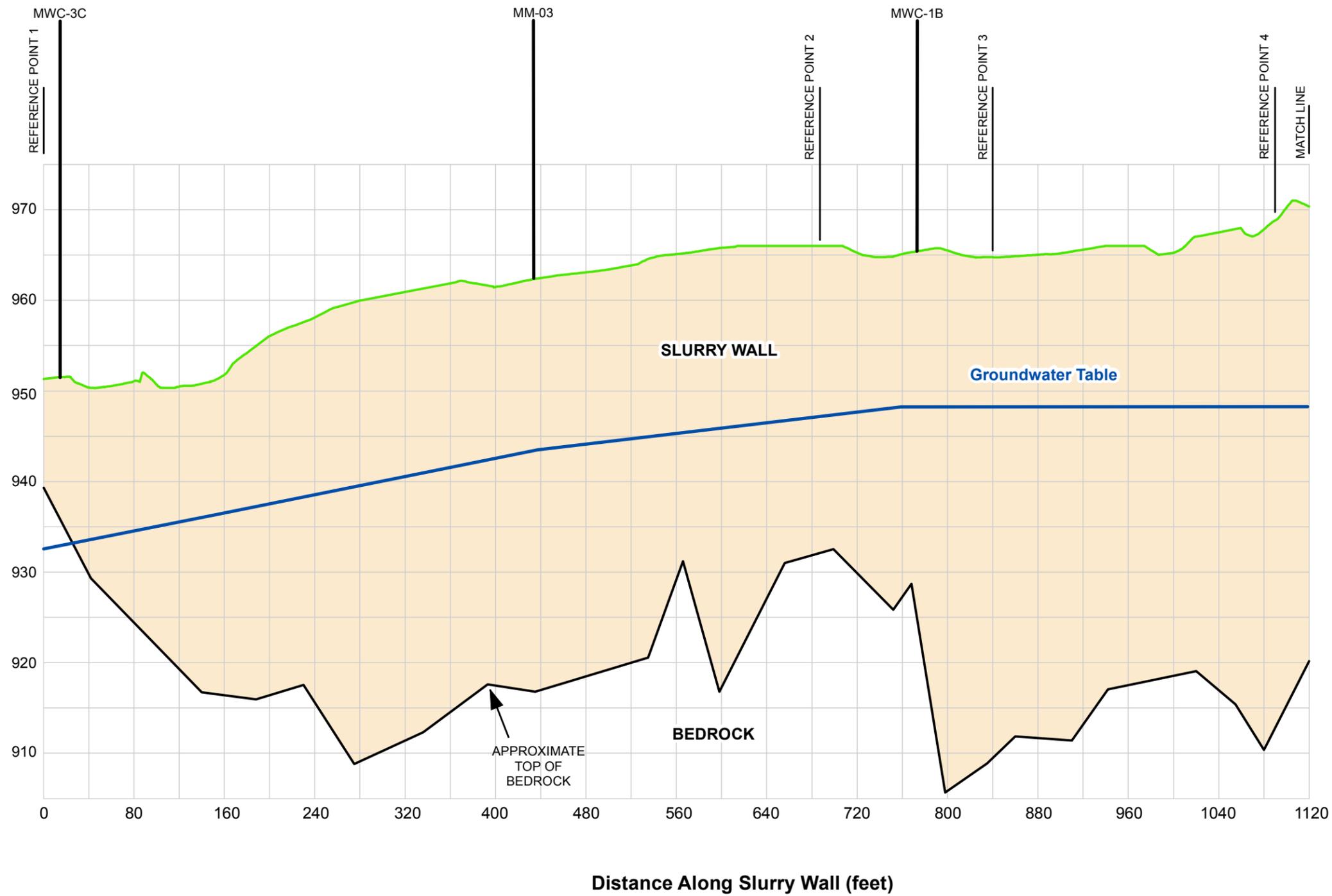
Proj. Name: 10th Annual Groundwater Sampling Event
December 22-23, 2015
Northside Drive Landfill Site

Client: Georgia World Congress Center

City: Atlanta **County:** Fulton **State:** Georgia

 **TETRA TECH**
Date: 1/03/2013
Analyst: helen.mayoral

Elevation Above Mean Sea Level (feet)



Legend

- Approximate top of bedrock
- Groundwater table outside slurry wall
- Approximate top of slurry wall

Note:
Reference points located on Figure 1



Scale located on axes

Map Source:
Modified from Tetra Tech 2001
Elevations from drawing specifications, not As-Built

FIGURE 3
Subsurface Cross Section
of Slurry Wall Perimeter

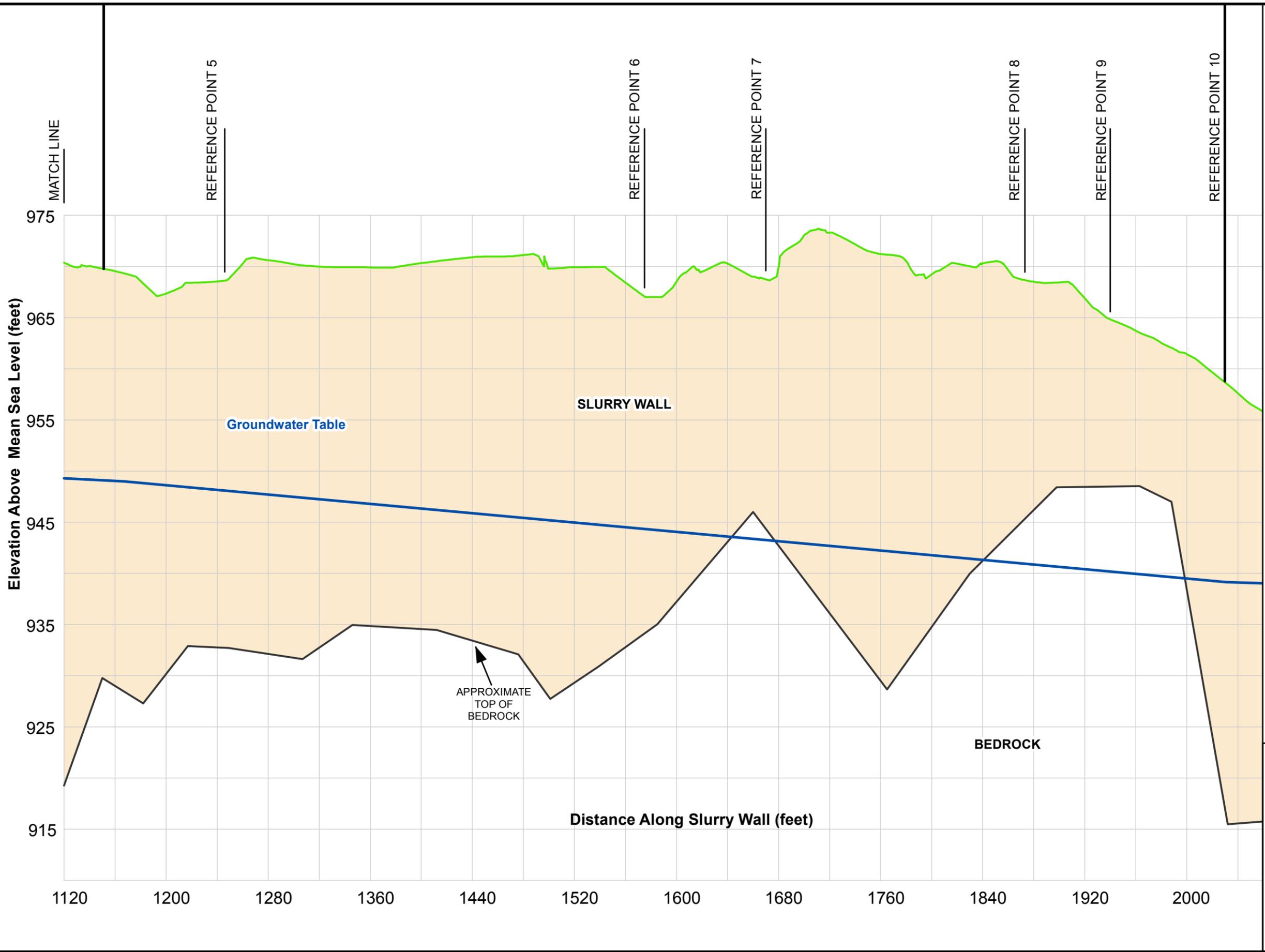
Proj. Name: 10th Annual Groundwater
Sampling Event
December 22-23, 2015
Northside Drive Landfill Site

Client: Georgia World Congress Center

City: Atlanta **County:** Fulton **State:** Georgia



Date:
2/3/2016
Analyst:
Helen Mayoral



- ### Legend
- Approximate top of bedrock
 - Groundwater table outside slurry wall
 - Approximate top of slurry wall

Note:
Reference points located on Figure 1



Scale located on axes

Map Source:
Modified from Tetra Tech 2001
Elevations from drawing specifications, not As-Builts

FIGURE 4
Subsurface Cross Section
of Slurry Wall Perimeter

Proj. Name: 10th Annual Groundwater
Sampling Event
December 22-23, 2015
Northside Drive Landfill Site

Client: Georgia World Congress Center

City: Atlanta	County: Fulton	State: Georgia
----------------------	-----------------------	-----------------------

Date: 2/3/2016
Analyst: Helen Mayoral



ENCLOSURE 2

TABLES

(9 Pages)

TABLE 1
10TH ANNUAL GROUNDWATER SAMPLING REPORT
REGULATED SUBSTANCES FOR GROUNDWATER
NORTHSIDE DRIVE LANDFILL SITE

Regulated Substance	Frequency of Groundwater Monitoring ¹	Type 1 RRS (mg/L)	Analytical Method ²
Organics			
Acenaphthene	Quarterly for 2 years, then annually	2	SW-846 8270D
Acenaphthylene	Quarterly for 2 years, then annually	PQL ^a : 0.023	SW-846 8270D
Anthracene	Quarterly for 2 years, then annually	PQL ^a : 0.0066	SW-846 8270D
Benzo(a)anthracene	Quarterly for 2 years, then annually	0.00013	SW-846 8270D
Benzo(a)pyrene	Quarterly for 2 years, then annually	0.00023	SW-846 8270D
Benzo(b)fluoranthene	Quarterly for 2 years, then annually	0.0002	SW-846 8270D
Benzo(k)fluoranthene	Quarterly for 2 years, then annually	PQL ^a : 0.00017	SW-846 8270D
Benzo(g,h,i)perylene	Quarterly for 2 years, then annually	PQL ^a : 0.00076	SW-846 8270D
Chrysene	Quarterly for 2 years, then annually	0.0002 ^b	SW-846 8270D
Dibenz(a,h)anthracene	Quarterly for 2 years, then annually	0.0003	SW-846 8270D
Fluoranthene	Quarterly for 2 years, then annually	1	SW-846 8270D
Fluorene	Quarterly for 2 years, then annually	1	SW-846 8270D
Indeno(1,2,3-cd)pyrene	Quarterly for 2 years, then annually	0.00043	SW-846 8270D
Naphthalene	Quarterly for 2 years, then annually	0.02	SW-846 8270D
Phenanthrene	Quarterly for 2 years, then annually	PQL ^a : 0.0064	SW-846 8270D
Pyrene	Quarterly for 2 years, then annually	1	SW-846 8270D
Metals			
Beryllium	Quarterly for 2 years, then annually	0.004	SW-846 6020A
Lead	Quarterly for 2 years, then annually	0.015	SW-846 6020A
Mercury	Quarterly for 2 years, then annually	0.002	SW-846 7470A

Notes:

- ¹ Frequency of groundwater monitoring may be modified only upon receipt of EPD's approval.
- ² During laboratory procurement activities for the 9th Annual Groundwater Sampling Event, Tetra Tech learned that analytical laboratories are phasing out the 8310 PAH method and 6010C for metals analysis. These methods are being replaced with Method 8270D SIM for PAHs and Method 6020A for metals. In correspondence dated December 11, 2014, GA EPD accepted the change in analytical methods for PAHs and metals on the condition that laboratory reporting limits remain unchanged from previous reports.
- ^a The PQL presented is the value provided in EPA SW-846 Method 8310 for a typical groundwater matrix in the absence of interference. Interference may cause the PQL value to increase. As such, this PQL value is provided for guidance and may not always be achieved. Note that although the analytical method changed beginning with the 9th Annual Groundwater Sampling Event, PQL values remain as provided by the original analytical method.
- ^b The health based drinking water criterion for this substance/analyte is lower than the lowest currently achievable and available detection limit. According to Rule 391-3-19.07(4)(e), the detection limit or background must be the Type I groundwater concentration criterion for this substance/analyte.
- mg/L Milligrams per liter
- PQL Practical quantitation limit
- RRS Georgia Environmental Protection Division Risk Reduction Standards
- SW-846 U.S. EPA. Test Methods for Evaluating Solid Waste, Physical/Chemical Methods. Including updates I, II, IIA, IIB, III, and IIIA to the Third Edition. September 1986 through 1998.

TABLE 2
10TH ANNUAL GROUNDWATER SAMPLING REPORT
SUMMARY OF GROUNDWATER FIELD PARAMETERS
NORTHSIDE DRIVE LANDFILL SITE

Well ID	Annual Sampling Event Date	TOC Elevation (ft)	Depth to Well Bottom (ft)	Depth to GW (ft)	GW Elevation (ft)	Depth to Sample Intake (ft)	pH (s.u.)	Conductivity (mS/cm)	Temp (°C)	Turbidity (NTU)
MM-04 (Background)	Dec. 28-30, 2004	970.75	45.37	17.72	953.03	NR	6.10	0.196	19.52	NA
	Dec. 20-21, 2005	970.75	45.42	18.25	952.50	NR	5.91	0.279	19.03	0.26
	Dec. 05-06, 2006	970.75	45.35	18.81	951.94	NR	5.94	0.261	19.59	0.50
	Dec. 04-05, 2007	970.75	45.10	19.76	950.99	NR	5.77	0.269	19.61	0.00
	Dec. 18-19, 2008	970.75	45.35	19.78	950.97	NR	5.59	0.246	20.07	1.15
	Dec. 16-17, 2009	970.75	45.35	17.47	953.28	NR	5.42	0.14	20.11	24
	Dec. 13-14, 2010	970.75	45.35	17.01	953.74	NR	5.93	0.153	20.30	19.8
	Dec. 14-15, 2011	970.75	45.35	16.60	954.15	35.00	5.84	0.108	21.60	0.00
	Dec. 12-13, 2012	970.75	45.35	17.84	952.91	40.00	5.37	0.155	20.90	0.61
	Dec. 10-11, 2013	970.75	45.35	17.11	953.64	21.94	6.07	0.120	18.01	0.06
Jan. 19-20, 2015	970.75	45.35	17.31	953.44	18.00	5.78	0.114	19.30	0.00	
Dec. 22-23 2015	970.75	45.35	16.41	954.34	17.25	8.87	0.125	19.75	0.78	
MM-01	Dec. 28-30, 2004	957.52	NS	NS	NS	NS	NS	NS	NS	NS
	Dec. 20-21, 2005	957.52	27.57	17.81	939.71	NR	5.71	0.584	19.24	0.90
	Dec. 05-06, 2006	957.52	27.59	18.78	938.74	NR	5.88	0.341	19.42	4.30
	Dec. 04-05, 2007	957.52	27.31	19.57	937.95	NR	5.48	0.415	19.51	5.00
	Dec. 18-19, 2008	957.52	27.53	19.95	937.57	NR	5.87	0.142	19.43	21.2
	Dec. 16-17, 2009	957.52	27.53	18.42	939.10	NR	5.91	0.112	19.31	196
	Dec. 13-14, 2010	957.52	27.53	18.16	939.36	NR	6.16	0.339	19.60	104
	Dec. 14-15, 2011	957.52	27.53	18.48	939.04	20.00	5.81	0.294	19.70	1.95
	Dec. 12-13, 2012	957.52	27.53	19.38	938.14	22.00	5.28	0.804	19.33	0.57
	Dec. 10-11, 2013	957.52	27.53	17.18	940.34	23.00	6.03	0.254	18.15	4.45
Jan. 19-20, 2015	957.52	27.53	17.65	939.87	19.40	5.73	0.118	19.18	8.94	
Dec. 22-23 2015	957.52	27.53	17.79	939.73	21.50	7.64	0.295	19.60	15.30	
MM-02	Dec. 28-30, 2004	941.72	16.68	10.49	931.23	NR	7.20	0.489	20.63	10.00
	Dec. 20-21, 2005	941.72	16.95	10.68	931.04	NR	6.30	0.635	21.17	0.70
	Dec. 05-06, 2006	941.72	16.91	10.88	930.84	NR	6.42	0.632	22.22	0.50
	Dec. 04-05, 2007	941.72	16.72	11.28	930.44	NR	6.31	0.611	22.71	0.00
	Dec. 18-19, 2008	941.72	16.90	11.32	930.40	NR	6.25	0.529	21.62	0.00
	Dec. 16-17, 2009	941.72	16.90	10.36	931.36	NR	6.26	0.359	20.80	158
	Dec. 13-14, 2010	941.72	16.90	10.63	931.09	NR	6.49	0.574	20.00	12.2
	Dec. 14-15, 2011	941.72	16.90	10.84	930.88	13.00	6.31	0.402	19.90	0.05
	Dec. 12-13, 2012	941.72	16.90	11.54	930.18	12.00	6.21	0.426	20.14	0.00
	Dec. 10-11, 2013	941.72	16.90	12.50	929.22	12.50	6.45	0.399	19.20	0.00
Jan. 19-20, 2015	941.72	16.90	10.44	931.28	11.40	5.79	0.424	18.22	0.12	
Dec. 22-23 2015	941.72	16.90	10.19	931.53	11.00	8.03	0.529	19.30	0.28	
MWC-3C	Dec. 28-30, 2004	943.12	29.07	10.31	932.81	NR	7.44	0.483	18.70	9.70
	Dec. 20-21, 2005	943.12	16.95	10.80	932.32	NR	6.50	0.735	19.60	0.00
	Dec. 05-06, 2006	943.12	29.31	10.90	932.22	NR	6.57	0.686	20.51	0.50
	Dec. 04-05, 2007	943.12	29.12	11.56	931.56	NR	6.44	0.694	19.90	0.00
	Dec. 18-19, 2008	943.12	29.30	11.54	931.58	NR	6.36	0.613	20.24	0.00
	Dec. 16-17, 2009	943.12	29.30	10.81	932.31	NR	6.41	0.402	19.74	106
	Dec. 13-14, 2010	943.12	29.30	10.76	932.36	NR	6.57	0.665	17.60	121
	Dec. 14-15, 2011	943.12	29.30	10.91	932.21	21.00	6.40	0.588	19.70	0.00
	Dec. 12-13, 2012	943.12	29.30	11.76	931.36	24.00	6.32	0.677	19.74	0.71
	Dec. 10-11, 2013	943.12	29.30	10.51	932.61	13.00	6.63	0.557	19.01	0.00
Jan. 19-20, 2015	943.12	29.30	10.41	932.71	11.50	6.07	0.639	18.63	0.12	
Dec. 22-23 2015	943.12	29.30	10.23	932.89	11.50	8.26	0.797	18.88	0.21	
MWC-3B	Dec. 28-30, 2004	944.8	24.68	10.29	934.51	NR	7.85	0.616	19.53	10.00
	Dec. 20-21, 2005	944.8	24.93	10.62	934.18	NR	6.82	0.856	20.02	0.36
	Dec. 05-06, 2006	944.8	24.91	11.04	933.76	NR	6.93	0.781	20.87	0.50
	Dec. 04-05, 2007	944.8	24.65	11.55	933.25	NR	6.80	0.810	20.64	0.50
	Dec. 18-19, 2008	944.8	24.88	11.54	933.26	NR	6.77	0.708	20.98	0.00
	Dec. 16-17, 2009	944.8	24.88	10.78	934.02	NR	6.80	0.465	20.40	119
	Dec. 13-14, 2010	944.8	24.88	10.80	934.00	NR	7.01	0.739	19.60	5.00
	Dec. 14-15, 2011	944.8	24.88	10.77	934.03	18.00	6.89	0.547	20.20	0.22
	Dec. 12-13, 2012	944.8	24.88	11.86	932.94	20.00	6.88	0.549	20.33	0.71
	Dec. 10-11, 2013	944.8	24.88	10.45	934.35	13.00	7.03	0.599	19.29	0.59
Jan. 19-20, 2015	944.8	24.88	10.37	934.43	12.00	6.58	0.770	18.37	0.59	
Dec. 22-23 2015	944.8	24.88	10.20	934.60	11.00	9.04	0.952	19.29	1.03	
MM-03 & MM-03-DUP	Dec. 28-30, 2004	957.92	30.00	14.45	943.47	NR	7.71	0.344	18.42	7.60
	Dec. 20-21, 2005	957.92	30.28	14.90	943.02	NR	5.86	0.398	19.11	0.00
	Dec. 05-06, 2006	957.92	30.22	14.79	943.13	NR	6.01	0.394	19.99	0.50
	Dec. 04-05, 2007	957.92	29.95	15.81	942.11	NR	5.86	0.372	20.00	0.00
	Dec. 18-19, 2008	957.92	30.20	16.04	941.88	NR	5.76	0.347	20.32	0.00
	Dec. 16-17, 2009	957.92	30.20	15.51	942.41	NR	5.67	0.185	19.84	101
	Dec. 13-14, 2010	957.92	30.20	15.78	942.14	NR	6.01	0.273	19.80	7.70
	Dec. 14-15, 2011	957.92	30.20	14.09	943.83	24.00	5.89	0.324	19.90	0.53
	Dec. 12-13, 2012	957.92	30.20	16.13	941.79	25.00	5.70	0.362	20.06	1.10
	Dec. 10-11, 2013	957.92	30.20	14.93	942.99	17.00	6.03	0.224	20.00	0.41
Jan. 19-20, 2015	957.92	30.20	14.49	943.43	16.50	4.92	0.228	19.84	0.15	
Dec. 22-23 2015	957.92	30.20	14.26	943.66	16.50	5.87	0.243	19.76	0.27	

