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Andy Kandray
Project Manager



SUPPORTING THE **GEORGIA WORLD CONGRESS CENTER**



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February 14, 2014

Ms. Antonia Beavers
GEORGIA DEPARTMENT OF NATURAL RESOURCES
Department of Environmental Protection
Hazardous Waste Division
2 Martin Luther King, Jr. Drive, S.E., Suite 1054
Atlanta, Georgia 30334-9000

**Subject: Annual Groundwater Sampling Report #8
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 #8 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 10 and 11, 2013 from nine groundwater monitoring wells.

Metals regulated by the revised M&M Plan were not detected above reporting limits. Concentrations of four site regulated PAHs were detected above the analytical method's reporting limit. Namely, flouranthene, naphthalene, and phenanthrene were detected in monitoring well MM-03 and flouranthene and pyrene were detected in monitoring well MWC-1A. A maximum flame ionization detector (FID) concentration of 1.2 parts per million (ppm) was observed within the headspace of well MM-02. Concentrations were not above the Type 1 Risk Reduction Standards (RRS), but were above background concentrations observed in well MM-04. The groundwater sample collected from background monitoring well MM-04 did not contain any analytes regulated by the revised M&M Plan above reporting limits.

Based on an unknown source of PAH detections observed during the previous sampling event (December 2012), Tetra Tech recommend quarterly monitoring of wells MM-03 and MWC-1A. This recommendation was made to assist with determining if the PAHs detected in these wells are due to an off-site release unrelated to the Northside Drive Landfill by collecting data on seasonal groundwater level trends and contaminant concentrations. On May 9, 2013, Tetra Tech received correspondence from the Georgia Environmental Protection Division which approved quarterly monitoring of wells MM-03 and MWC-1A. Quarterly sampling was initiated upon award of the 2013 and 2014 contract issued in August 2013; subsequently, the first quarterly sampling event was conducted in September 2013. Results from the quarterly events will be presented in the Annual Groundwater Sampling Report #9, to be submitted in February 2015.

During this past August, several geotechnical borings penetrated the landfill cap in an effort to determine the feasibility of constructing the new Atlanta Falcons stadium at the proposed northern site. Tetra Tech

Ms. Antonia Beavers
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conducted oversight of boring installation activities as well as landfill cap repair activities. No issues related to the sampling or subsequent repairs were noted during this investigation. Additional details about the sampling and repairs are presented in the Landfill Cap and Liner Repair Letter Report submitted to Georgia Department of Natural Resources on September 30, 2013.

As requested by representatives of the GWCC, Tetra Tech has enclosed two hard copies and one electronic copy of the 8th Annual Groundwater Sampling Report. If you have any questions or comments regarding this submittal, please contact me at (678) 775-3090 or Wayne Rosser (GWCC) at (404) 223-4820.

Sincerely,



Andy Kandray
Project Manager

Enclosure

cc: Tim Bricker, Tetra Tech
Wayne Rosser, GWCC
Jason Metzger, GA EPD (letter only)
Joan Sasine, Bryan Cave International Consulting LLC (electronic copy only)

ANNUAL¹ GROUNDWATER SAMPLING REPORT #8
NORTHSIDE DRIVE LANDFILL SITE



GEORGIA
WORLD
CONGRESS
CENTER

ATLANTA, GEORGIA

PO No. 86420

PREPARED FOR:

GEORGIA DEPARTMENT OF NATURAL RESOURCES

DEPARTMENT OF ENVIRONMENTAL PROTECTION, HAZARDOUS WASTE DIVISION

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FEBRUARY 2014

¹ Quarterly groundwater sampling was conducted for two years after installation of engineering controls, followed by eight years of annual groundwater sampling.

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.


Andy Kandray
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.


Tim Bricker
Georgia P.E. No. 22621



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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 8th 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), Hazardous Waste Division 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). Quarterly groundwater sampling was conducted at the Site for two years after installation of engineering controls. Following these quarterly sampling events, eight annual groundwater sampling events have been completed, including the most recent annual sampling event conducted on December 10 and 11, 2013.