TABLE 2
10TH ANNUAL GROUNDWATER SAMPLING REPORT
SUMMARY OF GROUNDWATER FIELD PARAMETERS
NORTHSIDE DRIVE LANDFILL SITE

Well ID	Annual Sampling Event Date	TOC Elevation (ft)	Depth to Well Bottom (ft)	Depth to GW (ft)	GW Elevation (ft)	Depth to Sample Intake (ft)	pH (s.u.)	Conductivity (mS/cm)	Temp (°C)	Turbidity (NTU)	
MWC-1A	Dec. 28-30, 2004	961.1	18.53	11.83	949.27	NR	8.40	0.231	19.90	7.80	
	Dec. 20-21, 2005	961.1	18.81	12.38	948.72	NR	5.62	0.299	19.66	0.23	
	Dec. 05-06, 2006	961.1	12.51	11.99	949.11	NR	5.97	0.285	19.39	5.98	
	Dec. 04-05, 2007	961.1	12.51					Not sampled due to insufficient water			
	Dec. 18-19, 2008	961.1	12.51					Not sampled due to insufficient water			
	Dec. 16-17, 2009	961.1	12.51					Not sampled due to insufficient water			
	Dec. 13-14, 2010	961.1	13.99					Not sampled due to insufficient water			
	Dec. 14-15, 2011	961.1	13.99	13.26	947.84	13.60	5.54	0.224	19.4	0.04	
	Dec. 12-13, 2012	961.1	18.42	13.60	947.50	13.00	5.25	0.279	19.2	0.31	
	Dec. 10-11, 2013	961.1	18.42	12.75	948.35	15.00	5.91	0.199	18.48	0.31	
	Jan. 19-20, 2015	961.1	18.42	12.52	948.58	13.50	5.01	0.203	18.18	0.98	
	Dec. 22-23 2015	961.1	18.42	12.47	948.63	13.50	5.89	0.566	18.39	1.22	
MWC-1B	Dec. 28-30, 2004	960.77	55.46	11.52	949.25	NR	6.27	0.280	19.02	5.90	
	Dec. 20-21, 2005	960.77	55.74	12.08	948.69	NR	5.79	0.372	18.77	0.50	
	Dec. 05-06, 2006	960.77	55.72	11.90	948.87	NR	5.97	0.370	19.55	0.00	
	Dec. 04-05, 2007	960.77	55.45	13.00	947.77	NR	5.80	0.393	19.03	0.00	
	Dec. 18-19, 2008	960.77	55.68	12.93	947.84	NR	5.70	0.361	19.90	0.00	
	Dec. 16-17, 2009	960.77	55.68	12.06	948.71	NR	5.73	0.227	19.75	31.0	
	Dec. 13-14, 2010	960.77	55.68	12.84	947.93	NR	5.89	0.006	20.40	0.50	
	Dec. 14-15, 2011	960.77	55.68	13.00	947.77	51.00	5.36	0.419	20.80	1.94	
	Dec. 12-13, 2012	960.77	55.68	13.42	947.35	50.00	5.62	0.595	19.92	0.85	
	Dec. 10-11, 2013	960.77	55.68	12.45	948.32	19.87	5.90	0.396	18.83	1.59	
	Jan. 19-20, 2015	960.77	55.68	12.19	948.58	15.60	4.85	0.404	18.84	0.19	
	Dec. 22-23 2015	960.77	55.68	12.02	948.75	50.00	5.77	0.499	18.17	0.41	
MWC-1C	Dec. 28-30, 2004	960.38	77.23	11.00	949.38	NR	7.33	0.462	19.63	8.00	
	Dec. 20-21, 2005	960.38	77.50	11.35	949.03	NR	6.01	0.603	19.26	2.14	
	Dec. 05-06, 2006	960.38	77.51	11.46	948.92	NR	6.20	0.589	19.11	0.00	
	Dec. 04-05, 2007	960.38	77.23	14.27	946.11	NR	5.99	0.612	20.75	0.00	
	Dec. 18-19, 2008	960.38	76.45	12.87	947.51	NR	5.87	0.556	20.13	0.00	
	Dec. 16-17, 2009	960.38	76.45	11.86	948.52	NR	6.08	0.339	20.99	7.00	
	Dec. 13-14, 2010	960.38	76.45	12.30	948.08	NR	5.89	0.617	20.70	0.30	
	Dec. 14-15, 2011	960.38	76.45	12.45	947.93	71.00	5.73	0.561	20.60	0.00	
	Dec. 12-13, 2012	960.38	76.45	13.08	947.30	71.00	5.79	0.787	20.21	0.16	
	Dec. 10-11, 2013	960.38	76.45	11.94	948.44	36.02	6.17	0.591	19.07	0.19	
	Jan. 19-20, 2015	960.38	76.45	11.79	948.59	25.00	5.13	0.571	19.27	0.37	
	Dec. 22-23 2015	960.38	76.45	11.42	948.96	70.00	6.05	0.570	18.64	1.56	
DWW	Dec. 28-30, 2004	949.3	NR	12.95	936.35	NA	NA	NA	NA	NA	
	Dec. 20-21, 2005	951.3	18.93	14.69	936.61	NA	NA	NA	NA	NA	
	Dec. 05-06, 2006	951.3	18.89	15.32	935.98	NA	NA	NA	NA	NA	
	Dec. 04-05, 2007	951.3	18.70	16.01	935.29	NA	NA	NA	NA	NA	
	Dec. 18-19, 2008	951.3	18.90	16.06	935.24	NA	NA	NA	NA	NA	
	Dec. 16-17, 2009	951.3	18.90	14.85	936.45	NA	NA	NA	NA	NA	
	Dec. 13-14, 2010	951.3	18.90	14.91	936.39	NA	NA	NA	NA	NA	
	Dec. 14-15, 2011	951.3	18.90	14.95	936.35	NA	NA	NA	NA	NA	
	Dec. 12-13, 2012	951.3	18.90	15.98	935.32	NA	NA	NA	NA	NA	
	Dec. 10-11, 2013	951.3	18.90	14.41	936.89	NA	NA	NA	NA	NA	
	Jan. 19-20, 2015	951.3	18.90	14.24	937.06	NA	NA	NA	NA	NA	
	Dec. 22-23 2015	951.3	18.90	14.19	937.11	NA	NA	NA	NA	NA	

Notes:
°C Degree Celsius
Ft Feet
GW Groundwater
ID Identification
mS/cm Millisiemens per centimeter
NA Not analyzed
NR Not recorded
NS Not sampled; in 2004 MM-01 was covered with approximately 9 feet of soil and debris
NTU Nephelometric Turbidity Units
s.u. standard units
Temp Temperature
TOC Top of casing, relative to corrected elevation above mean sea level
Parameters collected during relevant annual sampling event.

Depths recorded are measured as depths below TOC
Well redevelopment took place Nov 15-16, 2011, contributing to generally lower turbidity values

TABLE 3
10TH ANNUAL GROUNDWATER SAMPLING REPORT
SUMMARY OF METALS ANALYTICAL RESULTS
NORTHSIDE DRIVE LANDFILL SITE

Well ID	Annual Sampling Event Date	Beryllium (µg/L)	Lead (µg/L)	Mercury (µg/L)
RRS		4	15	2
MM-04 (Background)	Dec. 28-30, 2004	< 3	< 15	< 0.5
	Dec. 20-21, 2005	< 3	< 15	< 0.5
	Dec. 05-06, 2006	< 3	< 15	< 0.5
	Dec. 04-05, 2007	< 3	< 15	< 0.5
	Dec. 18-19, 2008	< 10.0	< 10.0	< 0.20
	Dec. 16-17, 2009	< 10.0	< 10.0	< 0.20
	Dec. 13-14, 2010	< 10.0	< 10.0	< 0.20
	Dec. 14-15, 2011	< 1.0	< 1.0	< 0.20
	Dec. 12-13, 2012	< 5.0	< 15	< 0.20
	Dec. 10-11, 2013	< 4.0	< 15	< 0.20
	Jan. 19-20, 2015	< 4.0	< 15	< 0.20
Dec. 22-23, 2015	< 4.0	< 15	< 0.20	
MM-01	Dec. 28-30, 2004	NS	NS	NS
	Dec. 20-21, 2005	< 3	< 15	< 0.5
	Dec. 05-06, 2006	< 3	< 15	< 0.5
	Dec. 04-05, 2007	< 3	< 15	< 0.5
	Dec. 18-19, 2008	< 10.0	< 10.0	< 0.20
	Dec. 16-17, 2009	< 10.0	< 10.0	0.06 J
	Dec. 13-14, 2010	< 10.0	< 10.0	< 0.20
	Dec. 14-15, 2011	< 1.0	< 1.0	< 0.20
	Dec. 12-13, 2012	< 5.0	< 15	< 0.20
	Dec. 10-11, 2013	< 4.0	< 15	< 0.20
	Jan. 19-20, 2015	< 4.0	< 15	< 0.20
Dec. 22-23, 2015	< 4.0	< 15	< 0.20	
MM-02	Dec. 28-30, 2004	< 3	< 15	< 0.5
	Dec. 20-21, 2005	< 3	< 15	< 0.5
	Dec. 05-06, 2006	< 3	< 15	< 0.5
	Dec. 04-05, 2007	< 3	< 15	< 0.5
	Dec. 18-19, 2008	< 10.0	< 10.0	< 0.20
	Dec. 16-17, 2009	< 10.0	< 10.0	< 0.20
	Dec. 13-14, 2010	< 10.0	< 10.0	< 0.20
	Dec. 14-15, 2011	< 1.0	< 1.0	< 0.20
	Dec. 12-13, 2012	< 5.0	< 15	< 0.20
	Dec. 10-11, 2013	< 4.0	< 15	< 0.20
	Jan. 19-20, 2015	< 4.0	< 15	< 0.20
Dec. 22-23, 2015	< 4.0	< 15	< 0.20	
MWC-3C	Dec. 28-30, 2004	< 3	< 15	< 0.5
	Dec. 20-21, 2005	< 3	< 15	< 0.5
	Dec. 05-06, 2006	< 3	< 15	< 0.5
	Dec. 04-05, 2007	< 3	< 15	< 0.5
	Dec. 18-19, 2008	< 10.0	< 10.0	< 0.20
	Dec. 16-17, 2009	< 10.0	< 10.0	< 0.20
	Dec. 13-14, 2010	< 10.0	< 10.0	< 0.20
	Dec. 14-15, 2011	< 1.0	< 1.0	< 0.20
	Dec. 12-13, 2012	< 5.0	< 15	< 0.20
	Dec. 10-11, 2013	< 4.0	< 15	< 0.20
	Jan. 19-20, 2015	< 4.0	< 15	< 0.20
Dec. 22-23, 2015	< 4.0	< 15	< 0.20	
MWC-3B	Dec. 28-30, 2004	< 3	< 15	< 0.5
	Dec. 20-21, 2005	< 3	< 15	< 0.5
	Dec. 05-06, 2006	< 3	< 15	< 0.5
	Dec. 04-05, 2007	< 3	< 15	< 0.5
	Dec. 18-19, 2008	< 10.0	< 10.0	< 0.20
	Dec. 16-17, 2009	< 10.0	< 10.0	< 0.20
	Dec. 13-14, 2010	< 10.0	< 10.0	< 0.20
	Dec. 14-15, 2011	< 1.0	< 1.0	< 0.20
	Dec. 12-13, 2012	< 5.0	< 15	< 0.20
	Dec. 10-11, 2013	< 4.0	< 15	< 0.20
	Jan. 19-20, 2015	< 4.0	< 15	< 0.20
Dec. 22-23, 2015	< 4.0	< 15	< 0.20	

TABLE 3
10TH ANNUAL GROUNDWATER SAMPLING REPORT
SUMMARY OF METALS ANALYTICAL RESULTS
NORTHSIDE DRIVE LANDFILL SITE

Well ID	Annual Sampling Event Date	Beryllium (µg/L)	Lead (µg/L)	Mercury (µg/L)
RRS		4	15	2
MM-03	Dec. 28-30, 2004	< 3	< 15	< 0.5
	Dec. 20-21, 2005	< 3	< 15	< 0.5
	Dec. 05-06, 2006	< 3	< 15	< 0.5
	Dec. 04-05, 2007	< 3	< 15	< 0.5
	Dec. 18-19, 2008	< 10.0	< 10.0	< 0.20
	Dec. 16-17, 2009	< 10.0	< 10.0	< 0.20
	Dec. 13-14, 2010	< 10.0	< 10.0	< 0.20
	Dec. 14-15, 2011	< 1.0	< 1.0	< 0.20
	Dec. 12-13, 2012	< 5.0	< 15	< 0.20
	Dec. 10-11, 2013	< 4.0	< 15	< 0.20
	Jan. 19-20, 2015	< 4.0	< 15	< 0.20
Dec. 22-23, 2015	< 4.0	< 15	< 0.20	
MM-03-DUP	Dec. 28-30, 2004	NS	NS	NS
	Dec. 20-21, 2005	NS	NS	NS
	Dec. 05-06, 2006	NS	NS	NS
	Dec. 04-05, 2007	NS	NS	NS
	Dec. 18-19, 2008	< 10.0	< 10.0	< 0.20
	Dec. 16-17, 2009	< 10.0	< 10.0	< 0.20
	Dec. 13-14, 2010	< 10.0	< 10.0	< 0.20
	Dec. 14-15, 2011	< 1.0	< 1.0	< 0.20
	Dec. 12-13, 2012	< 5.0	< 15	< 0.20
	Dec. 10-11, 2013	< 4.0	< 15	< 0.20
	Jan. 19-20, 2015	< 4.0	< 15	< 0.20
Dec. 22-23, 2015	< 4.0	< 15	< 0.20	
MWC-1A	Dec. 28-30, 2004	< 3	< 15	< 0.5
	Dec. 20-21, 2005	< 3	< 15	< 0.5
	Dec. 05-06, 2006	< 3	< 15	< 0.5
	Dec. 04-05, 2007	Not sampled due to insufficient water		
	Dec. 18-19, 2008	Not sampled due to insufficient water		
	Dec. 16-17, 2009	Not sampled due to insufficient water		
	Dec. 13-14, 2010	Not sampled due to insufficient water		
	Dec. 14-15, 2011	< 1.0	< 1.0	< 0.20
	Dec. 12-13, 2012	< 5.0	< 15	< 0.20
	Dec. 10-11, 2013	< 4.0	< 15	< 0.20
	Jan. 19-20, 2015	< 4.0	< 15	< 0.20
Dec. 22-23, 2015	< 4.0	< 15	< 0.20	
MWC-1B	Dec. 28-30, 2004	< 3	< 15	< 0.5
	Dec. 20-21, 2005	< 3	< 15	< 0.5
	Dec. 05-06, 2006	< 3	< 15	< 0.5
	Dec. 04-05, 2007	< 3	< 15	< 0.5
	Dec. 18-19, 2008	< 10.0	< 10.0	< 0.20
	Dec. 16-17, 2009	< 10.0	< 10.0	< 0.20
	Dec. 13-14, 2010	< 10.0	< 10.0	< 0.20
	Dec. 14-15, 2011	< 1.0	< 1.0	< 0.20
	Dec. 12-13, 2012	< 5.0	< 15	< 0.20
	Dec. 10-11, 2013	< 4.0	< 15	< 0.20
	Jan. 19-20, 2015	< 4.0	< 15	< 0.20
Dec. 22-23, 2015	< 4.0	< 15	< 0.20	
MWC-1C	Dec. 28-30, 2004	< 3	< 15	< 0.5
	Dec. 20-21, 2005	< 3	< 15	< 0.5
	Dec. 05-06, 2006	< 3	< 15	< 0.5
	Dec. 04-05, 2007	< 3	< 15	< 0.5
	Dec. 18-19, 2008	< 10.0	< 10.0	< 0.20
	Dec. 16-17, 2009	< 10.0	< 10.0	0.09 J
	Dec. 13-14, 2010	< 10.0	< 10.0	< 0.20
	Dec. 14-15, 2011	< 1.0	< 1.0	< 0.20
	Dec. 12-13, 2012	< 5.0	< 15	< 0.20
	Dec. 10-11, 2013	< 4.0	< 15	< 0.20
	Jan. 19-20, 2015	< 4.0	< 15	< 0.20
Dec. 22-23, 2015	< 4.0	< 15	< 0.20	

TABLE 3
10TH ANNUAL GROUNDWATER SAMPLING REPORT
SUMMARY OF METALS ANALYTICAL RESULTS
NORTHSIDE DRIVE LANDFILL SITE

Notes:

J	Estimated value detected below Reporting Limit
µg/L	Micrograms per liter
<	Less than
NS	Not sampled; in 2004 MM-01 was covered with approximately 9 feet of soil and debris. MM-03-DUP not collected prior to 2008.
RRS	Risk Reduction Standard
	Samples collected during relevant annual sampling event

TABLE 4
10TH ANNUAL GROUNDWATER SAMPLING REPORT
SUMMARY OF POLYNUCLEAR AROMATIC HYDROCARBONS (PAH) ANALYTICAL RESULTS
NORTHSIDE DRIVE LANDFILL SITE

Well ID	Annual Sampling Event Date	Acenaphthene (µg/L)	Acenaphthylene (µg/L)	Anthracene (µg/L)	Benzo(a)anthracene (µg/L)	Benzo(a)pyrene (µg/L)	Benzo(b)fluoranthene (µg/L)	Benzo(k)fluoranthene (µg/L)	Benzo(g,h,i)perylene (µg/L)	Chrysene (µg/L)	Dibenzo(a,h)anthracene (µg/L)	Fluoranthene (µg/L)	Flourene (µg/L)	Indeno(1,2,3-cd)pyrene (µg/L)	Naphthalene (µg/L)	Phenanthrene (µg/L)	Pyrene (µg/L)	
RRS		2,000	23	6.6	0.13	0.23	0.2	0.17	0.76	0.2	0.3	1,000	1,000	0.43	20	6.4	1,000	
MM-03	Dec. 28-30, 2004	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.17	<0.1	<0.1	<0.1	<1.0	<1.0	<0.4	<1.0	<1.0	<1.0	
	Dec. 20-21, 2005	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.17	<0.1	<0.1	<0.1	<1.0	<1.0	<0.4	<1.0	<1.0	<1.0	
	Dec. 05-06, 2006	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.17	<0.1	<0.1	<0.1	<1.0	<1.0	<0.4	<1.0	<1.0	<1.0	
	Dec. 04-05, 2007	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.17	<0.1	<0.1	<0.1	<1.0	<1.0	<0.4	<1.0	<1.0	<1.0	
	Dec. 18-19, 2008	<1.0	<1.0	<0.20	<0.10	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<1.0	<0.50	<0.20	
	Dec. 16-17, 2009	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<1.0	<0.50	<0.20	
	Dec. 13-14, 2010	<1.0	<1.0	<0.20	<0.10	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<1.0	<0.50	<0.20	
	Dec. 14-15, 2011	<0.50	<1.0	<0.050	<0.050	<0.050	<0.10	<0.10	<0.050	<0.050	<0.10	<0.10	0.20	<0.050	4.4	0.31	<0.050	
	Dec. 12-13, 2012	<1.09	<1.09	<0.109	<0.109	<0.109	<0.163	<0.109	<0.272	<0.109	<0.109	<0.272	<0.543	<0.272	2.93 J	0.302 J	<0.272	
	Dec. 10-11, 2013	<1.18	<1.18	<0.118	<0.118	<0.118	<0.176	<0.118	<0.294	<0.118	<0.118	0.638	<0.588	<0.294	1.76	0.43	<0.294	
	Jan. 19-20, 2015	<1.09	<1.09	<0.109	<0.109	<0.109	<0.163	<0.109	<0.272	<0.109	<0.109	<0.272	<0.543	<0.272	2.52	<0.109	<0.272	
Dec. 22-23, 2015	<1.14	<1.14	<0.114	<0.114	<0.114	<0.170	<0.114	<0.284	<0.114	<0.114	<0.284	<0.568	<0.284	2.39	0.25	<0.284		
MM-03-DUP	Dec. 28-30, 2004	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	Dec. 20-21, 2005	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	Dec. 05-06, 2006	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	Dec. 04-05, 2007	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	
	Dec. 18-19, 2008	<1.0	<1.0	<0.20	<0.10	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<1.0	<0.50	<0.20	
	Dec. 16-17, 2009	<1.0	<1.0	<0.20	<0.10	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<1.0	<0.50	<0.20	
	Dec. 13-14, 2010	<1.0	<1.0	<0.20	<0.10	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<1.0	<0.50	<0.20	
	Dec. 14-15, 2011	<0.50	<1.0	<0.050	<0.050	<0.050	<0.10	<0.10	<0.050	<0.050	<0.10	<0.10	0.18	<0.050	4.3	0.31	<0.050	
	Dec. 12-13, 2012	<1.06	<1.06	<0.106	<0.106	<0.106	<0.160	<0.106	<0.266	<0.106	<0.106	<0.266	<0.532	<0.266	<0.532 J	<0.106 J	<0.266	
	Dec. 10-11, 2013	<1.11	<1.11	<0.111	<0.111	<0.111	<0.167	<0.111	<0.278	<0.111	<0.111	0.556	<0.556	<0.278	1.58	0.414	<0.278	
	Jan. 19-20, 2015	<1.11	<1.11	<0.111	<0.111	<0.111	<0.167	<0.111	<0.278	<0.111	<0.111	<0.278	<0.556	<0.278	1.93	<0.111	<0.278	
Dec. 22-23, 2015	<1.14	<1.14	<0.114	<0.114	<0.114	<0.170	<0.114	<0.284	<0.114	<0.114	<0.284	<0.568	<0.284	2.5	0.259	<0.284		
MWC-1A	Dec. 28-30, 2004	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.17	<0.1	<0.1	<0.1	<1.0	<1.0	<0.4	<1.0	<1.0	<1.0	
	Dec. 20-21, 2005	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.17	<0.1	<0.1	<0.1	<1.0	<1.0	<0.4	<1.0	<1.0	<1.0	
	Dec. 05-06, 2006	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.17	<0.1	<0.1	<0.1	<1.0	<1.0	<0.4	<1.0	<1.0	<1.0	
	Dec. 04-05, 2007	Not sampled due to insufficient water																
	Dec. 18-19, 2008	Not sampled due to insufficient water																
	Dec. 16-17, 2009	Not sampled due to insufficient water																
	Dec. 13-14, 2010	Not sampled due to insufficient water																
	Dec. 14-15, 2011	<0.50	<1.0	<0.050	<0.050	<0.050	<0.10	<0.10	<0.050	<0.050	<0.10	3.0	<0.10	<0.050	<0.50	0.051	1.8	
	Dec. 12-13, 2012	<1.06	<1.06	<0.106	<0.106	<0.106	<0.160	<0.106	<0.266	<0.106	<0.106	3.3	<0.532	<0.266	<0.532	<0.106	1.62	
	Dec. 10-11, 2013	<1.18	<1.18	<0.118	<0.118	<0.118	<0.176	<0.118	<0.294	<0.118	<0.118	0.675	<0.588	<0.294	<0.588	<0.118	0.406	
	Jan. 19-20, 2015	<1.09	<1.09	<0.109	<0.109	<0.109	<0.163	<0.109	<0.272	<0.109	<0.109	0.330	<0.543	<0.272	<0.543	<0.109	<0.272	
Dec. 22-23, 2015	<1.14	<1.14	<0.114	<0.114	<0.114	<0.170	<0.114	<0.284	<0.114	<0.114	3.22	<0.568	<0.284	<0.568	<0.114	1.74		
MWC-1B	Dec. 28-30, 2004	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.17	<0.1	<0.1	<0.1	<1.0	<1.0	<0.4	<1.0	<1.0	<1.0	
	Dec. 20-21, 2005	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.17	<0.1	<0.1	<0.1	<1.0	<1.0	<0.4	<1.0	<1.0	<1.0	
	Dec. 05-06, 2006	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.17	<0.1	<0.1	<0.1	<1.0	<1.0	<0.4	<1.0	<1.0	<1.0	
	Dec. 04-05, 2007	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.17	<0.1	<0.1	<0.1	<1.0	<1.0	<0.4	<1.0	<1.0	<1.0	
	Dec. 18-19, 2008	<1.0	<1.0	<0.20	<0.10	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<1.0	<0.50	<0.20	
	Dec. 16-17, 2009	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<1.0	<0.50	<0.20	
	Dec. 13-14, 2010	<1.0	<1.0	<0.20	<0.10	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<1.0	<0.50	<0.20	
	Dec. 14-15, 2011	<0.50	<1.0	<0.050	<0.050	<0.050	<0.10	<0.10	<0.050	<0.050	<0.10	<0.10	<0.10	<0.050	<0.50	<0.050	<0.050	
	Dec. 12-13, 2012	<1.05	<1.05	<0.105	<0.105	<0.105	<0.158	<0.105	<0.263	<0.105	<0.105	<0.263	<0.526	<0.263	<0.526	<0.105	<0.263	
	Dec. 10-11, 2013	<1.11	<1.11	<0.111	<0.111	<0.111	<0.167	<0.111	<0.278	<0.111	<0.111	<0.278	<0.556	<0.278	<0.556	<0.111	<0.278	
	Jan. 19-20, 2015	<1.11	<1.11	<0.111	<0.111	<0.111	<0.167	<0.111	<0.278	<0.111	<0.111	<0.278	<0.556	<0.278	<0.556	<0.111	<0.278	
Dec. 22-23, 2015	<1.14	<1.14	<0.114	<0.114	<0.114	<0.170	<0.114	<0.284	<0.114	<0.114	<0.284	<0.568	<0.284	7.42	0.239	<0.284		
MWC-1C	Dec. 28-30, 2004	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.17	<0.1	<0.1	<0.1	<1.0	<1.0	<0.4	<1.0	<1.0	<1.0	
	Dec. 20-21, 2005	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.17	<0.1	<0.1	<0.1	<1.0	<1.0	<0.4	<1.0	<1.0	<1.0	
	Dec. 05-06, 2006	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.17	<0.1	<0.1	<0.1	<1.0	<1.0	<0.4	<1.0	<1.0	<1.0	
	Dec. 04-05, 2007	<1.0	<1.0	<1.0	<0.1	<0.1	<0.1	<0.17	<0.1	<0.1	<0.1	<1.0	<1.0	<0.4	<1.0	<1.0	<1.0	
	Dec. 18-19, 2008	<1.0	<1.0	<0.20	<0.10	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<1.0	<0.50	<0.20	
	Dec. 16-17, 2009	<1.0	<1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<1.0	<0.50	<0.20	
	Dec. 13-14, 2010	<1.0	<1.0	<0.20	<0.10	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.50	<0.20	<1.0	<0.50	<0.20	
	Dec. 14-15, 2011	<0.50	<1.0	<0.050	<0.050	<0.050	<0.10	<0.10	<0.050	<0.050	<0.10	<0.10	<0.10	<0.050	<0.50	<0.050	<0.050	
	Dec. 12-13, 2012	<1.09	<1.09	<0.109	<0.109	<0.109	<0.163	<0.109	<0.272	<0.109	<0.109	<0.272	<0.543	<0.272	<0.543	<0.109	<0.272	
	Dec. 10-11, 2013	<1.11	<1.11	<0.111	<0.111	<0.111	<0.167	<0.111	<0.278	<0.111	<0.111	<0.278	<0.556	<0.278	<0.556	<0.111	<0.278	
	Jan. 19-20, 2015	<1.09	<1.09	<0.109	<0.109	<0.109	<0.163	<0.109	<0.272	<0.109	<0.109	<0.272	<0.543	<0.272	<0.543	<0.109	<0.272	
Dec. 22-23, 2015	<1.14	<1.14	<0.114	<0.114	<0.114	<0.170	<0.114	<0.284	<0.114	<0.114	<0.284	<0.568	<0.284	<0.568	<0.114	<0.284		

TABLE 4
10TH ANNUAL GROUNDWATER SAMPLING REPORT
SUMMARY OF POLYNUCLEAR AROMATIC HYDROCARBONS (PAH) ANALYTICAL RESULTS
NORTHSIDE DRIVE LANDFILL SITE

Notes:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample
RRS	Risk Reduction Standard
µg/L	Micrograms per liter
NS	Not sampled; in 2004 MM-01 was covered with approximately 9 feet of soil and debris. MM-03-DUP not collected prior to 2008.
<	Less than
BOLD	Analytical results above analytical method's practical quantitation limit
	Samples collected during relevant annual sampling event

ENCLOSURE 3

LOGBOOK NOTES

(Two Pages)

Location GWCC Date 12/22/15¹³⁷

Project / Client Annual #10 Sampling Event

Weather: Overcast w/ light rain
high of 55°F

Scope: Sample Site Wells.