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 10 and 11, 2013 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 Atlanta Housing Authority 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 8th Annual Groundwater Sampling Event, which includes discussion of groundwater standards, sampling locations, and sampling procedures. Section 3.0 provides the analytical results of the 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 for the 8th 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-38/39 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

Two years of quarterly sampling were completed 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 10 and 11, 2013.

2.1 GROUNDWATER STANDARDS

Based on historical data collected during previous sampling events conducted by GA EPD, the regulated analytes for the Site include 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 the 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 overall periodic 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

Water level measurements were collected 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 upgradient, 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

Groundwater samples were also collected 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 sampled 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 site markers were also determined using this equipment. The GPS coordinates for the markers 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 markers 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 \pm 0.01 foot.

Due to detections of regulated analytes above practical quantitation limits (PQLs) in wells MM-03 and MWC-1A, discussed in further detail in Section 3.0 of this report, groundwater elevations inside and outside of the slurry wall were compared (see Figures 3 and 4 in Enclosure 1).

2.3 GROUNDWATER SAMPLING AND ANALYSIS PROCEDURES

During sampling activities conducted on December 10 and 11, 2013, Tetra Tech collected groundwater samples from nine monitoring wells. Groundwater samples were collected 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 appropriate disposal (see Section 2.3.2.6).

2.3.2 Measuring Depth to Groundwater

During the 8th 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 5).

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 TVA-1000 Flame Ionization Detector (FID) calibrated in the field prior to use. No elevated readings were observed in the breathing zone. However, when the inlet port was inserted into the well headspace, several elevated readings were detected, with a maximum concentration of 1.2 parts per million (ppm) measured within the headspace of well MM-02. Air monitoring screening results are presented in the logbook notes in Enclosure 3 and on the Groundwater Sampling Data Sheets in Enclosure 5.

Tetra Tech received the FID with minimal hydrogen remaining in the fuel cell. Efforts were made to evaluate the breathing zone and headspace on the first day but the low hydrogen levels prohibited the unit from operating correctly. By mid-afternoon, a full fuel cell was delivered to the site but casing caps had been removed to obtain water level measurements. Therefore, casing caps were securely fastened after water levels were obtained and air monitoring of the breathing zone and headspace was conducted the following morning on December 11, 2013.

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 LaMotte 2020e 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.

2.3.5 Collection of Groundwater Samples

Collection of samples for laboratory analysis utilized a peristaltic pump at the following wells: MM-04, MM-01, MM-02, MWC-3C, MWC-3B, MM-03, and MWC-1A. 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). A stainless steel submersible pump was utilized at the remaining two wells, MWC-1B and MWC-1C, due to the peristaltic pumps inability to lift water beyond 27 feet. Similar to purging with a peristaltic pump, purging with the submersible pump continued until a minimum of three (3) well casing volumes were removed and 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).

2.3.5.2 Purge Rates

All site wells were purged until at least three well volumes were removed in accordance with EPA groundwater sampling procedures. For all site wells, with the exception of MWC-1B and MWC-1C, purge rates did not exceed aquifer recharge rates and flow rates ranged from 0.06 to 0.114 gallons per minute (gal/min). Due to copious amount of water and the time required to remove three wells volumes from wells MWC-1B and MWC-1C at the aquifer recharge rate, the revised M&M Plan was utilized where three well casing volumes were purged (GA EPD 2005) at a rate greater than aquifer recharge. The actual purge rate for wells MWC-1B and MWC-1C was 0.27 gal/min and 0.242 gal/min, respectively. It should be noted that purge rates for all wells were slowed to rates below 0.13 gal/min or 0.5 L/min during sample collection. In

general, purge rates were based on drawdown and turbidity values 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 8th Annual Groundwater Sampling Event was placed in three 55-gallon drums, which are 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 8310 (by gas chromatography/mass spectrometry with selective ion monitoring). The metals (with the exception of mercury) were analyzed by EPA SW-846 Method 6010C (inductively coupled plasma/mass spectrometry). Mercury was analyzed by EPA SW-846 Method 7470A. All analytical methods were obtained from the same source document and are equally valid for use. Analytical methods used by GCAL for this sampling event adhere 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).

2.3.7 Sampling Decontamination Procedures

The Tetra Tech field team used pre-cleaned and dedicated sampling equipment for the 8th 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 20, 2011 (EPA 2011) 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 analyte-free water
2. Well sounders and tapes were washed using a phosphate-free, laboratory-grade detergent (Luminol®) and analyte-free deionized (ultra-pure lab-grade) water mixture
3. The sounders and tapes were then rinsed with analyte-free deionized water (ultra-pure lab-grade water was used during the 8th 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 8th 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

No odors were observed at any of the wells during sampling activities; however, analytical results for MM-03 and MM-03-DUP indicated that concentrations of fluoranthene, naphthalene, and phenanthrene were detected at levels above EPA SW-846 Method 8310 PQLs, but below Type 1 RRS values.

The analytes fluoranthene and pyrene were also detected in monitoring well MWC-1A at levels above EPA SW-846 Method 8310 PQLs, but below Type 1 RRS values. See Table 4 in Enclosure 2 for a summary of all analytical results from the 8th Annual Groundwater Sampling Event. The concentrations of site regulated substances detected above PQLs are summarized in the table below:

Analyte	Concentration	Well	Type 1 RRS
Fluoranthene	0.638 µg/L	MM-03	1,000 µg/L
	0.556 µg/L	MM-03-DUP	
	0.675 µg/L	MWC-1A	
Naphthalene	1.76 µg/L	MM-03	20 µg/L
	1.58 µg/L	MM-03-DUP	
Phenanthrene	0.43 µg/L	MM-03	6.4 µg/L
	0.414 µg/L	MM-03-DUP	
Pyrene	0.406 µg/L	MWC-1A	1,000 µg/L

Notes:
 µg/L micrograms per liter
 DUP duplicate

Metals listed as regulated analytes for the Site established in the revised M&M Plan were not detected above PQLs (see Table 2 in Enclosure 2). No site-regulated analytes were detected above the analytical method's PQL in the samples collected from the background monitoring well (MM-04).

3.2 Analytical Methods

The PAHs were analyzed by EPA SW-846 Method 8310 (by gas chromatography/mass spectrometry with selective ion monitoring). The metals (with the exception of mercury) were analyzed by EPA SW-846 Method 6010C (inductively coupled plasma/mass spectrometry). Mercury was analyzed by EPA SW-846 Method 7470A. 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 8th 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 2013 sampling event, the groundwater flow continues to move in a northwesterly direction (see Figure 2 in Enclosure 1). Additionally, groundwater levels outside of the slurry wall are depicted in 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 8th 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. 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). Tetra Tech is currently conducting quarterly gauging of all site wells, as well as collecting groundwater samples from MM-03 and MWC-1A. The data resulting from the quarterly sampling events will be presented and evaluated in the Annual Groundwater Sampling Report #9, to be submitted in February 2015.

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 8th Annual Groundwater Sampling Event are outliers. Evidence for this statement is supported by similar concentrations in the two previous (6th Annual [December 2011] and 7th Annual [December 2012]) sampling events and the presence of more than one regulated analyte in both of the wells where detections were encountered. Fluoranthene, naphthalene, and phenanthrene were detected in MM-03, and flouranthene and pyrene were detected in MWC-1A. Furthermore, the two wells are relatively close to each other and their screened intervals are near the top of the groundwater table. No contaminants were detected in monitoring wells MWC-1B or MWC-1C. Although both wells are located very close to Monitoring well MWC-1A, the screened intervals for MWC-1B and MWC-1C are deeper than the screened

interval for MWC-1A. The screening interval for MWC-1B is 46 to 55.68 feet below ground surface (bgs) and the screening interval for MWC-1C is 67 to 76.45 feet bgs (Table 5, Tetra Tech 2001a).