0800 Arrive on site, have tailgate

H&S meeting

- C. Jones and C. Owens onsite
for sampling event

0825 Open wells and allow to
equilibrate. Use Micro PID to
check breathing zone

<u>Well</u>	<u>Well head</u>	<u>Breathing Zone</u>
MM-04	0.0	0.0
MM-01	0.0	0.0
MM-02	0.0	0.0
MM-3C	0.0	0.0
MM-3B	0.0	0.0
MM-03	0.0	0.0
MWC-1A	0.0	0.0
MWC-1B	0.0	0.0
MWC-1C	0.0	0.0
DWW	0.0	0.0

- Calibrate unit prior to use, reading
297.5 ppm of 500 ppm cal gas.

1000 Calibrate YSI 556 and Turbidity Meter (Hach 2100Q)

Parameter	Solution	Bump
pH	7.0	7.02
pH	4.0	4.01
pH	10.0	10.0
Cond (µS/cm)	1.413	1.413
Turbidity (NTU)	10.0	10.03

1040 Gauge Wells

Well	DTW	TD	Begin Pacing	Sample time
MM-04	16.41	45.35	1105	1235
MM-01	17.79	27.53	1448	1610
MM-02	10.19	16.9	1438	1717
MWC-3C	10.23	29.3	1525	1643
MWC-3B	10.20	24.88	1655	1805
MM-03	14.26			
MWC-1A	12.47			
MWC-1B	12.02			
MWC-1C	11.58			
DWW	14.19			

1100 Begin sampling wells

1900 Off site for the day

0800 G. Krahl and C. Jones arrive on site

- Weather: Overcast w/ rain showers, high of 72°F
- Scope - Complete sampling activities
- Have tailgate HOS meeting to bump equipment.

0820 Set up on MM-03

Well	DTW	TD	Pacing start	Sample time
MM-03	14.26	30.20	0828	1122
MWC-1A	12.47	18.40	0917	1211
MWC-1B	12.02	55.68	13.40	1615
MWC-1C	11.58	76.45	1635	1720

1020 Collect GWCC-FB

1135 Collect MM-03-Dhp

1422 pH on YSI 556 is not reading correctly. Speakw/ Pinc they determine its a bad calite

1600 Replacement unit arrives,

1625 Collect GWCC-ER

~~1720~~ Collect (E3)

1820 Off site

ENCLOSURE 4

GROUNDWATER SAMPLING DATA SHEETS

(18 Pages)

GROUNDWATER SAMPLING DATA SHEET
 Georgia World Congress Center (GWCC)
 10th Annual Sampling Event (December 2015)

Date: 12/22/15 Purge Start Time: 1105 Time of Sample Collection: 1235

Sample ID/ Well Number: MM-04 Watertight Locking Cap Condition: _____

Wells securely locked?

Total Depth (TD): 45.35 ft below top of casing (TOC)

Length of Screening Interval: _____ ft

Initial Depth to Water (DTW): 16.41 ft below TOC

DTW Prior to Sampling: 16.76 ft below TOC

Depth to Sample Intake (DTI): 17.25 ft below TOC

(should be center of screened interval, if possible)

Method of purging: Peristaltic Pump
 _____ Bladder Pump
 _____ Submersible Pump
 _____ Bailer

Three Well Volumes: 14.16 Gallons

Total Volume Purged: 14.5 Gallons

Actual Purge Rate: 0.16 Gallons/min

Well Remarks (Sediment Accumulation, Grout/Concrete Present?) NA

Well Calculations

3 Well Volumes:
 TD - DTW = Water Column Length
45.35 - 16.41 = 28.94

Water Column Length * Well Diameter
 Constant = Well Volume
28.94 * 0.163 = 4.72

3 * Well Volume = 3 Well Volumes
 3 * 4.72 = 14.16

PHYSIO-CHEMICAL PARAMETERS DURING PURGING										
Measurement Criterion	Initial Reading									Stabilization Criteria
Time	<u>1222</u>	<u>1227</u>	<u>1232</u>							-
Breathing Zone FID Reading	<u>0.0</u>									
Well head FID Reading	<u>0.0</u>									-
pH	<u>8.97</u>	<u>8.92</u>	<u>8.87</u>							± 0.1
Temperature (°C)	<u>19.76</u>	<u>19.74</u>	<u>19.75</u>							-
Specific Conductivity (mS/cm)	<u>0.125</u>	<u>0.125</u>	<u>0.125</u>							± 5 %
Turbidity (NTU)	<u>0.62</u>	<u>0.67</u>	<u>0.78</u>							< 10
Depth to Water (ft)	<u>16.76</u>	<u>16.76</u>	<u>16.76</u>							-
Each Volume Purged (Gal)		<u>0.75</u>	<u>0.75</u>							-
Total Gallons Purged	<u>12.5</u>	<u>13.25</u>	<u>14.0</u>							-

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)

10th Annual Sampling Event (December 2015)

Duplicate Sample Collected? Yes No (Sample ID of Duplicate): _____

(Sample Time of Duplicate): _____

MS/MSD Sample Collected? Yes No

Purged water appearance (Odors, Colors, Sediment): clear, no odor

Comments: _____

Sample(s) Collected By: CJ

Analytical method to be written on COC: Metals/PAH

GROUNDWATER SAMPLING DATA SHEET
 Georgia World Congress Center (GWCC)
 10th Annual Sampling Event (December 2015)

Date: 12/22/15 Purge Start Time: 14:48 Time of Sample Collection: 1610

Sample ID/ Well Number: MM-01 Watertight Locking Cap Condition: _____

Wells securely locked? yes

Total Depth (TD): 27.53 ft below top of casing (TOC)

Length of Screening Interval: _____ ft

Initial Depth to Water (DTW): 17.79 ft below TOC

DTW Prior to Sampling: 21.05 ft below TOC

Depth to Sample Intake (DTI): 21.5 ft below TOC

(should be center of screened interval, if possible)

Method of purging: Peristaltic Pump

_____ Bladder Pump

_____ Submersible Pump

_____ Bailer

Three Well Volumes: 4.76 Gallons

Total Volume Purged: 8.1 Gallons

Actual Purge Rate: 0.099 Gallons/min

Well Remarks (Sediment Accumulation, Grout/Concrete Present?) NA

Well Calculations

3 Well Volumes:
 TD - DTW = Water Column Length
27.53 - 17.79 = 9.74

Water Column Length * Well Diameter
 Constant = Well Volume
9.74 * 0.163 = 1.59

3 * Well Volume = 3 Well Volumes
 3 * 1.59 = 4.76

PHYSIO-CHEMICAL PARAMETERS DURING PURGING											
Measurement Criterion	Initial Reading										Stabilization Criteria
Time	<u>1532</u>	<u>1537</u>	<u>1542</u>	<u>1548</u>	<u>1552</u>	<u>1557</u>	<u>1602</u>	<u>1607</u>			-
Breathing Zone FID Reading	<u>0.0</u>										
Well head FID Reading	<u>0.0</u>	-	-	-	-	-	-	-	-	-	-
pH	<u>8.54</u>	<u>8.29</u>	<u>7.99</u>	<u>7.93</u>	<u>7.84</u>	<u>7.72</u>	<u>7.73</u>	<u>7.64</u>			± 0.1
Temperature (°C)	<u>19.71</u>	<u>19.70</u>	<u>19.69</u>	<u>19.67</u>	<u>19.65</u>	<u>19.63</u>	<u>19.58</u>	<u>19.60</u>			-
Specific Conductivity (mS/cm)	<u>0.325</u>	<u>0.330</u>	<u>0.334</u>	<u>0.320</u>	<u>0.324</u>	<u>0.317</u>	<u>0.301</u>	<u>0.295</u>			± 5 %
Turbidity (NTU)	<u>7.04</u>	<u>18.6</u>	<u>21.7</u>	<u>14.9</u>	<u>15.3</u>	<u>49.3</u>	<u>17.2</u>	<u>15.3</u>			< 10
Depth to Water (ft)	<u>19.90</u>	<u>20.03</u>	<u>20.2</u>	<u>20.61</u>	<u>20.73</u>	<u>20.85</u>	<u>20.88</u>	<u>21.05</u>			-
Each Volume Purged (Gal)		<u>0.5</u>			-						
Total Gallons Purged	<u>4.5</u>	<u>5.0</u>	<u>5.5</u>	<u>6.0</u>	<u>6.5</u>	<u>7.0</u>	<u>7.5</u>	<u>8.0</u>			-

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)

10th Annual Sampling Event (December 2015)

Duplicate Sample Collected? Yes No (Sample ID of Duplicate): _____

(Sample Time of Duplicate): _____

MS/MSD Sample Collected? Yes No

Purged water appearance (Odors, Colors, Sediment): slight brownish tint but clears, no odor

Comments: _____

Sample(s) Collected By: CS

Analytical method to be written on COC: metals / PAH

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)
10th Annual Sampling Event (December 2015)

Date: 12/22/15 Purge Start Time: 1638 Time of Sample Collection: 1717

Sample ID/ Well Number: MM-02 Watertight Locking Cap Condition: _____

Wells securely locked? _____

Total Depth (TD): 16.9 ft below top of casing (TOC)

Length of Screening Interval: _____ ft

Initial Depth to Water (DTW): 10.19 ft below TOC

DTW Prior to Sampling: 10.56 ft below TOC

Depth to Sample Intake (DTI): 11.0 ft below TOC

(should be center of screened interval, if possible)

Method of purging: Peristaltic Pump

_____ Bladder Pump

_____ Submersible Pump

_____ Bailer

Three Well Volumes: 3.2 Gallons

Total Volume Purged: 5.0 Gallons

Actual Purge Rate: 0.128 Gallons/min

Well Remarks (Sediment Accumulation, Grout/Concrete Present?) NA

Well Calculations	
3 Well Volumes:	
TD - DTW = Water Column Length	<u>16.9</u> - <u>10.19</u> = <u>6.71</u>
Water Column Length * Well Diameter Constant = Well Volume	<u>6.71</u> * <u>0.163</u> = <u>1.09</u>
3 * Well Volume = 3 Well Volumes	3 * <u>1.09</u> =
	<u>3.2</u>

PHYSIO-CHEMICAL PARAMETERS DURING PURGING										
Measurement Criterion	Initial Reading									Stabilization Criteria
Time	<u>1700</u>	<u>1705</u>	<u>1710</u>	<u>1715</u>						-
Breathing Zone FID Reading	<u>0.0</u>									
Well head FID Reading	<u>0.0</u>									
pH	<u>8.17</u>	<u>8.04</u>	<u>8.01</u>	<u>8.03</u>						± 0.1
Temperature (°C)	<u>19.24</u>	<u>19.24</u>	<u>19.26</u>	<u>19.30</u>						-
Specific Conductivity (mS/cm)	<u>0.527</u>	<u>0.528</u>	<u>0.529</u>	<u>0.529</u>						± 5 %
Turbidity (NTU)	<u>0.24</u>	<u>0.45</u>	<u>0.28</u>	<u>0.28</u>						< 10
Depth to Water (ft)	<u>10.55</u>	<u>10.55</u>	<u>10.56</u>	<u>10.56</u>						-
Each Volume Purged (Gal)		<u>0.75</u>	<u>0.75</u>	<u>0.75</u>						-
Total Gallons Purged	<u>2.75</u>	<u>3.5</u>	<u>4.25</u>	<u>5.0</u>						-

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)

10th Annual Sampling Event (December 2015)

Duplicate Sample Collected? Yes No (Sample ID of Duplicate): _____

(Sample Time of Duplicate): _____

MS/MSD Sample Collected? Yes No

Purged water appearance (Odors, Colors, Sediment): clear, no odor

Comments: —

Sample(s) Collected By: CJ

Analytical method to be written on COC: metals / PAH

GROUNDWATER SAMPLING DATA SHEET
 Georgia World Congress Center (GWCC)
 10th Annual Sampling Event (December 2015)

Date: 12/22/15 Purge Start Time: 1525 Time of Sample Collection: 1643

Sample ID/ Well Number: MWC-3C Watertight Locking Cap Condition: _____

Wells securely locked? _____

Total Depth (TD): 29.3 ft below top of casing (TOC)

Length of Screening Interval: _____ ft

Initial Depth to Water (DTW): 10.23 ft below TOC

DTW Prior to Sampling: 11.03 ft below TOC

Depth to Sample Intake (DTI): 11.50 ft below TOC

(should be center of screened interval, if possible)

Method of purging: Peristaltic Pump
 _____ Bladder Pump
 _____ Submersible Pump
 _____ Bailer

Three Well Volumes: 9.3 Gallons

Total Volume Purged: 9.8 Gallons

Actual Purge Rate: 0.126 Gallons/min

Well Remarks (Sediment Accumulation, Grout/Concrete Present?) NA

Well Calculations

3 Well Volumes:
 TD - DTW = Water Column Length
29.3 - 10.23 = 19.07

Water Column Length * Well Diameter
 Constant = Well Volume
19.07 * 0.163 = 3.1

3 * Well Volume = 3 Well Volumes
 3 * 3.1 = 9.3

PHYSIO-CHEMICAL PARAMETERS DURING PURGING											
Measurement Criterion	Initial Reading										Stabilization Criteria
Time	<u>1620</u>	<u>1625</u>	<u>1630</u>	<u>1635</u>	<u>1640</u>						-
Breathing Zone FID Reading	<u>0.0</u>										
Well head FID Reading	<u>0.0</u>	-	-	-	-	-	-	-	-	-	-
pH	<u>8.38</u>	<u>8.27</u>	<u>8.26</u>	<u>8.33</u>	<u>8.26</u>						± 0.1
Temperature (°C)	<u>18.92</u>	<u>18.90</u>	<u>18.89</u>	<u>18.88</u>	<u>18.88</u>						-
Specific Conductivity (mS/cm)	<u>0.800</u>	<u>0.800</u>	<u>0.799</u>	<u>0.799</u>	<u>0.797</u>						± 5 %
Turbidity (NTU)	<u>15.3</u>	<u>0.2</u>	<u>0.29</u>	<u>0.12</u>	<u>0.21</u>						< 10
Depth to Water (ft)	<u>11.03</u>	<u>11.03</u>	<u>11.03</u>	<u>11.03</u>	<u>11.03</u>						-
Each Volume Purged (Gal)		<u>0.5</u>	<u>0.5</u>	<u>0.5</u>	<u>0.5</u>						-
Total Gallons Purged	<u>7.5</u>	<u>8.0</u>	<u>8.5</u>	<u>9.0</u>	<u>9.5</u>						-

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)

10th Annual Sampling Event (December 2015)

Duplicate Sample Collected? Yes No (Sample ID of Duplicate): _____

(Sample Time of Duplicate): _____

MS/MSD Sample Collected? Yes No

Purged water appearance (Odors, Colors, Sediment): Clear, no odor

Comments: _____

Sample(s) Collected By: CJ

Analytical method to be written on COC: Metals, PAH

GROUNDWATER SAMPLING DATA SHEET
 Georgia World Congress Center (GWCC)
 10th Annual Sampling Event (December 2015)

Date: 12/22/15 Purge Start Time: 1655 Time of Sample Collection: 1805

Sample ID/ Well Number: MWC-3B Watertight Locking Cap Condition: _____

Wells securely locked? _____

Total Depth (TD): 24.88 ft below top of casing (TOC)

Length of Screening Interval: _____ ft

Initial Depth to Water (DTW): 10.2 ft below TOC

DTW Prior to Sampling: 10.91 ft below TOC

Depth to Sample Intake (DTI): 11.0 ft below TOC

(should be center of screened interval, if possible)

Method of purging: Peristaltic Pump

_____ Bladder Pump

_____ Submersible Pump

_____ Bailer

Three Well Volumes: 7.2 Gallons

Total Volume Purged: 7.5 Gallons

Actual Purge Rate: 0.107 Gallons/min

Well Remarks (Sediment Accumulation, Grout/Concrete Present?) NA

Well Calculations

3 Well Volumes:

TD - DTW = Water Column Length
24.88 - 10.2 = 14.68

Water Column Length * Well Diameter
 Constant = Well Volume
14.68 * 0.163 = 2.39

3 * Well Volume = 3 Well Volumes
 3 * 2.39 = 7.2

PHYSIO-CHEMICAL PARAMETERS DURING PURGING										
Measurement Criterion	Initial Reading									Stabilization Criteria
Time	<u>1749</u>	<u>1754</u>	<u>1759</u>							-
Breathing Zone FID Reading	<u>0.0</u>									
Well head FID Reading	<u>0.0</u>	-	-	-	-	-	-	-	-	-
pH	<u>8.97</u>	<u>9.02</u>	<u>9.04</u>							± 0.1
Temperature (°C)	<u>19.29</u>	<u>19.28</u>	<u>19.29</u>							-
Specific Conductivity (mS/cm)	<u>0.951</u>	<u>0.952</u>	<u>0.952</u>							± 5 %
Turbidity (NTU)	<u>0.28</u>	<u>0.37</u>	<u>1.03</u>							< 10
Depth to Water (ft)	<u>10.89</u>	<u>10.89</u>	<u>10.91</u>							-
Each Volume Purged (Gal)		<u>0.5</u>	<u>0.5</u>							-
Total Gallons Purged	<u>6.0</u>	<u>6.5</u>	<u>7.0</u>							-

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)

10th Annual Sampling Event (December 2015)

Duplicate Sample Collected? Yes No (Sample ID of Duplicate): _____

(Sample Time of Duplicate): _____

MS/MSD Sample Collected? Yes No

Purged water appearance (Odors, Colors, Sediment): clear, no odor

Comments: _____

Sample(s) Collected By: CJ

Analytical method to be written on COC: Metals / PAH

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)
10th Annual Sampling Event (December 2015)

Date: 12/23/15 Purge Start Time: 0828 Time of Sample Collection: 1122

Sample ID/ Well Number: MM-03 Watertight Locking Cap Condition: _____

Wells securely locked? _____

Total Depth (TD): 30.2 ft below top of casing (TOC)

Length of Screening Interval: _____ ft

Initial Depth to Water (DTW): 14.26 ft below TOC

DTW Prior to Sampling: _____ ft below TOC

Depth to Sample Intake (DTI): 16.5 ft below TOC

(should be center of screened interval, if possible)

Method of purging: Peristaltic Pump

_____ Bladder Pump

_____ Submersible Pump

_____ Bailer

Three Well Volumes: 7.8 Gallons

Total Volume Purged: 11.1 Gallons

Actual Purge Rate: 0.15 Gallons/min

Well Remarks (Sediment Accumulation, Grout/Concrete Present?) NA

Well Calculations	
3 Well Volumes:	
TD - DTW = Water Column Length	<u>30.2</u> - <u>14.26</u> = <u>15.94</u>
Water Column Length * Well Diameter Constant = Well Volume	<u>15.94</u> * <u>0.163</u> = <u>2.59</u>
3 * Well Volume = 3 Well Volumes	3 * <u>2.59</u> =
	<u>7.8</u>

PHYSIO-CHEMICAL PARAMETERS DURING PURGING										
Measurement Criterion	Initial Reading									Stabilization Criteria
Time	<u>1110</u>	<u>1115</u>	<u>1120</u>							-
Breathing Zone FID Reading	<u>0.0</u>									
Well head FID Reading	<u>0.0</u>									
pH	<u>5.88</u>	<u>5.88</u>	<u>5.87</u>							± 0.1
Temperature (°C)	<u>19.84</u>	<u>19.81</u>	<u>19.76</u>							-
Specific Conductivity (mS/cm)	<u>0.252</u>	<u>0.244</u>	<u>0.243</u>							± 5 %
Turbidity (NTU)	<u>0.22</u>	<u>0.25</u>	<u>0.27</u>							< 10
Depth to Water (ft)	<u>15.12</u>	<u>15.12</u>	<u>15.12</u>							-
Each Volume Purged (Gal)		<u>0.5</u>	<u>0.5</u>							-
Total Gallons Purged	<u>10</u>	<u>10.5</u>	<u>11.0</u>							-

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)

10th Annual Sampling Event (December 2015)

Duplicate Sample Collected? Yes No (Sample ID of Duplicate): MM-03-DUP

(Sample Time of Duplicate): 1135

MS/MSD Sample Collected? Yes No

Purged water appearance (Odors, Colors, Sediment): clear, no odor

Comments: _____

Sample(s) Collected By: CJ

Analytical method to be written on COC: Metals / PAH

GROUNDWATER SAMPLING DATA SHEET
 Georgia World Congress Center (GWCC)
 10th Annual Sampling Event (December 2015)

Date: 12/23/15 Purge Start Time: 0917 Time of Sample Collection: 1211

Sample ID/ Well Number: MWC-1A Watertight Locking Cap Condition: _____

Wells securely locked? _____

Total Depth (TD): 18.4 ft below top of casing (TOC)

Length of Screening Interval: _____ ft

Initial Depth to Water (DTW): 12.47 ft below TOC

DTW Prior to Sampling: 13.16 ft below TOC

Depth to Sample Intake (DTI): 13.5 ft below TOC

(should be center of screened interval, if possible)