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 two wells within close proximity of the slurry wall (north and northeast portion of the site), combined with the observed northwesterly groundwater flow direction, suggest these contaminants likely originated outside the slurry wall. Tetra Tech will continue to conduct quarterly sampling of wells MM-03 and MWC-1A to better evaluate these occurrences. Results will be presented in the Annual Groundwater Sampling Report #9, to be submitted in February 2015.

4.3 Statistical Tests

Statistical tests cannot be performed on the given data set because the regulated analytes detected in monitoring wells MM-03 and MWC-1A were not 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, and is currently in the process of collecting data on seasonal water level trends in all wells and seasonal contaminant concentrations in monitoring wells MM-03 and MWC-1A. This data will assist with determining the source of the PAHs detected in these wells, which may have originated from an off-site release or other source unrelated to the Northside Drive Landfill.

Available data suggests that the source of contaminants is outside the site perimeter rather than due to a release from the landfill, because the wells where PAHs were detected (MM-03 and MWC-1A) are located north and northeast of the landfill and slurry wall, and groundwater flow direction has remained constant and continues to flow in a northwesterly direction. Furthermore, the water level in the dewatering well has remained stable since monitoring activities began 10 years ago, suggesting that the landfill cap and slurry wall are intact.

4.5 Potential Causes for Elevated Concentrations

Tetra Tech also reviewed potential causes which may have contributed to the detection of concentrations of regulated substances above PQLs in monitoring wells MM-03 and MWC-1A. Site features have changed from previous years when no contaminants were detected. The most notable change to site features involves the demolition and removal of Herndon Homes, formerly located just north of the landfill, which may have affected groundwater flow patterns (both horizontally and vertically). Furthermore, a review of historical quarterly groundwater elevations indicates a varying upward and downward change in water levels in the northeastern corner where detections have recently been observed. Data collected during annual sampling events during the month of December (from 2006 to the current reporting period) suggest water levels measured in wells in the northeastern corner have remained fairly static, with little change regarding upward and downward migration. Tetra Tech is currently in the process of sampling wells MM-03 and MWC-1A and conducting water level measurements at all wells on a quarterly basis to better establish current seasonal groundwater trends and contaminant levels in the two wells. The data resulting from the quarterly sampling and water level measurement events will be presented and evaluated in the 9th Annual Sampling Report (December 2014).

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 would not make the slurry wall susceptible to breach. Groundwater elevations inside and outside the slurry wall were compared to the surrounding ground level and bedrock as outlined from Tetra Tech's design specifications (Tetra Tech 2001b).

The groundwater level within the slurry wall, measured in the dewatering well, has remained at 936.08 feet \pm 0.84 foot since December 2004, and the level does not appear to be steadily increasing or decreasing. The water level within the dewatering well level is over six feet below the top of the slurry wall at its lowest point in the northwestern corner of the landfill, where the dewatering well is located. These findings suggest that because the dewatering well level within the slurry wall has remained constant, the cap and slurry wall remain intact in the vicinity of the dewatering well.

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 2013 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 8th Annual Groundwater Sampling Event, fluoranthene was detected at 0.638 micrograms per Liter ($\mu\text{g/L}$) (Type 1 RRS is 1,000 $\mu\text{g/L}$); naphthalene was detected at 1.76 $\mu\text{g/L}$ (Type 1 RRS is 20 $\mu\text{g/L}$); and phenanthrene was detected at 0.43 $\mu\text{g/L}$ (Type 1 RRS is 6.4 $\mu\text{g/L}$) in monitoring well MM-03. Additionally, in monitoring well MWC-1A, fluoranthene and pyrene were detected at 0.675 $\mu\text{g/L}$ and 0.406 $\mu\text{g/L}$, respectively. The Type 1 RRS for both fluoranthene and pyrene is 1,000 $\mu\text{g/L}$. No constituents were detected above PQLs in background monitoring well MM-04. Because these concentrations are above EPA SW-846 Method 8310 PQLs, Tetra Tech recommended quarterly monitoring of wells MM-03 and MWC-1A. On May 9, 2013, Tetra Tech received correspondence from the Georgia Environmental Protection Division which approved quarterly monitoring of wells MM-03 and MWC-1A. Quarterly sampling was initiated upon award of the 2013 and 2014 contract issued on August 2013; subsequently, the first quarterly sampling event was conducted in September 2013, and the two wells were sampled during the annual December 2013 monitoring event. Additional quarterly monitoring is planned for wells MM-03 and MWC-1A in March and June 2014. The data resulting from the quarterly sampling events will be presented and evaluated in the Annual Groundwater Sampling Report #9, to be submitted in February 2015.

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 in the vicinity of the dewatering well.

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

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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. The breathing zone was screened for organic vapors using an FID instead of a photoionization detector (PID), as described in section 3.2.1: “...the breathing zone must be checked for organic vapors using the PID.” An FID was utilized to monitor for the presence of SVOCs and methane, which have a higher ionization potential than that associated with a PID. ERM’s preliminary site assessment cited a “limited number of organic compounds” in the landfill, signifying the possibility of methane generation after sufficient degradation (ERM 1996). The FID can also detect all of the regulated analytes outlined in the revised M&M Plan.

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.
- GA EPD. 2003b. "Criteria for Type 1 Standards, Rules for Hazardous Site Response, Chapter 391-3-19-.07 (6)". June.
- GA EPD. 2003c. "Revised As-Built Drawings, Northside Drive Landfill Site, HSI Site 10222, Georgia Environmental Protection Division, Hazardous Waste Division". October.
- 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.
- GA EPD. 2011. "Response to Annual Groundwater Sampling Reports #4 and #5." May 2.
- 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.
- Tetra Tech, 2006. "Response to GA EPD Comments, May 15, 2006." June.
- Tetra Tech. 2011. "Response to GA EPD Comments, May 2, 2011." May.
- EPA, Region 4 Science and Ecosystem Support Division (SESD). 2011. Field Equipment Cleaning and Decontamination, Number SESDPROC-205-R2. December 20. 17 Pages. On-Line Address: <http://www.epa.gov/region4/sesd/fbgstp/Field-Equipment-Cleaning-and-Decontamination.pdf>