Method of purging: Peristaltic Pump

_____ Bladder Pump

_____ Submersible Pump

_____ Bailer

Three Well Volumes: 2.9 Gallons

Total Volume Purged: 7.5 Gallons

Actual Purge Rate: 0.043 Gallons/min

Well Remarks (Sediment Accumulation, Grout/Concrete Present?) NA

Well Calculations

3 Well Volumes:

TD - DTW = Water Column Length
18.4 - 12.47 = 5.93

Water Column Length * Well Diameter
 Constant = Well Volume
5.93 * 0.163 = 0.966

3 * Well Volume = 3 Well Volumes
 3 * 0.966 = 2.9

PHYSIO-CHEMICAL PARAMETERS DURING PURGING										
Measurement Criterion	Initial Reading									Stabilization Criteria
Time	<u>1159</u>	<u>1204</u>	<u>1209</u>							-
Breathing Zone FID Reading	<u>0.0</u>									
Well head FID Reading	<u>0.0</u>	-	-	-	-	-	-	-	-	-
pH	<u>5.88</u>	<u>5.89</u>	<u>5.89</u>							± 0.1
Temperature (°C)	<u>18.43</u>	<u>18.29</u>	<u>18.39</u>							-
Specific Conductivity (mS/cm)	<u>0.542</u>	<u>0.567</u>	<u>0.566</u>							± 5 %
Turbidity (NTU)	<u>1.44</u>	<u>1.20</u>	<u>1.22</u>							< 10
Depth to Water (ft)	<u>13.22</u>	<u>13.2</u>	<u>13.16</u>							-
Each Volume Purged (Gal)		<u>0.5</u>	<u>0.5</u>							-
Total Gallons Purged	<u>6</u>	<u>6.5</u>	<u>7.0</u>							-

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)
10th Annual Sampling Event (December 2015)

Duplicate Sample Collected? Yes No (Sample ID of Duplicate): _____

(Sample Time of Duplicate): _____

MS/MSD Sample Collected? Yes No

Purged water appearance (Odors, Colors, Sediment): clear, slight sulfur-like odor

Comments: _____

Sample(s) Collected By: CV

Analytical method to be written on COC: metals/PAH

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)

10th Annual Sampling Event (December 2015)

Date: 12/23/15

Purge Start Time: 1340 Time of Sample Collection: 1615

Sample ID/ Well Number: MWC-1B

Watertight Locking Cap Condition: _____

Wells securely locked? _____

Total Depth (TD): 55.68 ft below top of casing (TOC)

Length of Screening Interval: _____ ft

Initial Depth to Water (DTW): 12.02 ft below TOC

DTW Prior to Sampling: 12.51 ft below TOC

Depth to Sample Intake (DTI): 5.0 ft below TOC

(should be center of screened interval, if possible)

Method of purging: Peristaltic Pump

_____ Bladder Pump

_____ Submersible Pump

_____ Bailer

Three Well Volumes: 2.4 Gallons

Total Volume Purged: 8.25 Gallons

Actual Purge Rate: 0.053 Gallons/min

Well Remarks (Sediment Accumulation, Grout/Concrete Present?) NA

Well Calculations	
3 Well Volumes:	
TD - DTW = Water Column Length	<u>55.68</u> - <u>12.02</u> = <u>43.66</u>
Water Column Length * Well Diameter Constant = Well Volume	<u>43.66</u> * <u>0.163</u> = <u>7.12</u>
3 * Well Volume = 3 Well Volumes	3 * <u>7.12</u> =
	<u>21.4</u>

PHYSIO-CHEMICAL PARAMETERS DURING PURGING											
Measurement Criterion	Initial Reading										Stabilization Criteria
Time	<u>1422</u>	<u>1600</u>	<u>1605</u>	<u>1610</u>	<u>1615</u>						-
Breathing Zone FID Reading	<u>0.0</u>										
Well head FID Reading	<u>0.0</u>	-	-	-	-	-	-	-	-	-	-
pH	<u>3.86</u>	<u>5.96</u>	<u>5.75</u>	<u>5.75</u>	<u>5.77</u>						± 0.1
Temperature (°C)	<u>18.58</u>	<u>18.24</u>	<u>18.07</u>	<u>18.12</u>	<u>18.17</u>						-
Specific Conductivity (mS/cm)	<u>1.465</u>	<u>0.488</u>	<u>0.492</u>	<u>0.498</u>	<u>0.499</u>						± 5 %
Turbidity (NTU)	<u>0.39</u>	<u>0.70</u>	<u>1.25</u>	<u>0.72</u>	<u>0.41</u>						< 10
Depth to Water (ft)	<u>12.53</u>	<u>12.52</u>	<u>12.51</u>	<u>12.51</u>	<u>12.52</u>						-
Each Volume Purged (Gal)			<u>0.25</u>	<u>0.25</u>	<u>0.25</u>						-
Total Gallons Purged	<u>3.25</u>	<u>7.5</u>	<u>7.75</u>	<u>8.0</u>	<u>8.25</u>						-

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)
10th Annual Sampling Event (December 2015)

Duplicate Sample Collected? Yes No (Sample ID of Duplicate): _____

(Sample Time of Duplicate): _____

MS/MSD Sample Collected? Yes No

Purged water appearance (Odors, Colors, Sediment): clear, no odor

Comments: _____

Sample(s) Collected By: CJ

Analytical method to be written on COC: Metals / PAH

GROUNDWATER SAMPLING DATA SHEET
 Georgia World Congress Center (GWCC)
 10th Annual Sampling Event (December 2015)

Date: 12/23/15 Purge Start Time: 1635 Time of Sample Collection: 1720

Sample ID/ Well Number: MWC-1C Watertight Locking Cap Condition: _____

Wells securely locked? _____

Total Depth (TD): 76.45 ft below top of casing (TOC)

Length of Screening Interval: _____ ft

Initial Depth to Water (DTW): 11.42 ft below TOC

DTW Prior to Sampling: _____ ft below TOC

Depth to Sample Intake (DTI): 70.0 ft below TOC

(should be center of screened interval, if possible)

Method of purging: Peristaltic Pump

_____ Bladder Pump

_____ Submersible Pump

_____ Bailer

Three Well Volumes: 31.8 Gallons

Total Volume Purged: 2.0 Gallons

Actual Purge Rate: 0.44 Gallons/min

Well Remarks (Sediment Accumulation, Grout/Concrete Present?) NA

Well Calculations	
3 Well Volumes:	
TD - DTW = Water Column Length	<u>76.45</u> - <u>11.42</u> = <u>65.03</u>
Water Column Length * Well Diameter Constant = Well Volume	<u>65.03</u> * <u>0.163</u> = <u>10.60</u>
3 * Well Volume = 3 Well Volumes	3 * <u>10.60</u> =
	<u>31.8</u>

PHYSIO-CHEMICAL PARAMETERS DURING PURGING										
Measurement Criterion	Initial Reading									Stabilization Criteria
Time	<u>1705</u>	<u>1710</u>	<u>1715</u>							-
Breathing Zone FID Reading	<u>0.0</u>									
Well head FID Reading	<u>0.0</u>	-	-	-	-	-	-	-	-	-
pH	<u>6.06</u>	<u>6.06</u>	<u>6.05</u>							± 0.1
Temperature (°C)	<u>18.72</u>	<u>18.70</u>	<u>18.64</u>							-
Specific Conductivity (mS/cm)	<u>0.546</u>	<u>0.559</u>	<u>0.570</u>							± 5 %
Turbidity (NTU)	<u>1.03</u>	<u>1.14</u>	<u>1.56</u>							< 10
Depth to Water (ft)	<u>15.7</u>	<u>15.85</u>	<u>15.95</u>							-
Each Volume Purged (Gal)		<u>0.25</u>	<u>0.25</u>							-
Total Gallons Purged	<u>1.25</u>	<u>1.5</u>	<u>1.75</u>							-

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)
10th Annual Sampling Event (December 2015)

Duplicate Sample Collected? Yes No (Sample ID of Duplicate): _____
(Sample Time of Duplicate): _____

MS/MSD Sample Collected? Yes No

Purged water appearance (Odors, Colors, Sediment): clear, no odor

Comments: _____

Sample(s) Collected By: CJ

Analytical method to be written on COC: metals / PAH

ENCLOSURE 5

DECEMBER 2014 QUARTERLY INSPECTION PHOTOGRAPHIC LOG

(46 Pages)



**OFFICIAL PHOTOGRAPH NO. 1
TETRA TECH**

Subject: Granite plaque located on the east, southeast side of the north parking lot perimeter.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Aerial

Photographer: Jason Wilson, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 2
TETRA TECH**

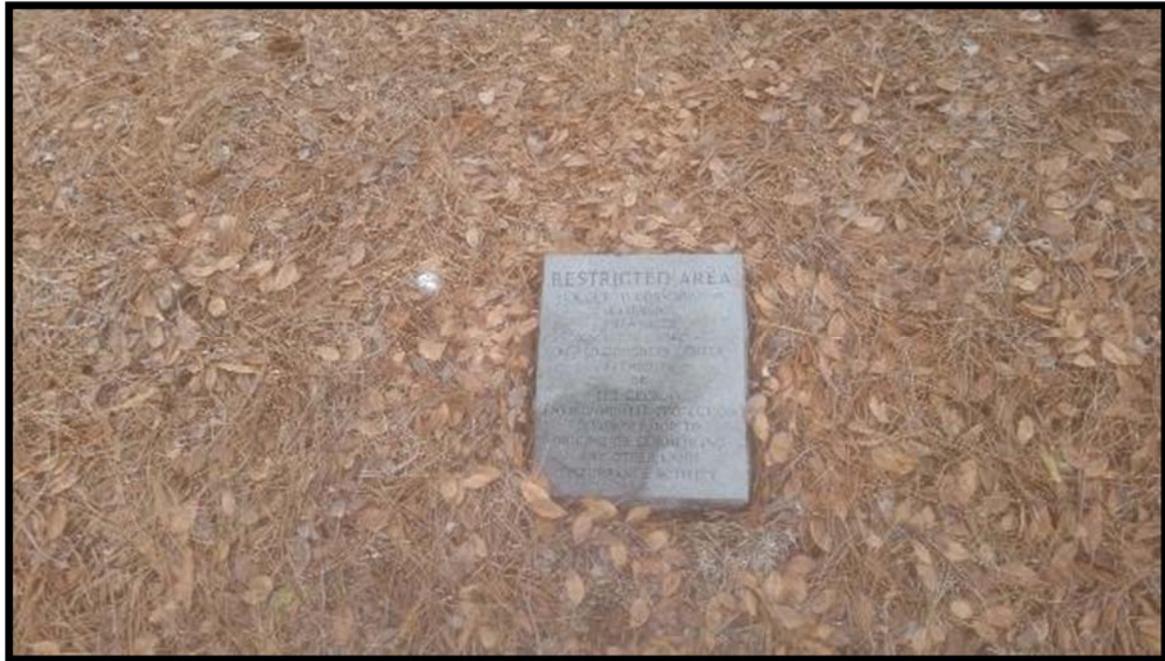
Subject: Background monitoring well, MM-04.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015

Orientation: Aerial

Photographer: Jason Wilson, PE
Tetra Tech



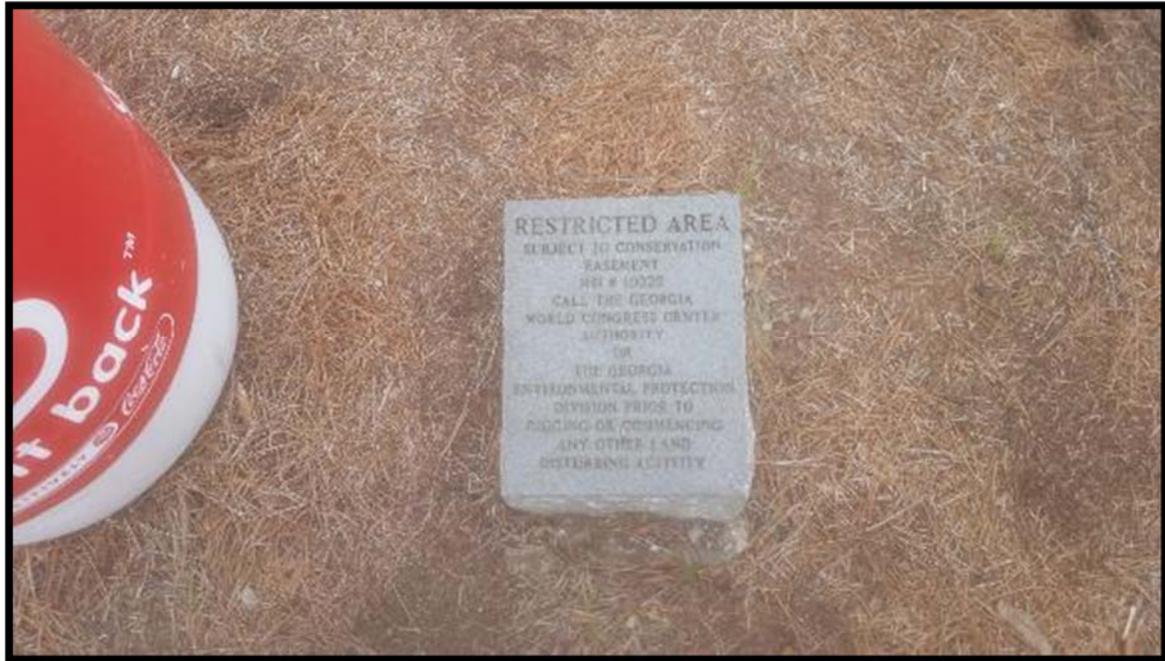
**OFFICIAL PHOTOGRAPH NO. 3
TETRA TECH**

Subject: Granite plaque on the southeast corner of the property.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Aerial

Photographer: Jason Wilson, PE
Tetra Tech



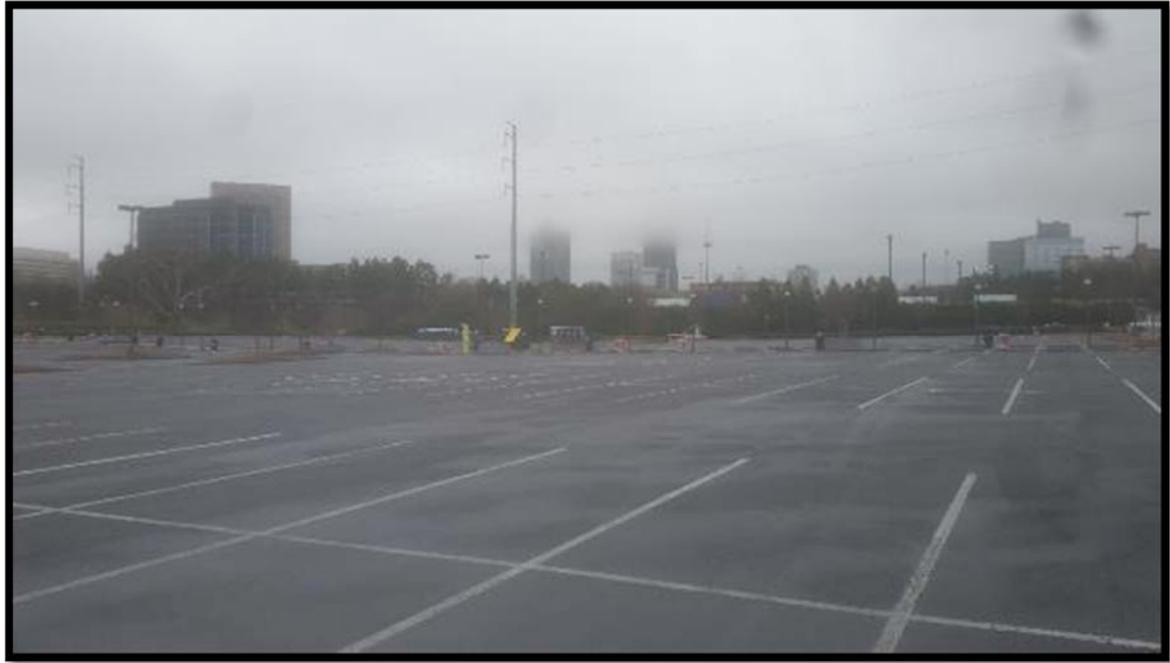
**OFFICIAL PHOTOGRAPH NO. 4
TETRA TECH**

Subject: Granite plaque on the south side of the property.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Aerial

Photographer: Jason Wilson, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 5
TETRA TECH**

Subject: Eastern portion of the lot looking northeast.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Northeast

Photographer: Jason Wilson, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 6
TETRA TECH**

Subject: Granite plaque on the northeastern perimeter of the property.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Aerial

Photographer: Jason Wilson, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 7
TETRA TECH**

Subject: Monitoring well, MM-01.
Site gauging activities were being performed. Well cap was temporarily removed.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Aerial

Photographer: Jason Wilson, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 8
TETRA TECH**

Subject: Granite plaque on the western perimeter of the property.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Aerial

Photographer: Jason Wilson, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 9
TETRA TECH**

Subject: Granite plaque on the southwestern perimeter of lot.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Aerial

Photographer: Jason Wilson, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 10
TETRA TECH**

Subject: Dewatering well at the northwest perimeter of the property. Site gauging activities were being performed. Well cap was temporarily removed.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Aerial

Photographer: Jason Wilson, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 11
TETRA TECH**

Subject: Monitoring well, MM-02 at the corner of John Street and Northside Drive.
Site gauging activities were being performed. Well cap and lid were temporarily removed.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Aerial

Photographer: Jason Wilson, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 12
TETRA TECH

Subject: Monitoring well, MWC-3C at the corner of John Street and Northside Drive.
Site gauging activities were being performed. Well cap and lid were temporarily removed.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** North

Photographer: Jason Wilson, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 13
TETRA TECH

Subject: Monitoring well, MWC-3B at the corner of John Street and Northside Drive.
Site gauging activities were being performed. Well cap and lid were temporarily removed.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** North

Photographer: Jason Wilson, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 14
TETRA TECH**

Subject: Granite plaque on the northwestern perimeter of the property.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Aerial

Photographer: Jason Wilson, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 15
TETRA TECH

Subject: Monitoring well, MM-03.
Site gauging activities were being performed.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Aerial

Photographer: Jason Wilson, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 16
TETRA TECH**

Subject: Monitoring well, MWC-1A at the corner of John Street and Gray Street.
Site gauging activities were being performed.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** North

Photographer: Jason Wilson, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 17
TETRA TECH

Subject: Monitoring well, MWC-1B at the corner of John Street and Gray Street.
Site gauging activities were being performed.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** North

Photographer: Jason Wilson, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 18
TETRA TECH

Subject: Monitoring well, MWC-1C at the corner of John Street and Gray Street.
Site gauging activities were being performed.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Northeast

Photographer: Jason Wilson, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 19
TETRA TECH**

Subject: Granite plaque on the north perimeter of the property.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Aerial

Photographer: Jason Wilson, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 20
TETRA TECH**

Subject: Granite plaque on the northeastern corner of the property.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Aerial

Photographer: Jason Wilson, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 21
TETRA TECH

Subject: Concrete median at the intersection of Northside Drive and John Street.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Southeast

Photographer: Jason Wilson, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 22
TETRA TECH

Subject: Granite plaque on the eastern perimeter of the property.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Aerial

Photographer: Jason Wilson, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 23
TETRA TECH

Subject: Storm water drains located at the eastern parking lot perimeter.
The existing crack was still present, but had not increased in size.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** East

Photographer: Jason Wilson, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 24
TETRA TECH

Subject: Storm water drains located at the northwest parking lot perimeter.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Northwest

Photographer: Jason Wilson, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 25
TETRA TECH

Subject: Storm water drain located at the northwest parking lot perimeter.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** North

Photographer: Jason Wilson, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 26
TETRA TECH

Subject: Location of storm water drain on the west side of the parking lot perimeter. Some accumulated vegetation in the area.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Southwest

Photographer: Jason Wilson, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 27
TETRA TECH

Subject: A small crack in the asphalt leading to the storm water drains on the eastern side of the parking lot. Storm water flows in this low point of the parking lot. The crack is estimated to be approximately 200 feet long, ¼ inch wide and ¼ inch deep. The existing crack was still present, but had not increased in size.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Northeast

Photographer: Jason Wilson, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 28
TETRA TECH

Subject: Example of another crack which runs east to west on the main entrance/exit roadway. Like the previously observed crack, it is no larger than $\frac{1}{4}$ inch wide and $\frac{1}{4}$ inch deep. This crack traverses almost the entire length of the entrance/exit roadway. The existing crack was still present, but had not increased in size.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** West

Photographer: Jason Wilson, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 29
TETRA TECH

Subject: Example of another crack which runs east to west on the entrance way of the parking lot row. Over half of the rows have cracks similar to this one. They occur where the asphalt seams are joined. Like the previously observed crack, it is no larger than 1/4 inch wide and 1/4 inch deep. The existing crack was still present, but had not increased in size.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** East

Photographer: Jason Wilson, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 30
TETRA TECH**

Subject: Example of another crack, which runs north to south on the western most row of the north parking lot. The width of this crack is typical of all cracks observed in the asphalt of the north parking lot. The existing crack was still present, but had not increased in size.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Aerial

Photographer: Jason Wilson, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 31
TETRA TECH**

Subject: Example of another crack which runs east to west. This crack is located on the northern portion of the parking lot and traverses the entire parking lot west of the north/south walkway. Once again, this crack occurs where the asphalt seams are joined. Like the previously observed cracks, it is no larger than $\frac{1}{4}$ inch wide and $\frac{1}{4}$ inch deep. The existing crack was still present, but had not increased in size.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** East

Photographer: Jason Wilson, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 32
TETRA TECH

Subject: Standing water several hours after rain event on the south side of the parking lot.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** East

Photographer: Jason Wilson, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 33
TETRA TECH

Subject: Standing water several hours after rain event in the central portion of the parking lot.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** West

Photographer: Jason Wilson, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 34
TETRA TECH

Subject: Monitoring wells MW-1A, MW-1B and MW-1C at the corner of John Street and Gray Street.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** West

Photographer: Jason Wilson, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 35
TETRA TECH**

Subject: Accumulated sediment and vegetation partially obstructing storm drain at the southwest corner of the John Street and Gray Street intersection.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Southwest

Photographer: Jason Wilson, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 36
TETRA TECH**

Subject: Rutted vegetation along (approx. 60' x 18" by 6") along John Street. Appears to have been caused by automobile.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** West

Photographer: Jason Wilson, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 37
TETRA TECH**

Subject: Significant washout along John Street for westward flowing storm water drainage. Washout appears to be undercutting sod.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** West.

Photographer: Jason Wilson, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 38
TETRA TECH

Subject: Pothole found near manhole in John Street – approx. 10” diameter and 4” deep.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Aerial

Photographer: Jason Wilson, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 39
TETRA TECH

Subject: Storm drain on John Street partially obstructed with gravel, sediment, and vegetation.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** West

Photographer: Jason Wilson, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 40
TETRA TECH**

Subject: Granite plaque on the northern perimeter of the property.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** East

Photographer: Jason Wilson, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 41
TETRA TECH**

Subject: Storm water washout area along John Street. Note large amount of accumulated vegetation and landscaping mulch in the area. Washout appears to be undercutting sod.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** West

Photographer: Jason Wilson, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 41A
TETRA TECH**

Subject: Eroded soil in the storm water washout area along John Street. The storm water appears to have caused a clear separation and has undercut the sod. The hole is approximately 16” deep and extends approximately 8 feet. The accumulation of storm water debris prevented the full measurement of the compromise.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** Aerial

Photographer: Jason Wilson, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 42
TETRA TECH

Subject: Storm water drain along John Street partially obstructed by gravel, sediment, and vegetation. This drain is located adjacent to the eroded area presented in Photograph 41A. Note the depressed concrete on the south side of the metal vault.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** West

Photographer: Jason Wilson, PE
Tetra Tech



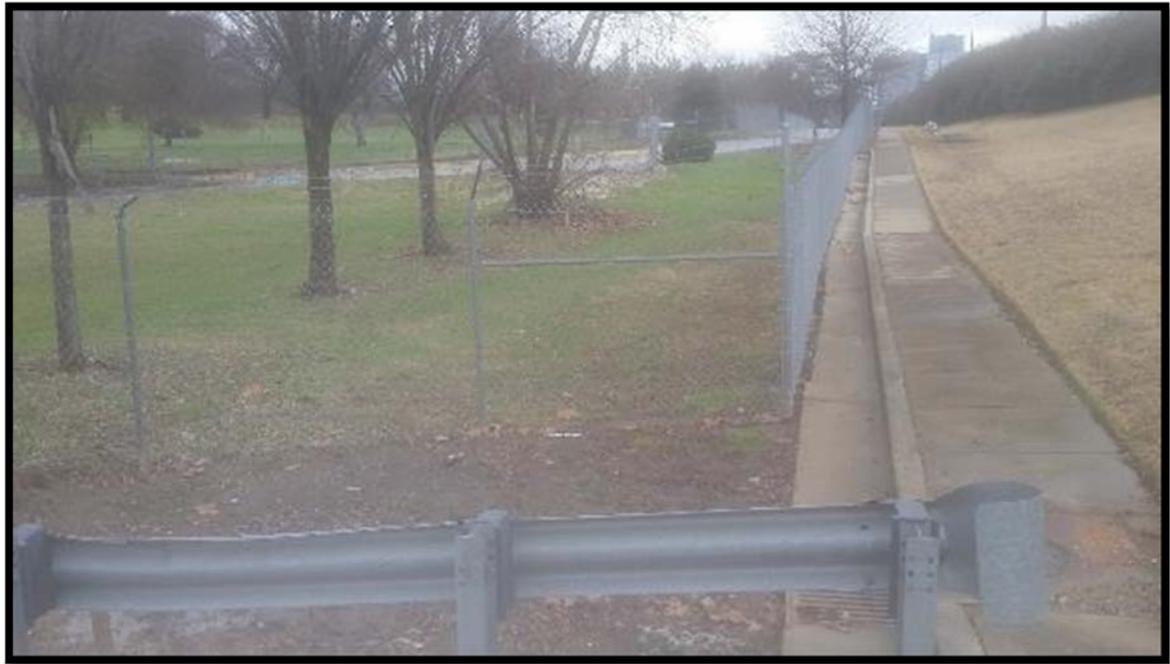
**OFFICIAL PHOTOGRAPH NO. 42A
TETRA TECH**

Subject: Another view of the eroded soil area and metal storm drain vault presented in Photographs 41A and 42.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** East

Photographer: Jason Wilson, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 43
TETRA TECH**

Subject: Monitoring wells MM-02, MWC-3B and MWC-3C inside the fence line between the trees.