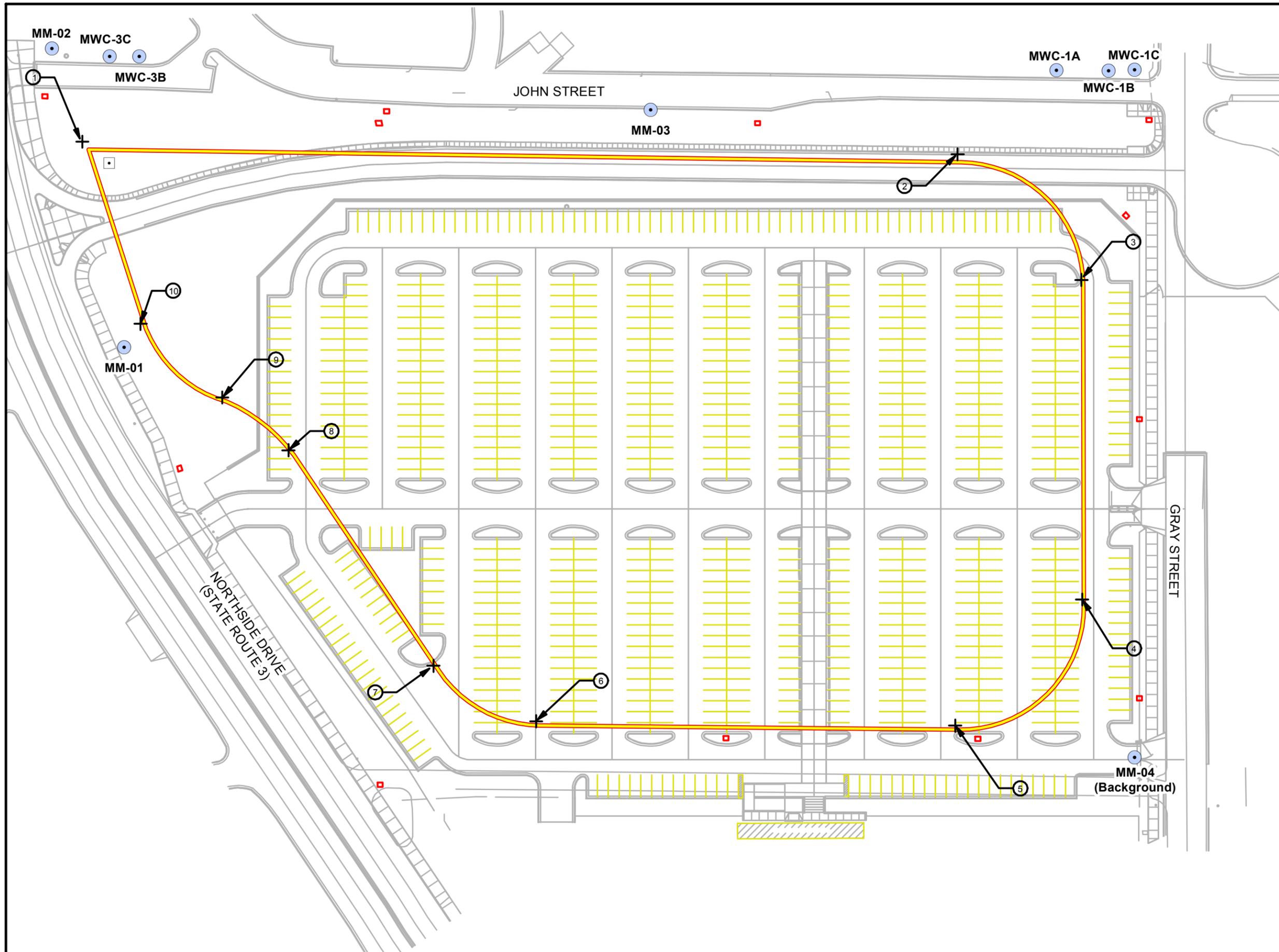
EPA, Region 4 SEDS. 2013. Groundwater Sampling, Number SESDPROC-301-R3. March 6. 31 Pages.
Accessed on-line at: <http://www.epa.gov/region4/sesd/fbqstp/Groundwater-Sampling.pdf>

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

ENCLOSURE 1

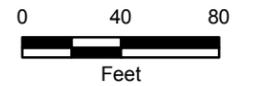
FIGURES

(Four Pages)