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** East

Photographer: Jason Wilson, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 44
TETRA TECH

Subject: Another eroded soil area on the north side of the property. Eroded area is approximately 6'x6"x14".

Site: Northside Drive Landfill Site (GWCC – 15)
Fulton County
Atlanta, Georgia

Date: December 22, 2015 **Orientation:** East

Photographer: Jason Wilson, PE
Tetra Tech

ENCLOSURE 6

CHAIN OF CUSTODY FORM

(One Page)

ENCLOSURE 7

DATA VALIDATION REPORTS

(Five Pages)



Site Name: Georgia World Congress Center (GWCC) – 10th Annual Groundwater Sampling Event

Laboratory: Gulf Coast Analytical Laboratories (GCAL), Baton Rouge, Louisiana

Data Reviewer: Jessica Vickers, Tetra Tech, Inc.

Analyses: Polynuclear Aromatic Hydrocarbons (PAHs), Total Target Analyte List (TAL) Metals

Report Date: February 8, 2016

Report Number	Matrix	Sample ID
215122918	Groundwater	MM-01, MM-02, field duplicate pair MM-03/MM-03-DUP, MM-04, MWC-1A, MWC-1B, MWC-1C, MWC-3B, MWC-3C, GWCC-EB, and GWCC-FB

Data validation was performed on the analytical data for ten groundwater and two quality control (QC) samples were collected by Tetra Tech, Inc. (Tetra Tech) from nine monitoring wells at the GWCC site during the 10th annual sampling event conducted on December 22, 2015. The samples were analyzed under report number 215122918 by Gulf Coast Analytical Laboratories, Inc. (GCAL), Baton Rouge, Louisiana. GCAL analyzed all samples for PAHs by SW-846 Method 8270D with selected ion monitoring, and total TAL metals by SW-846 Methods 6020A and 7470A (mercury only).

Data were evaluated in general accordance with the U.S. Environmental Protection Agency National Functional Guidelines (NFGs) for Organic Data Review and Inorganic Data Review. The analytical methods that were used by the laboratory during this project provide guidance on procedures and method acceptance criteria that, in some areas, differ from that given in the NFGs. Where differences exist between the method and the NFGs, the data validator followed the acceptance criteria given in the method. In addition, if the laboratory data package presented laboratory-derived acceptance criteria, these criteria were used to evaluate the data, unless the criteria were considered inadequate. Based on a comment received from Ms. Alexandra Cleary of the Georgia Department of Natural Resources, non-detect results were presented as “<reporting limit” rather than using the “U” qualifier used in the NFG. The qualifier used for this project’s data validation is listed below:

- J- The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.

GWCC – 10th Annual Groundwater Sampling Event
February 8, 2016

Data evaluation consisted of a cursory review of the data package and focused on the presence of serious analytical problems. The following list details the parameters evaluated in this data validation.

- Data Completeness
- Holding Times and Preservation
- Method Blank Results
- Surrogate Recoveries
- Matrix Spike/Matrix Spike Duplicate Recovery *
- Field and Rinsate Blank Results
- Field Duplicate Results
- Laboratory Control Samples

* QC criteria were not met for this evaluated parameter as discussed below.

Matrix Spike/Matrix Spike Duplicate Results

The matrix spike duplicate recoveries for mercury, selenium, and sodium were below the associated QC acceptance criteria. Therefore, these results for sample MM-04 were qualified as estimated with a possible low bias (flagged “J-”).

Overall

The overall quality of this data package was acceptable. A few results required qualification as indicated above. The enclosed table summarizes the qualified analytical results (see Attachment 1).

ATTACHMENT 1

QUALIFIED DATA SUMMARY TABLE

(Two Pages)

Table 1
Validated Analytical Results
10th Annual Groundwater Sampling Event - GWCC

Parameter	Sample Identification					
	MM-01	MM-02	MM-03	MM-03-DUP	MM-04	MWC-1A
PAHs (µg/L)						
1-Methylnaphthalene	<1.14	<1.09	1.80	1.89	<1.14	<1.06
2-Methylnaphthalene	<1.14	<1.09	<1.09	<1.09	<1.14	<1.06
Acenaphthene	<1.14	<1.09	<1.09	<1.09	<1.14	<1.06
Acenaphthylene	<1.14	<1.09	<1.09	<1.09	<1.14	<1.06
Anthracene	<0.114	<0.109	<0.109	<0.109	<0.114	<0.106
Benzo(a)anthracene	<0.114	<0.109	<0.109	<0.109	<0.114	<0.106
Benzo(a)pyrene	<0.114	<0.109	<0.109	<0.109	<0.114	<0.106
Benzo(b)fluoranthene	<0.170	<0.163	<0.163	<0.164	<0.170	<0.160
Benzo(k)fluoranthene	<0.284	<0.272	<0.272	<0.273	<0.284	<0.266
Benzo(g,h,i)perylene	<0.114	<0.109	<0.109	<0.109	<0.114	<0.106
Chrysene	<0.114	<0.109	<0.109	<0.109	<0.114	<0.106
Dibenzo(a,h)anthracene	<0.114	<0.109	<0.109	<0.109	<0.114	<0.106
Fluoranthene	<0.284	<0.272	<0.272	<0.273	<0.284	3.22
Fluorene	<0.568	<0.543	<0.543	<0.546	<0.568	<0.532
Indeno(1,2,3-cd)pyrene	<0.284	<0.272	<0.272	<0.273	<0.284	<0.266
Naphthalene	<0.568	<0.543	2.39	2.50	<0.568	<0.532
Phenanthrene	<0.114	0.172	0.250	0.259	0.136	<0.106
Pyrene	<0.284	<0.272	<0.272	<0.273	<0.284	1.74
Metals, Total (mg/L)						
Aluminum	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Antimony	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060
Arsenic	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Barium	0.050	0.089	0.14	0.14	0.020	0.061
Beryllium	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Cadmium	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Calcium	37.8	53.6	25.3	25.4	6.13	29.8
Chromium	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt	<0.010	<0.010	0.020	0.019	<0.010	<0.010
Copper	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Iron	0.47	<0.20	0.22	0.25	<0.20	<0.20
Lead	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Magnesium	2.94	13.6	5.06	5.29	1.39	4.37
Manganese	0.13	0.22	0.48	0.49	<0.015	1.08
Mercury	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020 J-	<0.00020
Molybdenum	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Nickel	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Potassium	8.57	7.86	2.80	2.88	1.47	2.13
Selenium	<0.040	<0.040	<0.040	<0.040	<0.040 J-	<0.040
Silver	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sodium	4.05	26.0	11.2	12.0	9.19 J-	9.29
Thallium	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Vanadium	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Zinc	1.02	<0.020	0.027	0.025	<0.020	<0.020

Notes:

J- = The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.

µg/L = Micrograms per liter

mg/L = Milligrams per liter

PAHs = Polycyclic aromatic hydrocarbons

Table 1
Validated Analytical Results
10th Annual Groundwater Sampling Event - GWCC

Parameter	Sample Identification					
	MWC-1B	MWC-1C	MWC-3B	MWC-3C	GWCC-EB	GWCC-FB
PAHs (µg/L)						
1-Methylnaphthalene	5.30	<1.06	<1.11	<1.14	<1.35	<1.39
2-Methylnaphthalene	6.13	<1.06	<1.11	<1.14	<1.35	<1.39
Acenaphthene	<1.06	<1.06	<1.11	<1.14	<1.35	<1.39
Acenaphthylene	<1.06	<1.06	<1.11	<1.14	<1.35	<1.39
Anthracene	<0.106	<0.106	<0.111	0.114	<0.135	<0.139
Benzo(a)anthracene	<0.106	<0.106	<0.111	<0.114	<0.135	<0.139
Benzo(a)pyrene	<0.106	<0.106	<0.111	<0.114	<0.135	<0.139
Benzo(b)fluoranthene	<0.160	<0.160	<0.167	<0.170	<0.203	<0.208
Benzo(k)fluoranthene	<0.266	<0.266	<0.278	<0.284	<0.338	<0.347
Benzo(g,h,i)perylene	<0.106	<0.106	<0.111	<0.114	<0.135	<0.139
Chrysene	<0.106	<0.106	<0.111	<0.114	<0.135	<0.139
Dibenzo(a,h)anthracene	<0.106	<0.106	<0.111	<0.114	<0.135	<0.139
Fluoranthene	<0.266	<0.266	<0.278	<0.284	<0.338	<0.347
Fluorene	<0.532	<0.532	<0.556	<0.568	<0.676	<0.694
Indeno(1,2,3-cd)pyrene	<0.266	<0.266	<0.278	<0.284	<0.338	<0.347
Naphthalene	7.42	<0.532	<0.556	<0.568	<0.676	<0.694
Phenanthrene	0.239	<0.106	0.117	0.421	<0.135	<0.139
Pyrene	<0.266	<0.266	<0.278	<0.284	<0.338	<0.347
Metals, Total (mg/L)						
Aluminum	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Antimony	<0.060	<0.060	<0.060	<0.060	<0.060	<0.060
Arsenic	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Barium	0.10	0.097	0.14	0.067	<0.010	<0.010
Beryllium	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Cadmium	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Calcium	47.6	71.2	103	83.6	<0.80	<0.80
Chromium	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Copper	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Iron	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Lead	<0.015	<0.015	<0.015	<0.015	<0.015	<0.015
Magnesium	7.56	15.0	31.1	23.9	<0.20	<0.20
Manganese	<0.015	<0.015	3.48	0.88	<0.015	<0.015
Mercury	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Nickel	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Potassium	4.35	6.47	9.14	5.30	<0.50	<0.50
Selenium	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Silver	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sodium	23.6	23.7	32.7	32.1	<1.00	<1.00
Thallium	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Vanadium	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Zinc	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020

Notes:

J- = The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.

µg/L = Micrograms per liter

mg/L = Milligrams per liter

PAHs = Polycyclic aromatic hydrocarbons

ATTACHMENT A

LABORATORY ANALYTICAL RESULTS

(44 Pages)

ANALYTICAL RESULTS

PERFORMED BY

GCAL, LLC
7979 Innovation Park Dr.
Baton Rouge, LA 70820

Report Date 01/08/2016

GCAL Report 215122918



Project GWCC

Deliver To

Jessica Vickers
Tetra Tech EMI
1955 Evergreen Blvd.
Duluth, GA 30096
662-681-5727

Additional Recipients

Chris Jones, Tetra Tech
Tim Ward, Tetrattech



Laboratory Endorsement

Sample analysis was performed in accordance with approved methodologies provided by the Environmental Protection Agency or other recognized agencies. The samples and their corresponding extracts will be maintained for a period of 30 days unless otherwise arranged. Following this retention period the samples will be disposed in accordance with GCAL's Standard Operating Procedures.

Common Abbreviations that may be Utilized in this Report

ND	Indicates the result was Not Detected at the specified reporting limit
DO	Indicates the result was Diluted Out
MI	Indicates the result was subject to Matrix Interference
TNTC	Indicates the result was Too Numerous To Count
SUBC	Indicates the analysis was Sub-Contracted
FLD	Indicates the analysis was performed in the Field
DL	Detection Limit
DL	Diluted analysis – when appended to Client Sample ID
LOD	Limit of Detection
LOQ	Limit of Quantitation
RE	Re-analysis
00:01	Reported as a time equivalent to 12:00 AM

Reporting Flags that may be Utilized in this Report

J or I	Indicates the result is between the MDL and LOQ
J	DOD flag on analyte in the parent sample for MS/MSD outside acceptance criteria
U	Indicates the compound was analyzed for but not detected
B or V	Indicates the analyte was detected in the associated Method Blank
Q	Indicates a non-compliant QC Result (See Q Flag Application Report)
*	Indicates a non-compliant or not applicable QC recovery or RPD – see narrative
E	The result is estimated because it exceeded the instrument calibration range
E	Metals - % difference for the serial dilution is > 10%

Sample receipt at GCAL is documented through the attached chain of custody. In accordance with NELAC, this report shall be reproduced only in full and with the written permission of GCAL. The results contained within this report relate only to the samples reported. The documented results are presented within this report.

This report pertains only to the samples listed in the Report Sample Summary and should be retained as a permanent record thereof. The results contained within this report are intended for the use of the client. Any unauthorized use of the information contained in this report is prohibited.

I certify that this data package is in compliance with The NELAC Institute (TNI) Standard 2009 and terms and conditions of the contract and Statement of Work both technically and for completeness, for other than the conditions in the case narrative. Release of the data contained in this hardcopy data package and in the computer readable data submitted has been authorized by the Quality Assurance Manager or his/her designee, as verified by the following signature.

Estimated uncertainty of measurement is available upon request. This report is in compliance with the DOD QSM as specified in the contract if applicable.

Authorized Signature
GCAL Report 215122918

Certifications

10/02/2015

Certification	Certification Number
DOD ELAP	L14-243
Alabama	01955
Arizona	AZ0718
Arkansas	12-060-0
Colorado	01955
Delaware	01955
Florida	E87854
Georgia	01955
Hawaii	01955
Idaho	01955
Illinois	200048
Indiana	01955
Kansas	E-10354
Kentucky	95
Louisiana	01955
Maryland	01955
Massachusetts	01955
Michigan	01955
Mississippi	01955
Missouri	01955
Montana	N/A
Nebraska	01955
New Mexico	01955
North Carolina	618
North Dakota	R-195
Oklahoma	9403
South Carolina	73006001
South Dakota	01955
Tennessee	01955
Texas	T104704178
Vermont	01955
Virginia	460215
USDA Soil Permit	P330-10-00117

Case Narrative

Client: Tetra Tech **Report:** 215122918

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the Report Sample Summary page of this report. Receipt of the sample(s) is documented by the attached chain of custody. This applies only to the sample(s) listed in this report. No sample integrity or quality control exceptions were identified unless noted below.

METALS

In the EPA 6020A analysis, samples 21512291805 (MM-02), 21512291806 (MWC-3C), 21512291807 (MWC-3B), 21512291808 (MM-03), 21512291809 (MM-03-DUP), 21512291810 (MWC-1A), 21512291811 (MWC-1B) and 21512291812 (MWC-1C) had to be diluted in order to bracket the concentration within the calibration range of the instrument.

In the EPA 6020A analysis for prep batch 575758, the MS and/or MSD recovery is outside the control limits for Selenium and Sodium. The LCS recovery is within control limits. This indicates the analysis is in control and the sample is affected by matrix interference.

In the EPA 7470A analysis for prep batch 575761, the MS and/or MSD recovery is outside the control limits for Mercury. The LCS recovery is within the control limits. This indicates the analysis is in control and the sample is affected by matrix interference.

Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21512291801	MM-04	Water	12/22/2015 12:35	12/29/2015 10:35
21512291802	MM-04 MS	Water	12/22/2015 12:35	12/29/2015 10:35
21512291803	MM-04 MSD	Water	12/22/2015 12:35	12/29/2015 10:35
21512291804	MM-01	Water	12/22/2015 16:10	12/29/2015 10:35
21512291805	MM-02	Water	12/22/2015 16:38	12/29/2015 10:35
21512291806	MWC-3C	Water	12/22/2015 15:25	12/29/2015 10:35
21512291807	MWC-3B	Water	12/22/2015 16:55	12/29/2015 10:35
21512291808	MM-03	Water	12/23/2015 11:22	12/29/2015 10:35
21512291809	MM-03-DUP	Water	12/23/2015 11:35	12/29/2015 10:35
21512291810	MWC-1A	Water	12/23/2015 12:11	12/29/2015 10:35
21512291811	MWC-1B	Water	12/23/2015 16:15	12/29/2015 10:35
21512291812	MWC-1C	Water	12/23/2015 17:20	12/29/2015 10:35
21512291813	GWCC-EB	Water	12/23/2015 16:25	12/29/2015 10:35
21512291814	GWCC-FB	Water	12/23/2015 10:20	12/29/2015 10:35

Summary of Compounds Detected

MM-04	Collect Date	12/22/2015 12:35	GCAL ID	21512291801
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

CAS#	Parameter	Result	LOQ	Units
85-01-8	Phenanthrene	0.136	0.114	ug/L

EPA 6020A

CAS#	Parameter	Result	LOQ	Units
7440-39-3	Barium	0.020	0.010	mg/L
7440-70-2	Calcium	6.13	0.80	mg/L
7439-95-4	Magnesium	1.39	0.20	mg/L
7440-09-7	Potassium	1.47	0.50	mg/L
7440-23-5	Sodium	9.19	1.00	mg/L

MM-04 MS	Collect Date	12/22/2015 12:35	GCAL ID	21512291802
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	5.68	1.16	ug/L
91-57-6	2-Methylnaphthalene	5.24	1.16	ug/L
83-32-9	Acenaphthene	5.26	1.16	ug/L
208-96-8	Acenaphthylene	5.65	1.16	ug/L
120-12-7	Anthracene	5.84	0.116	ug/L
56-55-3	Benzo(a)anthracene	5.25	0.116	ug/L
50-32-8	Benzo(a)pyrene	5.50	0.116	ug/L
205-99-2	Benzo(b)fluoranthene	5.19	0.174	ug/L
191-24-2	Benzo(g,h,i)perylene	3.29	0.291	ug/L
207-08-9	Benzo(k)fluoranthene	4.99	0.116	ug/L
218-01-9	Chrysene	4.91	0.116	ug/L
53-70-3	Dibenz(a,h)anthracene	3.32	0.116	ug/L
206-44-0	Fluoranthene	5.73	0.291	ug/L
86-73-7	Fluorene	5.57	0.581	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	3.84	0.291	ug/L
91-20-3	Naphthalene	5.18	0.581	ug/L
85-01-8	Phenanthrene	5.46	0.116	ug/L
129-00-0	Pyrene	5.76	0.291	ug/L

EPA 6020A

CAS#	Parameter	Result	LOQ	Units
7429-90-5	Aluminum	0.98	0.20	mg/L
7440-36-0	Antimony	0.11	0.060	mg/L

Summary of Compounds Detected

MM-04 MS	Collect Date	12/22/2015 12:35	GCAL ID	21512291802
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 6020A (Continued)

CAS#	Parameter	Result	LOQ	Units
7440-38-2	Arsenic	0.046	0.020	mg/L
7440-39-3	Barium	0.074	0.010	mg/L
7440-41-7	Beryllium	0.046	0.0040	mg/L
7440-43-9	Cadmium	0.050	0.0050	mg/L
7440-70-2	Calcium	31.3	0.80	mg/L
7440-47-3	Chromium	0.050	0.010	mg/L
7440-48-4	Cobalt	0.049	0.010	mg/L
7440-50-8	Copper	0.050	0.020	mg/L
7439-89-6	Iron	4.95	0.20	mg/L
7439-92-1	Lead	0.052	0.015	mg/L
7439-95-4	Magnesium	6.46	0.20	mg/L
7439-96-5	Manganese	0.050	0.015	mg/L
7439-98-7	Molybdenum	0.054	0.030	mg/L
7440-02-0	Nickel	0.098	0.040	mg/L
7440-09-7	Potassium	6.54	0.50	mg/L
7440-22-4	Silver	0.053	0.010	mg/L
7440-23-5	Sodium	14.6	1.00	mg/L
7440-28-0	Thallium	0.053	0.020	mg/L
7440-62-2	Vanadium	0.051	0.020	mg/L
7440-66-6	Zinc	0.89	0.020	mg/L

EPA 7470A

CAS#	Parameter	Result	LOQ	Units
7439-97-6	Mercury	0.0043	0.00020	mg/L

MM-04 MSD	Collect Date	12/22/2015 12:35	GCAL ID	21512291803
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	6.31	1.16	ug/L
91-57-6	2-Methylnaphthalene	6.01	1.16	ug/L
83-32-9	Acenaphthene	5.50	1.16	ug/L
208-96-8	Acenaphthylene	5.97	1.16	ug/L
120-12-7	Anthracene	6.20	0.116	ug/L
56-55-3	Benzo(a)anthracene	5.49	0.116	ug/L
50-32-8	Benzo(a)pyrene	5.38	0.116	ug/L
205-99-2	Benzo(b)fluoranthene	5.00	0.174	ug/L
191-24-2	Benzo(g,h,i)perylene	2.79	0.291	ug/L
207-08-9	Benzo(k)fluoranthene	4.87	0.116	ug/L
218-01-9	Chrysene	5.14	0.116	ug/L
53-70-3	Dibenz(a,h)anthracene	2.67	0.116	ug/L

Summary of Compounds Detected

MM-04 MSD	Collect Date	12/22/2015 12:35	GCAL ID	21512291803
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM (Continued)

CAS#	Parameter	Result	LOQ	Units
206-44-0	Fluoranthene	6.08	0.291	ug/L
86-73-7	Fluorene	5.90	0.581	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	3.20	0.291	ug/L
91-20-3	Naphthalene	5.57	0.581	ug/L
85-01-8	Phenanthrene	6.03	0.116	ug/L
129-00-0	Pyrene	6.20	0.291	ug/L

EPA 6020A

CAS#	Parameter	Result	LOQ	Units
7429-90-5	Aluminum	0.90	0.20	mg/L
7440-36-0	Antimony	0.093	0.060	mg/L
7440-38-2	Arsenic	0.042	0.020	mg/L
7440-39-3	Barium	0.064	0.010	mg/L
7440-41-7	Beryllium	0.041	0.0040	mg/L
7440-43-9	Cadmium	0.044	0.0050	mg/L
7440-70-2	Calcium	28.3	0.80	mg/L
7440-47-3	Chromium	0.045	0.010	mg/L
7440-48-4	Cobalt	0.045	0.010	mg/L
7440-50-8	Copper	0.045	0.020	mg/L
7439-89-6	Iron	4.47	0.20	mg/L
7439-92-1	Lead	0.046	0.015	mg/L
7439-95-4	Magnesium	5.84	0.20	mg/L
7439-96-5	Manganese	0.046	0.015	mg/L
7439-98-7	Molybdenum	0.047	0.030	mg/L
7440-02-0	Nickel	0.089	0.040	mg/L
7440-09-7	Potassium	5.67	0.50	mg/L
7440-22-4	Silver	0.046	0.010	mg/L
7440-23-5	Sodium	13.1	1.00	mg/L
7440-28-0	Thallium	0.046	0.020	mg/L
7440-62-2	Vanadium	0.046	0.020	mg/L
7440-66-6	Zinc	0.82	0.020	mg/L

EPA 7470A

CAS#	Parameter	Result	LOQ	Units
7439-97-6	Mercury	0.0040	0.00020	mg/L

Summary of Compounds Detected

MM-01	Collect Date	12/22/2015 16:10	GCAL ID	21512291804
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 6020A

CAS#	Parameter	Result	LOQ	Units
7440-39-3	Barium	0.050	0.010	mg/L
7440-70-2	Calcium	37.8	0.80	mg/L
7439-89-6	Iron	0.47	0.20	mg/L
7439-95-4	Magnesium	2.94	0.20	mg/L
7439-96-5	Manganese	0.13	0.015	mg/L
7440-09-7	Potassium	8.57	0.50	mg/L
7440-23-5	Sodium	4.05	1.00	mg/L
7440-66-6	Zinc	1.02	0.020	mg/L

MM-02	Collect Date	12/22/2015 16:38	GCAL ID	21512291805
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

CAS#	Parameter	Result	LOQ	Units
85-01-8	Phenanthrene	0.172	0.109	ug/L

EPA 6020A

CAS#	Parameter	Result	LOQ	Units
7440-39-3	Barium	0.089	0.010	mg/L
7440-70-2	Calcium	53.6	8.00	mg/L
7439-95-4	Magnesium	13.6	2.00	mg/L
7439-96-5	Manganese	0.22	0.015	mg/L
7440-09-7	Potassium	7.86	0.50	mg/L
7440-23-5	Sodium	26.0	10.0	mg/L

MWC-3C	Collect Date	12/22/2015 15:25	GCAL ID	21512291806
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

CAS#	Parameter	Result	LOQ	Units
120-12-7	Anthracene	0.114	0.114	ug/L
85-01-8	Phenanthrene	0.421	0.114	ug/L

Summary of Compounds Detected

MWC-3C	Collect Date	12/22/2015 15:25	GCAL ID	21512291806
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 6020A

CAS#	Parameter	Result	LOQ	Units
7440-39-3	Barium	0.067	0.010	mg/L
7440-70-2	Calcium	83.6	8.00	mg/L
7439-95-4	Magnesium	23.9	2.00	mg/L
7439-96-5	Manganese	0.88	0.15	mg/L
7440-09-7	Potassium	5.30	0.50	mg/L
7440-23-5	Sodium	32.1	10.0	mg/L

MWC-3B	Collect Date	12/22/2015 16:55	GCAL ID	21512291807
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

CAS#	Parameter	Result	LOQ	Units
85-01-8	Phenanthrene	0.117	0.111	ug/L

EPA 6020A

CAS#	Parameter	Result	LOQ	Units
7440-39-3	Barium	0.14	0.010	mg/L
7440-70-2	Calcium	103	8.00	mg/L
7439-95-4	Magnesium	31.1	2.00	mg/L
7439-96-5	Manganese	3.48	0.15	mg/L
7440-09-7	Potassium	9.14	0.50	mg/L
7440-23-5	Sodium	32.7	10.0	mg/L

MM-03	Collect Date	12/23/2015 11:22	GCAL ID	21512291808
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	1.80	1.09	ug/L
91-20-3	Naphthalene	2.39	0.543	ug/L
85-01-8	Phenanthrene	0.250	0.109	ug/L

Summary of Compounds Detected

MM-03	Collect Date	12/23/2015 11:22	GCAL ID	21512291808
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 6020A

CAS#	Parameter	Result	LOQ	Units
7440-39-3	Barium	0.14	0.010	mg/L
7440-70-2	Calcium	25.3	0.80	mg/L
7440-48-4	Cobalt	0.020	0.010	mg/L
7439-89-6	Iron	0.22	0.20	mg/L
7439-95-4	Magnesium	5.06	0.20	mg/L
7439-96-5	Manganese	0.48	0.015	mg/L
7440-09-7	Potassium	2.80	0.50	mg/L
7440-23-5	Sodium	11.2	10.0	mg/L
7440-66-6	Zinc	0.027	0.020	mg/L

MM-03-DUP	Collect Date	12/23/2015 11:35	GCAL ID	21512291809
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	1.89	1.09	ug/L
91-20-3	Naphthalene	2.50	0.543	ug/L
85-01-8	Phenanthrene	0.259	0.109	ug/L

EPA 6020A

CAS#	Parameter	Result	LOQ	Units
7440-39-3	Barium	0.14	0.010	mg/L
7440-70-2	Calcium	25.4	0.80	mg/L
7440-48-4	Cobalt	0.019	0.010	mg/L
7439-89-6	Iron	0.25	0.20	mg/L
7439-95-4	Magnesium	5.29	0.20	mg/L
7439-96-5	Manganese	0.49	0.015	mg/L
7440-09-7	Potassium	2.88	0.50	mg/L
7440-23-5	Sodium	12.0	10.0	mg/L
7440-66-6	Zinc	0.028	0.020	mg/L

MWC-1A	Collect Date	12/23/2015 12:11	GCAL ID	21512291810
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

CAS#	Parameter	Result	LOQ	Units
206-44-0	Fluoranthene	3.22	0.266	ug/L

Summary of Compounds Detected

MWC-1A	Collect Date	12/23/2015 12:11	GCAL ID	21512291810
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM (Continued)

CAS#	Parameter	Result	LOQ	Units
129-00-0	Pyrene	1.74	0.266	ug/L

EPA 6020A

CAS#	Parameter	Result	LOQ	Units
7440-39-3	Barium	0.061	0.010	mg/L
7440-70-2	Calcium	29.8	0.80	mg/L
7439-95-4	Magnesium	4.37	0.20	mg/L
7439-96-5	Manganese	1.08	0.15	mg/L
7440-09-7	Potassium	2.13	0.50	mg/L
7440-23-5	Sodium	9.29	1.00	mg/L

MWC-1B	Collect Date	12/23/2015 16:15	GCAL ID	21512291811
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	5.30	1.06	ug/L
91-57-6	2-Methylnaphthalene	6.13	1.06	ug/L
91-20-3	Naphthalene	7.42	0.532	ug/L
85-01-8	Phenanthrene	0.239	0.106	ug/L

EPA 6020A

CAS#	Parameter	Result	LOQ	Units
7440-39-3	Barium	0.10	0.010	mg/L
7440-70-2	Calcium	47.6	0.80	mg/L
7439-95-4	Magnesium	7.56	0.20	mg/L
7440-09-7	Potassium	4.35	0.50	mg/L
7440-23-5	Sodium	23.6	10.0	mg/L

Summary of Compounds Detected

MWC-1C	Collect Date	12/23/2015 17:20	GCAL ID	21512291812
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 6020A

CAS#	Parameter	Result	LOQ	Units
7440-39-3	Barium	0.097	0.010	mg/L
7440-70-2	Calcium	71.2	8.00	mg/L
7439-95-4	Magnesium	15.0	2.00	mg/L
7440-09-7	Potassium	6.47	0.50	mg/L
7440-23-5	Sodium	23.7	10.0	mg/L

Sample Results

MM-04	Collect Date	12/22/2015 12:35	GCAL ID	21512291801
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 03:34	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	ND	1.14	ug/L
91-57-6	2-Methylnaphthalene	ND	1.14	ug/L
83-32-9	Acenaphthene	ND	1.14	ug/L
208-96-8	Acenaphthylene	ND	1.14	ug/L
120-12-7	Anthracene	ND	0.114	ug/L
56-55-3	Benzo(a)anthracene	ND	0.114	ug/L
50-32-8	Benzo(a)pyrene	ND	0.114	ug/L
205-99-2	Benzo(b)fluoranthene	ND	0.170	ug/L
191-24-2	Benzo(g,h,i)perylene	ND	0.284	ug/L
207-08-9	Benzo(k)fluoranthene	ND	0.114	ug/L
218-01-9	Chrysene	ND	0.114	ug/L
53-70-3	Dibenz(a,h)anthracene	ND	0.114	ug/L
206-44-0	Fluoranthene	ND	0.284	ug/L
86-73-7	Fluorene	ND	0.568	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.284	ug/L
91-20-3	Naphthalene	ND	0.568	ug/L
85-01-8	Phenanthrene	0.136	0.114	ug/L
129-00-0	Pyrene	ND	0.284	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	5.68	4.98	ug/L	88	55 - 111
321-60-8	2-Fluorobiphenyl	5.68	4.96	ug/L	87	53 - 106
1718-51-0	Terphenyl-d14	5.68	6.4	ug/L	113	58 - 132

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	1	01/06/2016 12:52	AWG	576323

CAS#	Parameter	Result	LOQ	Units
7429-90-5	Aluminum	ND	0.20	mg/L
7440-36-0	Antimony	ND	0.060	mg/L
7440-38-2	Arsenic	ND	0.020	mg/L
7440-39-3	Barium	0.020	0.010	mg/L
7440-41-7	Beryllium	ND	0.0040	mg/L
7440-43-9	Cadmium	ND	0.0050	mg/L
7440-70-2	Calcium	6.13	0.80	mg/L
7440-47-3	Chromium	ND	0.010	mg/L
7440-48-4	Cobalt	ND	0.010	mg/L
7440-50-8	Copper	ND	0.020	mg/L
7439-89-6	Iron	ND	0.20	mg/L
7439-92-1	Lead	ND	0.015	mg/L
7439-95-4	Magnesium	1.39	0.20	mg/L
7439-96-5	Manganese	ND	0.015	mg/L

Sample Results

MM-04	Collect Date	12/22/2015 12:35	GCAL ID	21512291801
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 6020A (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	1	01/06/2016 12:52	AWG	576323

CAS#	Parameter	Result	LOQ	Units
7439-98-7	Molybdenum	ND	0.030	mg/L
7440-02-0	Nickel	ND	0.040	mg/L
7440-09-7	Potassium	1.47	0.50	mg/L
7782-49-2	Selenium	ND	0.040	mg/L
7440-22-4	Silver	ND	0.010	mg/L
7440-23-5	Sodium	9.19	1.00	mg/L
7440-28-0	Thallium	ND	0.020	mg/L
7440-62-2	Vanadium	ND	0.020	mg/L
7440-66-6	Zinc	ND	0.020	mg/L

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 15:00	575761	EPA 7470A	1	12/31/2015 11:54	LWZ	575931

CAS#	Parameter	Result	LOQ	Units
7439-97-6	Mercury	ND	0.00020	mg/L

MM-04 MS	Collect Date	12/22/2015 12:35	GCAL ID	21512291802
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 03:52	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	5.68	1.16	ug/L
91-57-6	2-Methylnaphthalene	5.24	1.16	ug/L
83-32-9	Acenaphthene	5.26	1.16	ug/L
208-96-8	Acenaphthylene	5.65	1.16	ug/L
120-12-7	Anthracene	5.84	0.116	ug/L
56-55-3	Benzo(a)anthracene	5.25	0.116	ug/L
50-32-8	Benzo(a)pyrene	5.50	0.116	ug/L
205-99-2	Benzo(b)fluoranthene	5.19	0.174	ug/L
191-24-2	Benzo(g,h,i)perylene	3.29	0.291	ug/L
207-08-9	Benzo(k)fluoranthene	4.99	0.116	ug/L
218-01-9	Chrysene	4.91	0.116	ug/L
53-70-3	Dibenz(a,h)anthracene	3.32	0.116	ug/L
206-44-0	Fluoranthene	5.73	0.291	ug/L
86-73-7	Fluorene	5.57	0.581	ug/L

Sample Results

MM-04 MS	Collect Date	12/22/2015 12:35	GCAL ID	21512291802
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 03:52	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
193-39-5	Indeno(1,2,3-cd)pyrene	3.84	0.291	ug/L
91-20-3	Naphthalene	5.18	0.581	ug/L
85-01-8	Phenanthrene	5.46	0.116	ug/L
129-00-0	Pyrene	5.76	0.291	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	5.81	5.08	ug/L	87	55 - 111
321-60-8	2-Fluorobiphenyl	5.81	5.14	ug/L	88	53 - 106
1718-51-0	Terphenyl-d14	5.81	6.31	ug/L	109	58 - 132

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	1	01/06/2016 12:55	AWG	576323

CAS#	Parameter	Result	LOQ	Units
7429-90-5	Aluminum	0.98	0.20	mg/L
7440-36-0	Antimony	0.11	0.060	mg/L
7440-38-2	Arsenic	0.046	0.020	mg/L
7440-39-3	Barium	0.074	0.010	mg/L
7440-41-7	Beryllium	0.046	0.0040	mg/L
7440-43-9	Cadmium	0.050	0.0050	mg/L
7440-70-2	Calcium	31.3	0.80	mg/L
7440-47-3	Chromium	0.050	0.010	mg/L
7440-48-4	Cobalt	0.049	0.010	mg/L
7440-50-8	Copper	0.050	0.020	mg/L
7439-89-6	Iron	4.95	0.20	mg/L
7439-92-1	Lead	0.052	0.015	mg/L
7439-95-4	Magnesium	6.46	0.20	mg/L
7439-96-5	Manganese	0.050	0.015	mg/L
7439-98-7	Molybdenum	0.054	0.030	mg/L
7440-02-0	Nickel	0.098	0.040	mg/L
7440-09-7	Potassium	6.54	0.50	mg/L
7782-49-2	Selenium	ND	0.040	mg/L
7440-22-4	Silver	0.053	0.010	mg/L
7440-23-5	Sodium	14.6	1.00	mg/L
7440-28-0	Thallium	0.053	0.020	mg/L
7440-62-2	Vanadium	0.051	0.020	mg/L
7440-66-6	Zinc	0.89	0.020	mg/L

Sample Results

MM-04 MS	Collect Date	12/22/2015 12:35	GCAL ID	21512291802
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 15:00	575761	EPA 7470A	1	12/31/2015 11:56	LWZ	575931

CAS#	Parameter	Result	LOQ	Units
7439-97-6	Mercury	0.0043	0.00020	mg/L

MM-04 MSD	Collect Date	12/22/2015 12:35	GCAL ID	21512291803
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 04:11	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	6.31	1.16	ug/L
91-57-6	2-Methylnaphthalene	6.01	1.16	ug/L
83-32-9	Acenaphthene	5.50	1.16	ug/L
208-96-8	Acenaphthylene	5.97	1.16	ug/L
120-12-7	Anthracene	6.20	0.116	ug/L
56-55-3	Benzo(a)anthracene	5.49	0.116	ug/L
50-32-8	Benzo(a)pyrene	5.38	0.116	ug/L
205-99-2	Benzo(b)fluoranthene	5.00	0.174	ug/L
191-24-2	Benzo(g,h,i)perylene	2.79	0.291	ug/L
207-08-9	Benzo(k)fluoranthene	4.87	0.116	ug/L
218-01-9	Chrysene	5.14	0.116	ug/L
53-70-3	Dibenz(a,h)anthracene	2.67	0.116	ug/L
206-44-0	Fluoranthene	6.08	0.291	ug/L
86-73-7	Fluorene	5.90	0.581	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	3.20	0.291	ug/L
91-20-3	Naphthalene	5.57	0.581	ug/L
85-01-8	Phenanthrene	6.03	0.116	ug/L
129-00-0	Pyrene	6.20	0.291	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	5.81	5.36	ug/L	92	55 - 111
321-60-8	2-Fluorobiphenyl	5.81	5.35	ug/L	92	53 - 106
1718-51-0	Terphenyl-d14	5.81	6.57	ug/L	113	58 - 132

Sample Results

MM-04 MSD	Collect Date	12/22/2015 12:35	GCAL ID	21512291803
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	1	01/06/2016 12:59	AWG	576323

CAS#	Parameter	Result	LOQ	Units
7429-90-5	Aluminum	0.90	0.20	mg/L
7440-36-0	Antimony	0.093	0.060	mg/L
7440-38-2	Arsenic	0.042	0.020	mg/L
7440-39-3	Barium	0.064	0.010	mg/L
7440-41-7	Beryllium	0.041	0.0040	mg/L
7440-43-9	Cadmium	0.044	0.0050	mg/L
7440-70-2	Calcium	28.3	0.80	mg/L
7440-47-3	Chromium	0.045	0.010	mg/L
7440-48-4	Cobalt	0.045	0.010	mg/L
7440-50-8	Copper	0.045	0.020	mg/L
7439-89-6	Iron	4.47	0.20	mg/L
7439-92-1	Lead	0.046	0.015	mg/L
7439-95-4	Magnesium	5.84	0.20	mg/L
7439-96-5	Manganese	0.046	0.015	mg/L
7439-98-7	Molybdenum	0.047	0.030	mg/L
7440-02-0	Nickel	0.089	0.040	mg/L
7440-09-7	Potassium	5.67	0.50	mg/L
7782-49-2	Selenium	ND	0.040	mg/L
7440-22-4	Silver	0.046	0.010	mg/L
7440-23-5	Sodium	13.1	1.00	mg/L
7440-28-0	Thallium	0.046	0.020	mg/L
7440-62-2	Vanadium	0.046	0.020	mg/L
7440-66-6	Zinc	0.82	0.020	mg/L

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 15:00	575761	EPA 7470A	1	12/31/2015 11:58	LWZ	575931

CAS#	Parameter	Result	LOQ	Units
7439-97-6	Mercury	0.0040	0.00020	mg/L

Sample Results

MM-01	Collect Date	12/22/2015 16:10	GCAL ID	21512291804
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 04:47	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	ND	1.14	ug/L
91-57-6	2-Methylnaphthalene	ND	1.14	ug/L
83-32-9	Acenaphthene	ND	1.14	ug/L
208-96-8	Acenaphthylene	ND	1.14	ug/L
120-12-7	Anthracene	ND	0.114	ug/L
56-55-3	Benzo(a)anthracene	ND	0.114	ug/L
50-32-8	Benzo(a)pyrene	ND	0.114	ug/L
205-99-2	Benzo(b)fluoranthene	ND	0.170	ug/L
191-24-2	Benzo(g,h,i)perylene	ND	0.284	ug/L
207-08-9	Benzo(k)fluoranthene	ND	0.114	ug/L
218-01-9	Chrysene	ND	0.114	ug/L
53-70-3	Dibenz(a,h)anthracene	ND	0.114	ug/L
206-44-0	Fluoranthene	ND	0.284	ug/L
86-73-7	Fluorene	ND	0.568	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.284	ug/L
91-20-3	Naphthalene	ND	0.568	ug/L
85-01-8	Phenanthrene	ND	0.114	ug/L
129-00-0	Pyrene	ND	0.284	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	5.68	5.24	ug/L	92	55 - 111
321-60-8	2-Fluorobiphenyl	5.68	5.21	ug/L	92	53 - 106
1718-51-0	Terphenyl-d14	5.68	6.78	ug/L	119	58 - 132

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	1	01/06/2016 13:09	AWG	576323

CAS#	Parameter	Result	LOQ	Units
7429-90-5	Aluminum	ND	0.20	mg/L
7440-36-0	Antimony	ND	0.060	mg/L
7440-38-2	Arsenic	ND	0.020	mg/L
7440-39-3	Barium	0.050	0.010	mg/L
7440-41-7	Beryllium	ND	0.0040	mg/L
7440-43-9	Cadmium	ND	0.0050	mg/L
7440-70-2	Calcium	37.8	0.80	mg/L
7440-47-3	Chromium	ND	0.010	mg/L
7440-48-4	Cobalt	ND	0.010	mg/L
7440-50-8	Copper	ND	0.020	mg/L
7439-89-6	Iron	0.47	0.20	mg/L
7439-92-1	Lead	ND	0.015	mg/L
7439-95-4	Magnesium	2.94	0.20	mg/L
7439-96-5	Manganese	0.13	0.015	mg/L

Sample Results

MM-01	Collect Date	12/22/2015 16:10	GCAL ID	21512291804
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 6020A (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	1	01/06/2016 13:09	AWG	576323

CAS#	Parameter	Result	LOQ	Units
7439-98-7	Molybdenum	ND	0.030	mg/L
7440-02-0	Nickel	ND	0.040	mg/L
7440-09-7	Potassium	8.57	0.50	mg/L
7782-49-2	Selenium	ND	0.040	mg/L
7440-22-4	Silver	ND	0.010	mg/L
7440-23-5	Sodium	4.05	1.00	mg/L
7440-28-0	Thallium	ND	0.020	mg/L
7440-62-2	Vanadium	ND	0.020	mg/L
7440-66-6	Zinc	1.02	0.020	mg/L

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 15:00	575761	EPA 7470A	1	12/31/2015 12:00	LWZ	575931

CAS#	Parameter	Result	LOQ	Units
7439-97-6	Mercury	ND	0.00020	mg/L

MM-02	Collect Date	12/22/2015 16:38	GCAL ID	21512291805
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 05:06	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	ND	1.09	ug/L
91-57-6	2-Methylnaphthalene	ND	1.09	ug/L
83-32-9	Acenaphthene	ND	1.09	ug/L
208-96-8	Acenaphthylene	ND	1.09	ug/L
120-12-7	Anthracene	ND	0.109	ug/L
56-55-3	Benzo(a)anthracene	ND	0.109	ug/L
50-32-8	Benzo(a)pyrene	ND	0.109	ug/L
205-99-2	Benzo(b)fluoranthene	ND	0.163	ug/L
191-24-2	Benzo(g,h,i)perylene	ND	0.272	ug/L
207-08-9	Benzo(k)fluoranthene	ND	0.109	ug/L
218-01-9	Chrysene	ND	0.109	ug/L
53-70-3	Dibenz(a,h)anthracene	ND	0.109	ug/L
206-44-0	Fluoranthene	ND	0.272	ug/L
86-73-7	Fluorene	ND	0.543	ug/L

Sample Results

MM-02	Collect Date	12/22/2015 16:38	GCAL ID	21512291805
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 05:06	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.272	ug/L
91-20-3	Naphthalene	ND	0.543	ug/L
85-01-8	Phenanthrene	0.172	0.109	ug/L
129-00-0	Pyrene	ND	0.272	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	5.43	4.63	ug/L	85	55 - 111
321-60-8	2-Fluorobiphenyl	5.43	4.61	ug/L	85	53 - 106
1718-51-0	Terphenyl-d14	5.43	6	ug/L	110	58 - 132

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	1	01/06/2016 13:16	AWG	576323

CAS#	Parameter	Result	LOQ	Units
7429-90-5	Aluminum	ND	0.20	mg/L
7440-36-0	Antimony	ND	0.060	mg/L
7440-38-2	Arsenic	ND	0.020	mg/L
7440-39-3	Barium	0.089	0.010	mg/L
7440-41-7	Beryllium	ND	0.0040	mg/L
7440-43-9	Cadmium	ND	0.0050	mg/L
7440-47-3	Chromium	ND	0.010	mg/L
7440-48-4	Cobalt	ND	0.010	mg/L
7440-50-8	Copper	ND	0.020	mg/L
7439-89-6	Iron	ND	0.20	mg/L
7439-92-1	Lead	ND	0.015	mg/L
7439-96-5	Manganese	0.22	0.015	mg/L
7439-98-7	Molybdenum	ND	0.030	mg/L
7440-02-0	Nickel	ND	0.040	mg/L
7440-09-7	Potassium	7.86	0.50	mg/L
7782-49-2	Selenium	ND	0.040	mg/L
7440-22-4	Silver	ND	0.010	mg/L
7440-28-0	Thallium	ND	0.020	mg/L
7440-62-2	Vanadium	ND	0.020	mg/L
7440-66-6	Zinc	ND	0.020	mg/L

Sample Results

MM-02	Collect Date	12/22/2015 16:38	GCAL ID	21512291805
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	10	01/06/2016 13:12	AWG	576323

CAS#	Parameter	Result	LOQ	Units
7440-70-2	Calcium	53.6	8.00	mg/L
7439-95-4	Magnesium	13.6	2.00	mg/L
7440-23-5	Sodium	26.0	10.0	mg/L

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 15:00	575761	EPA 7470A	1	12/31/2015 12:02	LWZ	575931

CAS#	Parameter	Result	LOQ	Units
7439-97-6	Mercury	ND	0.00020	mg/L

MWC-3C	Collect Date	12/22/2015 15:25	GCAL ID	21512291806
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 04:29	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	ND	1.14	ug/L
91-57-6	2-Methylnaphthalene	ND	1.14	ug/L
83-32-9	Acenaphthene	ND	1.14	ug/L
208-96-8	Acenaphthylene	ND	1.14	ug/L
120-12-7	Anthracene	0.114	0.114	ug/L
56-55-3	Benzo(a)anthracene	ND	0.114	ug/L
50-32-8	Benzo(a)pyrene	ND	0.114	ug/L
205-99-2	Benzo(b)fluoranthene	ND	0.170	ug/L
191-24-2	Benzo(g,h,i)perylene	ND	0.284	ug/L
207-08-9	Benzo(k)fluoranthene	ND	0.114	ug/L
218-01-9	Chrysene	ND	0.114	ug/L
53-70-3	Dibenz(a,h)anthracene	ND	0.114	ug/L
206-44-0	Fluoranthene	ND	0.284	ug/L
86-73-7	Fluorene	ND	0.568	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.284	ug/L
91-20-3	Naphthalene	ND	0.568	ug/L
85-01-8	Phenanthrene	0.421	0.114	ug/L

Sample Results

MWC-3C	Collect Date	12/22/2015 15:25	GCAL ID	21512291806
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 04:29	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
129-00-0	Pyrene	ND	0.284	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	5.68	5.06	ug/L	89	55 - 111
321-60-8	2-Fluorobiphenyl	5.68	4.91	ug/L	86	53 - 106
1718-51-0	Terphenyl-d14	5.68	6.19	ug/L	109	58 - 132

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	1	01/06/2016 13:26	AWG	576323

CAS#	Parameter	Result	LOQ	Units
7429-90-5	Aluminum	ND	0.20	mg/L
7440-36-0	Antimony	ND	0.060	mg/L
7440-38-2	Arsenic	ND	0.020	mg/L
7440-39-3	Barium	0.067	0.010	mg/L
7440-41-7	Beryllium	ND	0.0040	mg/L
7440-43-9	Cadmium	ND	0.0050	mg/L
7440-47-3	Chromium	ND	0.010	mg/L
7440-48-4	Cobalt	ND	0.010	mg/L
7440-50-8	Copper	ND	0.020	mg/L
7439-89-6	Iron	ND	0.20	mg/L
7439-92-1	Lead	ND	0.015	mg/L
7439-98-7	Molybdenum	ND	0.030	mg/L
7440-02-0	Nickel	ND	0.040	mg/L
7440-09-7	Potassium	5.30	0.50	mg/L
7782-49-2	Selenium	ND	0.040	mg/L
7440-22-4	Silver	ND	0.010	mg/L
7440-28-0	Thallium	ND	0.020	mg/L
7440-62-2	Vanadium	ND	0.020	mg/L
7440-66-6	Zinc	ND	0.020	mg/L

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	10	01/06/2016 13:22	AWG	576323

CAS#	Parameter	Result	LOQ	Units
7440-70-2	Calcium	83.6	8.00	mg/L
7439-95-4	Magnesium	23.9	2.00	mg/L

Sample Results

MWC-3C	Collect Date	12/22/2015 15:25	GCAL ID	21512291806
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 6020A (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	10	01/06/2016 13:22	AWG	576323

CAS#	Parameter	Result	LOQ	Units
7439-96-5	Manganese	0.88	0.15	mg/L
7440-23-5	Sodium	32.1	10.0	mg/L

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 15:00	575761	EPA 7470A	1	12/31/2015 12:04	LWZ	575931

CAS#	Parameter	Result	LOQ	Units
7439-97-6	Mercury	ND	0.00020	mg/L

MWC-3B	Collect Date	12/22/2015 16:55	GCAL ID	21512291807
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 05:24	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	ND	1.11	ug/L
91-57-6	2-Methylnaphthalene	ND	1.11	ug/L
83-32-9	Acenaphthene	ND	1.11	ug/L
208-96-8	Acenaphthylene	ND	1.11	ug/L
120-12-7	Anthracene	ND	0.111	ug/L
56-55-3	Benzo(a)anthracene	ND	0.111	ug/L
50-32-8	Benzo(a)pyrene	ND	0.111	ug/L
205-99-2	Benzo(b)fluoranthene	ND	0.167	ug/L
191-24-2	Benzo(g,h,i)perylene	ND	0.278	ug/L
207-08-9	Benzo(k)fluoranthene	ND	0.111	ug/L
218-01-9	Chrysene	ND	0.111	ug/L
53-70-3	Dibenz(a,h)anthracene	ND	0.111	ug/L
206-44-0	Fluoranthene	ND	0.278	ug/L
86-73-7	Fluorene	ND	0.556	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.278	ug/L
91-20-3	Naphthalene	ND	0.556	ug/L
85-01-8	Phenanthrene	0.117	0.111	ug/L

Sample Results

MWC-3B	Collect Date	12/22/2015 16:55	GCAL ID	21512291807
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 05:24	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
129-00-0	Pyrene	ND	0.278	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	5.56	5.26	ug/L	95	55 - 111
321-60-8	2-Fluorobiphenyl	5.56	5.24	ug/L	94	53 - 106
1718-51-0	Terphenyl-d14	5.56	6.54	ug/L	118	58 - 132

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	1	01/06/2016 13:36	AWG	576323

CAS#	Parameter	Result	LOQ	Units
7429-90-5	Aluminum	ND	0.20	mg/L
7440-36-0	Antimony	ND	0.060	mg/L
7440-38-2	Arsenic	ND	0.020	mg/L
7440-39-3	Barium	0.14	0.010	mg/L
7440-41-7	Beryllium	ND	0.0040	mg/L
7440-43-9	Cadmium	ND	0.0050	mg/L
7440-47-3	Chromium	ND	0.010	mg/L
7440-48-4	Cobalt	ND	0.010	mg/L
7440-50-8	Copper	ND	0.020	mg/L
7439-89-6	Iron	ND	0.20	mg/L
7439-92-1	Lead	ND	0.015	mg/L
7439-98-7	Molybdenum	ND	0.030	mg/L
7440-02-0	Nickel	ND	0.040	mg/L
7440-09-7	Potassium	9.14	0.50	mg/L
7782-49-2	Selenium	ND	0.040	mg/L
7440-22-4	Silver	ND	0.010	mg/L
7440-28-0	Thallium	ND	0.020	mg/L
7440-62-2	Vanadium	ND	0.020	mg/L
7440-66-6	Zinc	ND	0.020	mg/L

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	10	01/06/2016 13:33	AWG	576323

CAS#	Parameter	Result	LOQ	Units
7440-70-2	Calcium	103	8.00	mg/L
7439-95-4	Magnesium	31.1	2.00	mg/L

Sample Results

MWC-3B	Collect Date	12/22/2015 16:55	GCAL ID	21512291807
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 6020A (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	10	01/06/2016 13:33	AWG	576323

CAS#	Parameter	Result	LOQ	Units
7439-96-5	Manganese	3.48	0.15	mg/L
7440-23-5	Sodium	32.7	10.0	mg/L

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 15:00	575761	EPA 7470A	1	12/31/2015 12:11	LWZ	575931

CAS#	Parameter	Result	LOQ	Units
7439-97-6	Mercury	ND	0.00020	mg/L

MM-03	Collect Date	12/23/2015 11:22	GCAL ID	21512291808
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 06:01	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	1.80	1.09	ug/L
91-57-6	2-Methylnaphthalene	ND	1.09	ug/L
83-32-9	Acenaphthene	ND	1.09	ug/L
208-96-8	Acenaphthylene	ND	1.09	ug/L
120-12-7	Anthracene	ND	0.109	ug/L
56-55-3	Benzo(a)anthracene	ND	0.109	ug/L
50-32-8	Benzo(a)pyrene	ND	0.109	ug/L
205-99-2	Benzo(b)fluoranthene	ND	0.163	ug/L
191-24-2	Benzo(g,h,i)perylene	ND	0.272	ug/L
207-08-9	Benzo(k)fluoranthene	ND	0.109	ug/L
218-01-9	Chrysene	ND	0.109	ug/L
53-70-3	Dibenz(a,h)anthracene	ND	0.109	ug/L
206-44-0	Fluoranthene	ND	0.272	ug/L
86-73-7	Fluorene	ND	0.543	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.272	ug/L
91-20-3	Naphthalene	2.39	0.543	ug/L
85-01-8	Phenanthrene	0.250	0.109	ug/L

Sample Results

MM-03	Collect Date	12/23/2015 11:22	GCAL ID	21512291808
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 06:01	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
129-00-0	Pyrene	ND	0.272	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	5.43	4.6	ug/L	85	55 - 111
321-60-8	2-Fluorobiphenyl	5.43	4.58	ug/L	84	53 - 106
1718-51-0	Terphenyl-d14	5.43	5.85	ug/L	108	58 - 132

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	1	01/07/2016 17:57	JEL2	576413

CAS#	Parameter	Result	LOQ	Units
7429-90-5	Aluminum	ND	0.20	mg/L
7440-36-0	Antimony	ND	0.060	mg/L
7440-38-2	Arsenic	ND	0.020	mg/L
7440-39-3	Barium	0.14	0.010	mg/L
7440-41-7	Beryllium	ND	0.0040	mg/L
7440-43-9	Cadmium	ND	0.0050	mg/L
7440-70-2	Calcium	25.3	0.80	mg/L
7440-47-3	Chromium	ND	0.010	mg/L
7440-48-4	Cobalt	0.020	0.010	mg/L
7440-50-8	Copper	ND	0.020	mg/L
7439-89-6	Iron	0.22	0.20	mg/L
7439-92-1	Lead	ND	0.015	mg/L
7439-95-4	Magnesium	5.06	0.20	mg/L
7439-96-5	Manganese	0.48	0.015	mg/L
7439-98-7	Molybdenum	ND	0.030	mg/L
7440-02-0	Nickel	ND	0.040	mg/L
7440-09-7	Potassium	2.80	0.50	mg/L
7782-49-2	Selenium	ND	0.040	mg/L
7440-22-4	Silver	ND	0.010	mg/L
7440-28-0	Thallium	ND	0.020	mg/L
7440-62-2	Vanadium	ND	0.020	mg/L
7440-66-6	Zinc	0.027	0.020	mg/L

Sample Results

MM-03	Collect Date	12/23/2015 11:22	GCAL ID	21512291808
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	10	01/07/2016 17:52	JEL2	576413

CAS#	Parameter	Result	LOQ	Units
7440-23-5	Sodium	11.2	10.0	mg/L

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 15:00	575761	EPA 7470A	1	12/31/2015 12:13	LWZ	575931

CAS#	Parameter	Result	LOQ	Units
7439-97-6	Mercury	ND	0.00020	mg/L

MM-03-DUP	Collect Date	12/23/2015 11:35	GCAL ID	21512291809
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 06:19	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	1.89	1.09	ug/L
91-57-6	2-Methylnaphthalene	ND	1.09	ug/L
83-32-9	Acenaphthene	ND	1.09	ug/L
208-96-8	Acenaphthylene	ND	1.09	ug/L
120-12-7	Anthracene	ND	0.109	ug/L
56-55-3	Benzo(a)anthracene	ND	0.109	ug/L
50-32-8	Benzo(a)pyrene	ND	0.109	ug/L
205-99-2	Benzo(b)fluoranthene	ND	0.163	ug/L
191-24-2	Benzo(g,h,i)perylene	ND	0.272	ug/L
207-08-9	Benzo(k)fluoranthene	ND	0.109	ug/L
218-01-9	Chrysene	ND	0.109	ug/L
53-70-3	Dibenz(a,h)anthracene	ND	0.109	ug/L
206-44-0	Fluoranthene	ND	0.272	ug/L
86-73-7	Fluorene	ND	0.543	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.272	ug/L
91-20-3	Naphthalene	2.50	0.543	ug/L
85-01-8	Phenanthrene	0.259	0.109	ug/L

Sample Results

MM-03-DUP	Collect Date	12/23/2015 11:35	GCAL ID	21512291809
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 06:19	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
129-00-0	Pyrene	ND	0.272	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	5.43	4.81	ug/L	89	55 - 111
321-60-8	2-Fluorobiphenyl	5.43	4.76	ug/L	88	53 - 106
1718-51-0	Terphenyl-d14	5.43	6.04	ug/L	111	58 - 132

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	1	01/07/2016 18:13	JEL2	576413

CAS#	Parameter	Result	LOQ	Units
7429-90-5	Aluminum	ND	0.20	mg/L
7440-36-0	Antimony	ND	0.060	mg/L
7440-38-2	Arsenic	ND	0.020	mg/L
7440-39-3	Barium	0.14	0.010	mg/L
7440-41-7	Beryllium	ND	0.0040	mg/L
7440-43-9	Cadmium	ND	0.0050	mg/L
7440-70-2	Calcium	25.4	0.80	mg/L
7440-47-3	Chromium	ND	0.010	mg/L
7440-48-4	Cobalt	0.019	0.010	mg/L
7440-50-8	Copper	ND	0.020	mg/L
7439-89-6	Iron	0.25	0.20	mg/L
7439-92-1	Lead	ND	0.015	mg/L
7439-95-4	Magnesium	5.29	0.20	mg/L
7439-96-5	Manganese	0.49	0.015	mg/L
7439-98-7	Molybdenum	ND	0.030	mg/L
7440-02-0	Nickel	ND	0.040	mg/L
7440-09-7	Potassium	2.88	0.50	mg/L
7782-49-2	Selenium	ND	0.040	mg/L
7440-22-4	Silver	ND	0.010	mg/L
7440-28-0	Thallium	ND	0.020	mg/L
7440-62-2	Vanadium	ND	0.020	mg/L
7440-66-6	Zinc	0.028	0.020	mg/L

Sample Results

MM-03-DUP	Collect Date	12/23/2015 11:35	GCAL ID	21512291809
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	10	01/07/2016 18:08	JEL2	576413

CAS#	Parameter	Result	LOQ	Units
7440-23-5	Sodium	12.0	10.0	mg/L

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 15:00	575761	EPA 7470A	1	12/31/2015 12:15	LWZ	575931

CAS#	Parameter	Result	LOQ	Units
7439-97-6	Mercury	ND	0.00020	mg/L

MWC-1A	Collect Date	12/23/2015 12:11	GCAL ID	21512291810
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 06:37	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	ND	1.06	ug/L
91-57-6	2-Methylnaphthalene	ND	1.06	ug/L
83-32-9	Acenaphthene	ND	1.06	ug/L
208-96-8	Acenaphthylene	ND	1.06	ug/L
120-12-7	Anthracene	ND	0.106	ug/L
56-55-3	Benzo(a)anthracene	ND	0.106	ug/L
50-32-8	Benzo(a)pyrene	ND	0.106	ug/L
205-99-2	Benzo(b)fluoranthene	ND	0.160	ug/L
191-24-2	Benzo(g,h,i)perylene	ND	0.266	ug/L
207-08-9	Benzo(k)fluoranthene	ND	0.106	ug/L
218-01-9	Chrysene	ND	0.106	ug/L
53-70-3	Dibenz(a,h)anthracene	ND	0.106	ug/L
206-44-0	Fluoranthene	3.22	0.266	ug/L
86-73-7	Fluorene	ND	0.532	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.266	ug/L
91-20-3	Naphthalene	ND	0.532	ug/L
85-01-8	Phenanthrene	ND	0.106	ug/L

Sample Results

MWC-1A	Collect Date	12/23/2015 12:11	GCAL ID	21512291810
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 06:37	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
129-00-0	Pyrene	1.74	0.266	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	5.32	4.62	ug/L	87	55 - 111
321-60-8	2-Fluorobiphenyl	5.32	4.54	ug/L	85	53 - 106
1718-51-0	Terphenyl-d14	5.32	5.84	ug/L	110	58 - 132

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	1	01/07/2016 18:29	JEL2	576413

CAS#	Parameter	Result	LOQ	Units
7429-90-5	Aluminum	ND	0.20	mg/L
7440-36-0	Antimony	ND	0.060	mg/L
7440-38-2	Arsenic	ND	0.020	mg/L
7440-39-3	Barium	0.061	0.010	mg/L
7440-41-7	Beryllium	ND	0.0040	mg/L
7440-43-9	Cadmium	ND	0.0050	mg/L
7440-70-2	Calcium	29.8	0.80	mg/L
7440-47-3	Chromium	ND	0.010	mg/L
7440-48-4	Cobalt	ND	0.010	mg/L
7440-50-8	Copper	ND	0.020	mg/L
7439-89-6	Iron	ND	0.20	mg/L
7439-92-1	Lead	ND	0.015	mg/L
7439-95-4	Magnesium	4.37	0.20	mg/L
7439-98-7	Molybdenum	ND	0.030	mg/L
7440-02-0	Nickel	ND	0.040	mg/L
7440-09-7	Potassium	2.13	0.50	mg/L
7782-49-2	Selenium	ND	0.040	mg/L
7440-22-4	Silver	ND	0.010	mg/L
7440-23-5	Sodium	9.29	1.00	mg/L
7440-28-0	Thallium	ND	0.020	mg/L
7440-62-2	Vanadium	ND	0.020	mg/L
7440-66-6	Zinc	ND	0.020	mg/L

Sample Results

MWC-1A	Collect Date	12/23/2015 12:11	GCAL ID	21512291810
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	10	01/07/2016 18:23	JEL2	576413

CAS#	Parameter	Result	LOQ	Units
7439-96-5	Manganese	1.08	0.15	mg/L

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 15:00	575761	EPA 7470A	1	12/31/2015 12:17	LWZ	575931

CAS#	Parameter	Result	LOQ	Units
7439-97-6	Mercury	ND	0.00020	mg/L

MWC-1B	Collect Date	12/23/2015 16:15	GCAL ID	21512291811
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 06:56	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	5.30	1.06	ug/L
91-57-6	2-Methylnaphthalene	6.13	1.06	ug/L
83-32-9	Acenaphthene	ND	1.06	ug/L
208-96-8	Acenaphthylene	ND	1.06	ug/L
120-12-7	Anthracene	ND	0.106	ug/L
56-55-3	Benzo(a)anthracene	ND	0.106	ug/L
50-32-8	Benzo(a)pyrene	ND	0.106	ug/L
205-99-2	Benzo(b)fluoranthene	ND	0.160	ug/L
191-24-2	Benzo(g,h,i)perylene	ND	0.266	ug/L
207-08-9	Benzo(k)fluoranthene	ND	0.106	ug/L
218-01-9	Chrysene	ND	0.106	ug/L
53-70-3	Dibenz(a,h)anthracene	ND	0.106	ug/L
206-44-0	Fluoranthene	ND	0.266	ug/L
86-73-7	Fluorene	ND	0.532	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.266	ug/L
91-20-3	Naphthalene	7.42	0.532	ug/L
85-01-8	Phenanthrene	0.239	0.106	ug/L

Sample Results

MWC-1B	Collect Date	12/23/2015 16:15	GCAL ID	21512291811
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 06:56	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
129-00-0	Pyrene	ND	0.266	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	5.32	5.06	ug/L	95	55 - 111
321-60-8	2-Fluorobiphenyl	5.32	5	ug/L	94	53 - 106
1718-51-0	Terphenyl-d14	5.32	6.2	ug/L	117	58 - 132

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	1	01/07/2016 19:00	JEL2	576413

CAS#	Parameter	Result	LOQ	Units
7429-90-5	Aluminum	ND	0.20	mg/L
7440-36-0	Antimony	ND	0.060	mg/L
7440-38-2	Arsenic	ND	0.020	mg/L
7440-39-3	Barium	0.10	0.010	mg/L
7440-41-7	Beryllium	ND	0.0040	mg/L
7440-43-9	Cadmium	ND	0.0050	mg/L
7440-70-2	Calcium	47.6	0.80	mg/L
7440-47-3	Chromium	ND	0.010	mg/L
7440-48-4	Cobalt	ND	0.010	mg/L
7440-50-8	Copper	ND	0.020	mg/L
7439-89-6	Iron	ND	0.20	mg/L
7439-92-1	Lead	ND	0.015	mg/L
7439-95-4	Magnesium	7.56	0.20	mg/L
7439-96-5	Manganese	ND	0.015	mg/L
7439-98-7	Molybdenum	ND	0.030	mg/L
7440-02-0	Nickel	ND	0.040	mg/L
7440-09-7	Potassium	4.35	0.50	mg/L
7782-49-2	Selenium	ND	0.040	mg/L
7440-22-4	Silver	ND	0.010	mg/L
7440-28-0	Thallium	ND	0.020	mg/L
7440-62-2	Vanadium	ND	0.020	mg/L
7440-66-6	Zinc	ND	0.020	mg/L

Sample Results

MWC-1B	Collect Date	12/23/2015 16:15	GCAL ID	21512291811
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	10	01/07/2016 18:55	JEL2	576413

CAS#	Parameter	Result	LOQ	Units
7440-23-5	Sodium	23.6	10.0	mg/L

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 15:00	575761	EPA 7470A	1	12/31/2015 12:19	LWZ	575931

CAS#	Parameter	Result	LOQ	Units
7439-97-6	Mercury	ND	0.00020	mg/L

MWC-1C	Collect Date	12/23/2015 17:20	GCAL ID	21512291812
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 07:33	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	ND	1.06	ug/L
91-57-6	2-Methylnaphthalene	ND	1.06	ug/L
83-32-9	Acenaphthene	ND	1.06	ug/L
208-96-8	Acenaphthylene	ND	1.06	ug/L
120-12-7	Anthracene	ND	0.106	ug/L
56-55-3	Benzo(a)anthracene	ND	0.106	ug/L
50-32-8	Benzo(a)pyrene	ND	0.106	ug/L
205-99-2	Benzo(b)fluoranthene	ND	0.160	ug/L
191-24-2	Benzo(g,h,i)perylene	ND	0.266	ug/L
207-08-9	Benzo(k)fluoranthene	ND	0.106	ug/L
218-01-9	Chrysene	ND	0.106	ug/L
53-70-3	Dibenz(a,h)anthracene	ND	0.106	ug/L
206-44-0	Fluoranthene	ND	0.266	ug/L
86-73-7	Fluorene	ND	0.532	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.266	ug/L
91-20-3	Naphthalene	ND	0.532	ug/L
85-01-8	Phenanthrene	ND	0.106	ug/L

Sample Results

MWC-1C	Collect Date	12/23/2015 17:20	GCAL ID	21512291812
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 07:33	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
129-00-0	Pyrene	ND	0.266	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	5.32	4.75	ug/L	89	55 - 111
321-60-8	2-Fluorobiphenyl	5.32	4.72	ug/L	89	53 - 106
1718-51-0	Terphenyl-d14	5.32	6	ug/L	113	58 - 132

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	1	01/07/2016 19:16	JEL2	576413

CAS#	Parameter	Result	LOQ	Units
7429-90-5	Aluminum	ND	0.20	mg/L
7440-36-0	Antimony	ND	0.060	mg/L
7440-38-2	Arsenic	ND	0.020	mg/L
7440-39-3	Barium	0.097	0.010	mg/L
7440-41-7	Beryllium	ND	0.0040	mg/L
7440-43-9	Cadmium	ND	0.0050	mg/L
7440-47-3	Chromium	ND	0.010	mg/L
7440-48-4	Cobalt	ND	0.010	mg/L
7440-50-8	Copper	ND	0.020	mg/L
7439-89-6	Iron	ND	0.20	mg/L
7439-92-1	Lead	ND	0.015	mg/L
7439-96-5	Manganese	ND	0.015	mg/L
7439-98-7	Molybdenum	ND	0.030	mg/L
7440-02-0	Nickel	ND	0.040	mg/L
7440-09-7	Potassium	6.47	0.50	mg/L
7782-49-2	Selenium	ND	0.040	mg/L
7440-22-4	Silver	ND	0.010	mg/L
7440-28-0	Thallium	ND	0.020	mg/L
7440-62-2	Vanadium	ND	0.020	mg/L
7440-66-6	Zinc	ND	0.020	mg/L

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	10	01/07/2016 19:11	JEL2	576413

CAS#	Parameter	Result	LOQ	Units
7440-70-2	Calcium	71.2	8.00	mg/L

Sample Results

MWC-1C	Collect Date	12/23/2015 17:20	GCAL ID	21512291812
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 6020A (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	10	01/07/2016 19:11	JEL2	576413

CAS#	Parameter	Result	LOQ	Units
7439-95-4	Magnesium	15.0	2.00	mg/L
7440-23-5	Sodium	23.7	10.0	mg/L

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 15:00	575761	EPA 7470A	1	12/31/2015 12:21	LWZ	575931

CAS#	Parameter	Result	LOQ	Units
7439-97-6	Mercury	ND	0.00020	mg/L

GWCC-EB	Collect Date	12/23/2015 16:25	GCAL ID	21512291813
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 07:14	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	ND	1.35	ug/L
91-57-6	2-Methylnaphthalene	ND	1.35	ug/L
83-32-9	Acenaphthene	ND	1.35	ug/L
208-96-8	Acenaphthylene	ND	1.35	ug/L
120-12-7	Anthracene	ND	0.135	ug/L
56-55-3	Benzo(a)anthracene	ND	0.135	ug/L
50-32-8	Benzo(a)pyrene	ND	0.135	ug/L
205-99-2	Benzo(b)fluoranthene	ND	0.203	ug/L
191-24-2	Benzo(g,h,i)perylene	ND	0.338	ug/L
207-08-9	Benzo(k)fluoranthene	ND	0.135	ug/L
218-01-9	Chrysene	ND	0.135	ug/L
53-70-3	Dibenz(a,h)anthracene	ND	0.135	ug/L
206-44-0	Fluoranthene	ND	0.338	ug/L
86-73-7	Fluorene	ND	0.676	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.338	ug/L
91-20-3	Naphthalene	ND	0.676	ug/L
85-01-8	Phenanthrene	ND	0.135	ug/L

Sample Results

GWCC-EB	Collect Date	12/23/2015 16:25	GCAL ID	21512291813
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM (Continued)

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 07:14	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
129-00-0	Pyrene	ND	0.338	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	6.76	5.92	ug/L	88	55 - 111
321-60-8	2-Fluorobiphenyl	6.76	5.9	ug/L	87	53 - 106
1718-51-0	Terphenyl-d14	6.76	7.63	ug/L	113	58 - 132

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	1	01/07/2016 19:27	JEL2	576413

CAS#	Parameter	Result	LOQ	Units
7429-90-5	Aluminum	ND	0.20	mg/L
7440-36-0	Antimony	ND	0.060	mg/L
7440-38-2	Arsenic	ND	0.020	mg/L
7440-39-3	Barium	ND	0.010	mg/L
7440-41-7	Beryllium	ND	0.0040	mg/L
7440-43-9	Cadmium	ND	0.0050	mg/L
7440-70-2	Calcium	ND	0.80	mg/L
7440-47-3	Chromium	ND	0.010	mg/L
7440-48-4	Cobalt	ND	0.010	mg/L
7440-50-8	Copper	ND	0.020	mg/L
7439-89-6	Iron	ND	0.20	mg/L
7439-92-1	Lead	ND	0.015	mg/L
7439-95-4	Magnesium	ND	0.20	mg/L
7439-96-5	Manganese	ND	0.015	mg/L
7439-98-7	Molybdenum	ND	0.030	mg/L
7440-02-0	Nickel	ND	0.040	mg/L
7440-09-7	Potassium	ND	0.50	mg/L
7782-49-2	Selenium	ND	0.040	mg/L
7440-22-4	Silver	ND	0.010	mg/L
7440-23-5	Sodium	ND	1.00	mg/L
7440-28-0	Thallium	ND	0.020	mg/L
7440-62-2	Vanadium	ND	0.020	mg/L
7440-66-6	Zinc	ND	0.020	mg/L

Sample Results

GWCC-EB	Collect Date	12/23/2015 16:25	GCAL ID	21512291813
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 15:00	575761	EPA 7470A	1	12/31/2015 12:23	LWZ	575931

CAS#	Parameter	Result	LOQ	Units
7439-97-6	Mercury	ND	0.00020	mg/L

GWCC-FB	Collect Date	12/23/2015 10:20	GCAL ID	21512291814
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 8270C SIM

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 16:45	575788	EPA 3510C	1	12/31/2015 05:42	ALZ	575984

CAS#	Parameter	Result	LOQ	Units
90-12-0	1-Methylnaphthalene	ND	1.39	ug/L
91-57-6	2-Methylnaphthalene	ND	1.39	ug/L
83-32-9	Acenaphthene	ND	1.39	ug/L
208-96-8	Acenaphthylene	ND	1.39	ug/L
120-12-7	Anthracene	ND	0.139	ug/L
56-55-3	Benzo(a)anthracene	ND	0.139	ug/L
50-32-8	Benzo(a)pyrene	ND	0.139	ug/L
205-99-2	Benzo(b)fluoranthene	ND	0.208	ug/L
191-24-2	Benzo(g,h,i)perylene	ND	0.347	ug/L
207-08-9	Benzo(k)fluoranthene	ND	0.139	ug/L
218-01-9	Chrysene	ND	0.139	ug/L
53-70-3	Dibenz(a,h)anthracene	ND	0.139	ug/L
206-44-0	Fluoranthene	ND	0.347	ug/L
86-73-7	Fluorene	ND	0.694	ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.347	ug/L
91-20-3	Naphthalene	ND	0.694	ug/L
85-01-8	Phenanthrene	ND	0.139	ug/L
129-00-0	Pyrene	ND	0.347	ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
4165-60-0	Nitrobenzene-d5	6.94	6.55	ug/L	94	55 - 111
321-60-8	2-Fluorobiphenyl	6.94	6.51	ug/L	94	53 - 106
1718-51-0	Terphenyl-d14	6.94	8.41	ug/L	121	58 - 132

Sample Results

GWCC-FB	Collect Date	12/23/2015 10:20	GCAL ID	21512291814
	Receive Date	12/29/2015 10:35	Matrix	Water

EPA 6020A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 14:00	575758	EPA 3010A	1	01/07/2016 19:32	JEL2	576413

CAS#	Parameter	Result	LOQ	Units
7429-90-5	Aluminum	ND	0.20	mg/L
7440-36-0	Antimony	ND	0.060	mg/L
7440-38-2	Arsenic	ND	0.020	mg/L
7440-39-3	Barium	ND	0.010	mg/L
7440-41-7	Beryllium	ND	0.0040	mg/L
7440-43-9	Cadmium	ND	0.0050	mg/L
7440-70-2	Calcium	ND	0.80	mg/L
7440-47-3	Chromium	ND	0.010	mg/L
7440-48-4	Cobalt	ND	0.010	mg/L
7440-50-8	Copper	ND	0.020	mg/L
7439-89-6	Iron	ND	0.20	mg/L
7439-92-1	Lead	ND	0.015	mg/L
7439-95-4	Magnesium	ND	0.20	mg/L
7439-96-5	Manganese	ND	0.015	mg/L
7439-98-7	Molybdenum	ND	0.030	mg/L
7440-02-0	Nickel	ND	0.040	mg/L
7440-09-7	Potassium	ND	0.50	mg/L
7782-49-2	Selenium	ND	0.040	mg/L
7440-22-4	Silver	ND	0.010	mg/L
7440-23-5	Sodium	ND	1.00	mg/L
7440-28-0	Thallium	ND	0.020	mg/L
7440-62-2	Vanadium	ND	0.020	mg/L
7440-66-6	Zinc	ND	0.020	mg/L

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analysis Date	By	Analytical Batch
12/29/2015 15:00	575761	EPA 7470A	1	12/31/2015 12:25	LWZ	575931

CAS#	Parameter	Result	LOQ	Units
7439-97-6	Mercury	ND	0.00020	mg/L

GC/MS Semi-Volatiles QC Summary

Analytical Batch		Client ID	MB575788	LCS575788				LCSD575788					
575984		GCAL ID	1524644	1524645				1524646					
Prep Batch		Sample Type	MB	LCS				LCSD					
575788		Prep Date	12/29/2015 16:45	12/29/2015 16:45				12/29/2015 16:45					
Prep Method		Analysis Date	12/31/2015 02:39	12/31/2015 02:57				12/31/2015 03:15					
EPA 3510C		Matrix	Water	Water				Water					
EPA 8270C SIM			Units Result	ug/L LOQ	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
1-Methylnaphthalene	90-12-0	ND	1.00	5.00	4.86	97	41 - 115	5.00	4.68	94	4	30	
2-Methylnaphthalene	91-57-6	ND	1.00	5.00	4.39	88	39 - 114	5.00	4.23	85	4	30	
Acenaphthene	83-32-9	ND	1.00	5.00	4.57	91	48 - 114	5.00	4.43	89	3	30	
Acenaphthylene	208-96-8	ND	1.00	5.00	4.88	98	35 - 121	5.00	4.74	95	3	30	
Anthracene	120-12-7	ND	0.100	5.00	5.10	102	53 - 119	5.00	4.96	99	3	30	
Benzo(a)anthracene	56-55-3	ND	0.100	5.00	4.62	92	59 - 120	5.00	4.51	90	2	30	
Benzo(a)pyrene	50-32-8	ND	0.100	5.00	4.97	99	53 - 120	5.00	4.83	97	3	30	
Benzo(b)fluoranthene	205-99-2	ND	0.150	5.00	4.74	95	53 - 126	5.00	4.62	92	3	30	
Benzo(g,h,i)perylene	191-24-2	ND	0.250	5.00	4.84	97	44 - 128	5.00	4.52	90	7	30	
Benzo(k)fluoranthene	207-08-9	ND	0.100	5.00	4.54	91	54 - 125	5.00	4.58	92	1	30	
Chrysene	218-01-9	ND	0.100	5.00	4.33	87	57 - 120	5.00	4.24	85	2	30	
Dibenz(a,h)anthracene	53-70-3	ND	0.100	5.00	4.82	96	44 - 131	5.00	4.31	86	11	30	
Fluoranthene	206-44-0	ND	0.250	5.00	5.01	100	58 - 120	5.00	4.86	97	3	30	
Fluorene	86-73-7	ND	0.500	5.00	4.86	97	50 - 118	5.00	4.70	94	3	30	
Indeno(1,2,3-cd)pyrene	193-39-5	ND	0.250	5.00	5.21	104	48 - 130	5.00	4.90	98	6	30	
Naphthalene	91-20-3	ND	0.500	5.00	4.41	88	43 - 114	5.00	4.28	86	3	30	
Phenanthrene	85-01-8	ND	0.100	5.00	4.74	95	53 - 115	5.00	4.61	92	3	30	
Pyrene	129-00-0	ND	0.250	5.00	5.00	100	53 - 121	5.00	4.91	98	2	30	
Surrogate													
2-Fluorobiphenyl	321-60-8	4.45	89	5	4.32	86	53 - 106	5	4.23	85	NA	NA	
Nitrobenzene-d5	4165-60-0	4.59	92	5	4.39	88	55 - 111	5	4.33	87	NA	NA	
Terphenyl-d14	1718-51-0	5.81	116	5	5.54	111	58 - 132	5	5.48	110	NA	NA	

Analytical Batch		Client ID	MM-04	MM-04 MS				MM-04 MSD					
575984		GCAL ID	21512291801	21512291802				21512291803					
Prep Batch		Sample Type	SAMPLE	MS				MSD					
575788		Prep Date	12/29/2015 16:45	12/29/2015 16:45				12/29/2015 16:45					
Prep Method		Analysis Date	12/31/2015 03:34	12/31/2015 03:52				12/31/2015 04:11					
EPA 3510C		Matrix	Water	Water				Water					
EPA 8270C SIM			Units Result	ug/L LOQ	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
1-Methylnaphthalene	90-12-0	0.159	1.16	5.81	5.68	95	41 - 115	5.81	6.31	106	11	30	
2-Methylnaphthalene	91-57-6	0.140	1.16	5.81	5.24	88	39 - 114	5.81	6.01	101	14	30	
Acenaphthene	83-32-9	0.031	1.16	5.81	5.26	90	48 - 114	5.81	5.50	94	4	30	
Acenaphthylene	208-96-8	0.060	1.16	5.81	5.65	96	35 - 121	5.81	5.97	102	6	30	
Anthracene	120-12-7	0.040	0.116	5.81	5.84	100	53 - 119	5.81	6.20	106	6	30	
Benzo(a)anthracene	56-55-3	0.027	0.116	5.81	5.25	90	59 - 120	5.81	5.49	94	4	30	
Benzo(a)pyrene	50-32-8	0.018	0.116	5.81	5.50	94	53 - 120	5.81	5.38	92	2	30	
Benzo(b)fluoranthene	205-99-2	0.025	0.174	5.81	5.19	89	53 - 126	5.81	5.00	86	4	30	
Benzo(g,h,i)perylene	191-24-2	0.018	0.291	5.81	3.29	56	44 - 128	5.81	2.79	48	16	30	
Benzo(k)fluoranthene	207-08-9	0.010	0.116	5.81	4.99	86	54 - 125	5.81	4.87	84	2	30	
Chrysene	218-01-9	0.022	0.116	5.81	4.91	84	57 - 120	5.81	5.14	88	5	30	
Dibenz(a,h)anthracene	53-70-3	0.00	0.116	5.81	3.32	57	44 - 131	5.81	2.67	46	22	30	
Fluoranthene	206-44-0	0.067	0.291	5.81	5.73	97	58 - 120	5.81	6.08	103	6	30	
Fluorene	86-73-7	0.038	0.581	5.81	5.57	95	50 - 118	5.81	5.90	101	6	30	
Indeno(1,2,3-cd)pyrene	193-39-5	0.021	0.291	5.81	3.84	66	48 - 130	5.81	3.20	55	18	30	
Naphthalene	91-20-3	0.038	0.581	5.81	5.18	88	43 - 114	5.81	5.57	95	7	30	
Phenanthrene	85-01-8	0.136	0.116	5.81	5.46	92	53 - 115	5.81	6.03	101	10	30	
Pyrene	129-00-0	0.107	0.291	5.81	5.76	97	53 - 121	5.81	6.20	105	7	30	
Surrogate													
2-Fluorobiphenyl	321-60-8	4.96	87	5.81	5.14	88	53 - 106	5.81	5.35	92	NA	NA	
Nitrobenzene-d5	4165-60-0	4.98	88	5.81	5.08	87	55 - 111	5.81	5.36	92	NA	NA	
Terphenyl-d14	1718-51-0	6.4	113	5.81	6.31	109	58 - 132	5.81	6.57	113	NA	NA	

Inorganics QC Summary

Analytical Batch 575931	Client ID GCAL ID	MB575761 1524484	LCS575761 1524485				
Prep Batch 575761	Sample Type Prep Date	MB 12/29/2015 15:00	LCS 12/29/2015 15:00				
Prep Method EPA 7470A	Analysis Date Matrix	12/31/2015 11:50 Water	12/31/2015 11:52 Water				
EPA 7470A		Units Result	mg/L LOQ	Spike Added	Result	%R	Control Limits%R
Mercury	7439-97-6	ND	0.00020	0.0050	0.0047	94	80 - 120

Analytical Batch 575931	Client ID GCAL ID	MM-04 21512291801	MM-04 MS 21512291802				MM-04 MSD 21512291803					
Prep Batch 575761	Sample Type Prep Date	SAMPLE 12/29/2015 15:00	MS 12/29/2015 15:00				MSD 12/29/2015 15:00					
Prep Method EPA 7470A	Analysis Date Matrix	12/31/2015 11:54 Water	12/31/2015 11:56 Water				12/31/2015 11:58 Water					
EPA 7470A		Units Result	mg/L LOQ	Spike Added	Result	%R	Control Limits%R	Spike Added	Result	%R	RPD	RPD Limit
Mercury	7439-97-6	0.0	0.00020	0.0050	0.0043	85	80 - 120	0.0050	0.0040	79*	7	20

Analytical Batch 576323	Client ID GCAL ID	MB575758 1524474	LCS575758 1524475				
Prep Batch 575758	Sample Type Prep Date	MB 12/29/2015 14:00	LCS 12/29/2015 14:00				
Prep Method EPA 3010A	Analysis Date Matrix	01/06/2016 12:45 Water	01/06/2016 12:49 Water				
EPA 6020A		Units Result	mg/L LOQ	Spike Added	Result	%R	Control Limits%R
Aluminum	7429-90-5	ND	0.20	1.00	0.97	97	80 - 120
Antimony	7440-36-0	ND	0.060	0.10	0.099	99	80 - 120
Arsenic	7440-38-2	ND	0.020	0.050	0.045	90	80 - 120
Barium	7440-39-3	ND	0.010	0.050	0.049	98	80 - 120
Beryllium	7440-41-7	ND	0.0040	0.050	0.046	92	80 - 120
Cadmium	7440-43-9	ND	0.0050	0.050	0.047	94	80 - 120
Calcium	7440-70-2	ND	0.80	25.0	24.5	98	80 - 120
Chromium	7440-47-3	ND	0.010	0.050	0.048	97	80 - 120
Cobalt	7440-48-4	ND	0.010	0.050	0.049	98	80 - 120
Copper	7440-50-8	ND	0.020	0.050	0.049	98	80 - 120
Iron	7439-89-6	ND	0.20	5.00	4.86	97	80 - 120
Lead	7439-92-1	ND	0.015	0.050	0.049	98	80 - 120
Magnesium	7439-95-4	ND	0.20	5.00	4.98	100	80 - 120
Manganese	7439-96-5	ND	0.015	0.050	0.049	98	80 - 120
Molybdenum	7439-98-7	ND	0.030	0.050	0.050	99	80 - 120
Nickel	7440-02-0	ND	0.040	0.10	0.098	98	80 - 120
Potassium	7440-09-7	ND	0.50	5.00	4.68	94	80 - 120
Selenium	7782-49-2	ND	0.040	0.010	0.0082	82	80 - 120
Silver	7440-22-4	ND	0.010	0.050	0.049	98	80 - 120
Sodium	7440-23-5	ND	1.00	5.00	4.98	100	80 - 120
Thallium	7440-28-0	ND	0.020	0.050	0.050	100	80 - 120
Vanadium	7440-62-2	ND	0.020	0.050	0.048	96	80 - 120
Zinc	7440-66-6	ND	0.020	1.00	0.88	88	80 - 120

Inorganics QC Summary

Analytical Batch		Client ID	MM-04	MM-04 MS			MM-04 MSD					
576323		GCAL ID	21512291801	21512291802			21512291803					
Prep Batch		Sample Type	SAMPLE	MS			MSD					
575758		Prep Date	12/29/2015 14:00	12/29/2015 14:00			12/29/2015 14:00					
Prep Method		Analysis Date	01/06/2016 12:52	01/06/2016 12:55			01/06/2016 12:59					
EPA 3010A		Matrix	Water	Water			Water					
EPA 6020A		Units	mg/L	Spike	Result	%R	Control	Spike	Result	%R	RPD	RPD
		Result	LOQ	Added			Limits	Added			Limit	
Aluminum	7429-90-5	0.011	0.20	1.00	0.98	97	80 - 120	1.00	0.90	89	9	20
Antimony	7440-36-0	0.0	0.060	0.10	0.11	106	80 - 120	0.10	0.093	93	17	20
Arsenic	7440-38-2	0.0	0.020	0.050	0.046	91	80 - 120	0.050	0.042	84	9	20
Barium	7440-39-3	0.020	0.010	0.050	0.074	108	80 - 120	0.050	0.064	89	14	20
Beryllium	7440-41-7	0.0	0.0040	0.050	0.046	91	80 - 120	0.050	0.041	81	11	20
Cadmium	7440-43-9	0.0	0.0050	0.050	0.050	101	80 - 120	0.050	0.044	89	13	20
Calcium	7440-70-2	6.13	0.80	25.0	31.3	101	80 - 120	25.0	28.3	89	10	20
Chromium	7440-47-3	0.00048	0.010	0.050	0.050	98	80 - 120	0.050	0.045	89	11	20
Cobalt	7440-48-4	0.0	0.010	0.050	0.049	99	80 - 120	0.050	0.045	89	9	20
Copper	7440-50-8	0.0	0.020	0.050	0.050	100	80 - 120	0.050	0.045	90	11	20
Iron	7439-89-6	0.0	0.20	5.00	4.95	99	80 - 120	5.00	4.47	89	10	20
Lead	7439-92-1	0.0	0.015	0.050	0.052	104	80 - 120	0.050	0.046	92	12	20
Magnesium	7439-95-4	1.39	0.20	5.00	6.46	101	80 - 120	5.00	5.84	89	10	20
Manganese	7439-96-5	0.0	0.015	0.050	0.050	101	80 - 120	0.050	0.046	91	8	20
Molybdenum	7439-98-7	0.000070	0.030	0.050	0.054	107	80 - 120	0.050	0.047	94	14	20
Nickel	7440-02-0	0.0	0.040	0.10	0.098	98	80 - 120	0.10	0.089	89	10	20
Potassium	7440-09-7	1.47	0.50	5.00	6.54	102	80 - 120	5.00	5.67	84	14	20
Selenium	7782-49-2	0.0	0.040	0.010	0.0084	84	80 - 120	0.010	0.0078	78*	7	20
Silver	7440-22-4	0.0	0.010	0.050	0.053	106	80 - 120	0.050	0.046	92	14	20
Sodium	7440-23-5	9.19	1.00	5.00	14.6	108	80 - 120	5.00	13.1	78*	11	20
Thallium	7440-28-0	0.0	0.020	0.050	0.053	106	80 - 120	0.050	0.046	93	14	20
Vanadium	7440-62-2	0.0020	0.020	0.050	0.051	97	80 - 120	0.050	0.046	88	10	20
Zinc	7440-66-6	0.0	0.020	1.00	0.89	89	80 - 120	1.00	0.82	82	8	20



SAMPLE RECEIVING CHECKLIST



SAMPLE DELIVERY GROUP 215122918		CHECKLIST	YES	NO	NA
Client PM AMK 4449 - Tetra Tech	Transport Method FEDEX	Were all samples received using proper thermal preservation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		When used, were all custody seals intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Were all samples received in proper containers?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Profile Number 237642	Received By Lofton, Katie E.	Were all samples received using proper chemical preservation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Was preservative added to any container at the lab?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Line Item(s) 1 - Water	Receive Date(s) 12/29/15	Were all containers received in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Were all VOC water samples received without head space?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		Do all sample labels match the Chain of Custody?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Did the Chain of Custody list the sampling technician?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Was the COC maintained i.e. all signatures, dates and time of receipt included?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COOLERS		DISCREPANCIES	LAB PRESERVATIONS		
Airbill	Thermometer ID: E26	Temp(°C)	None		
7752 9810 4434		1.1 2.3 1.2			
NOTES					

ATTACHMENT B

LABORATORY CERTIFICATION SHEET

(One Page)



December 17, 2015

GCAL, LLC
7979 Innovation Drive
Baton Rouge, LA 70820

Stipulation of Approval for Commercial Laboratories

According to Georgia State Law (O.C.G.A. 12-2-9) Commercial Rules for Commercial Laboratory Accreditation, any person submitting data to EPD prepared by a commercial laboratory shall stipulate the laboratory is approved (Chapter 391-3-26-05). The following information is provided as requested.

Laboratory:	Gulf Coast Analytical Laboratories 7979 Innovation Park Drive Baton Rouge, LA 70820 (225)769-4900
Primary Accrediting Authority:	Louisiana Department of Environmental Quality
Accreditation ID:	01955
Scope:	CWA: Metals, General Chemistry, Volatile Organics, Extractable Organics, Pesticides, Herbicides, PCBs Solid and Chemical Materials: Metals, General Chemistry, Volatile Organics, Extractable Organics, Pesticides, Herbicides, PCBs Biological Tissues: Metals, Volatile Organics, Extractable Organics, Pesticides, Herbicides, PCBs
Effective:	July 1, 2015
Expiration:	June 30, 2016

Any question regarding this stipulation of approval may be directed to GCAL at (225)769-4900. Thank you for your business and do not hesitate to contact me if I can be of further assistance.

Sincerely,

Randy Whittington, CEO