Legend

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



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

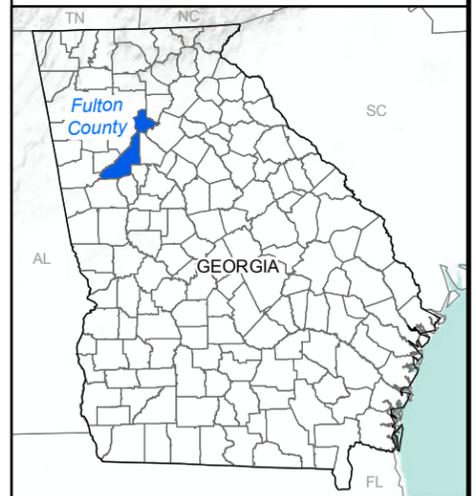


FIGURE 1

Site Location and Layout

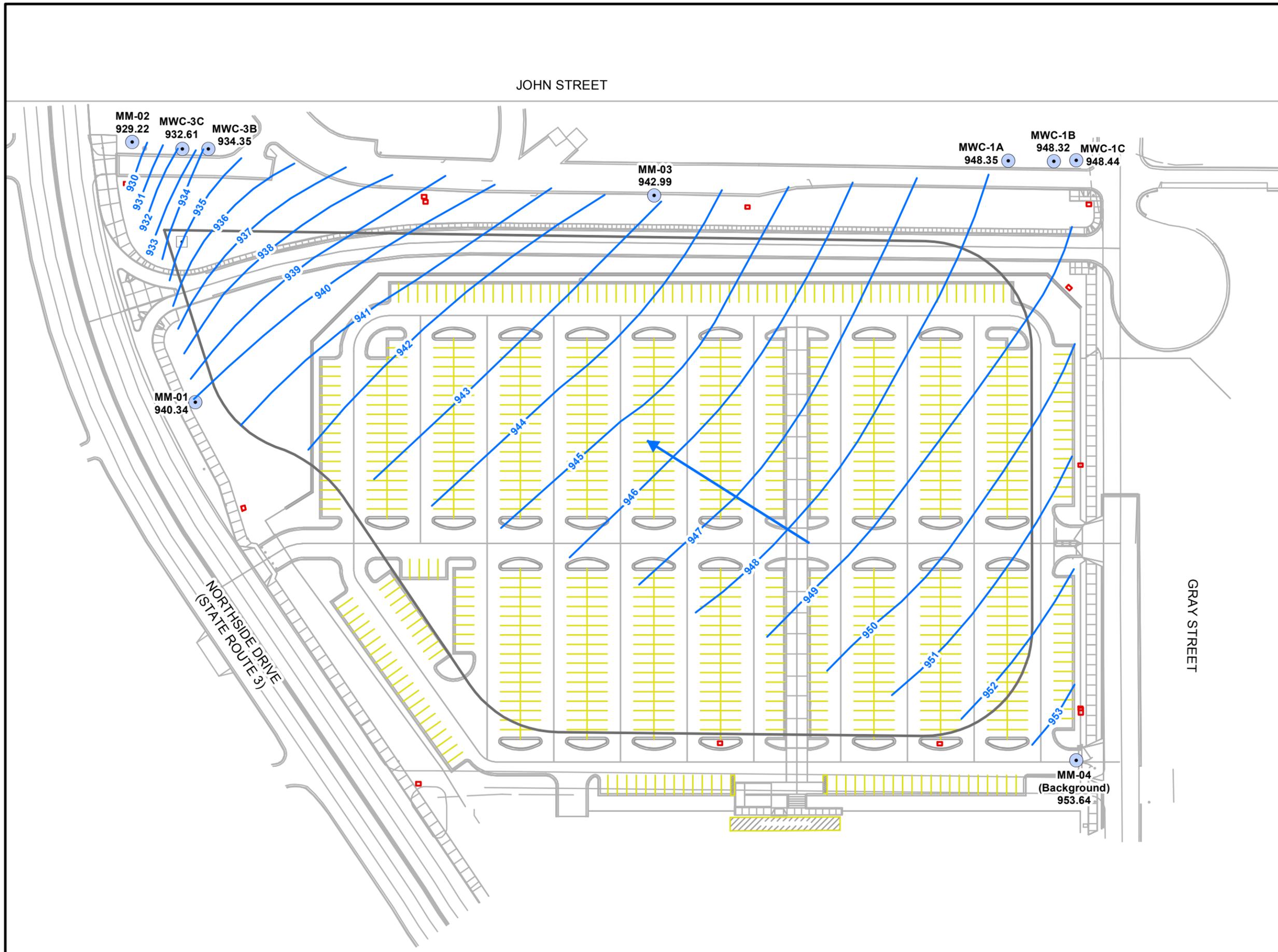
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December 10-11, 2013
Northside Drive Landfill Site

Client: Georgia World Congress Center

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

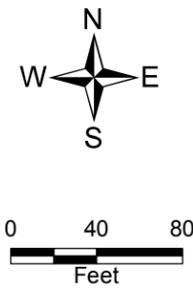


Date: 2/9/2014
Analyst: dale.vonbusch



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: 8th Annual Groundwater Sampling Event
December 10-11, 2013
Northside Drive Landfill Site

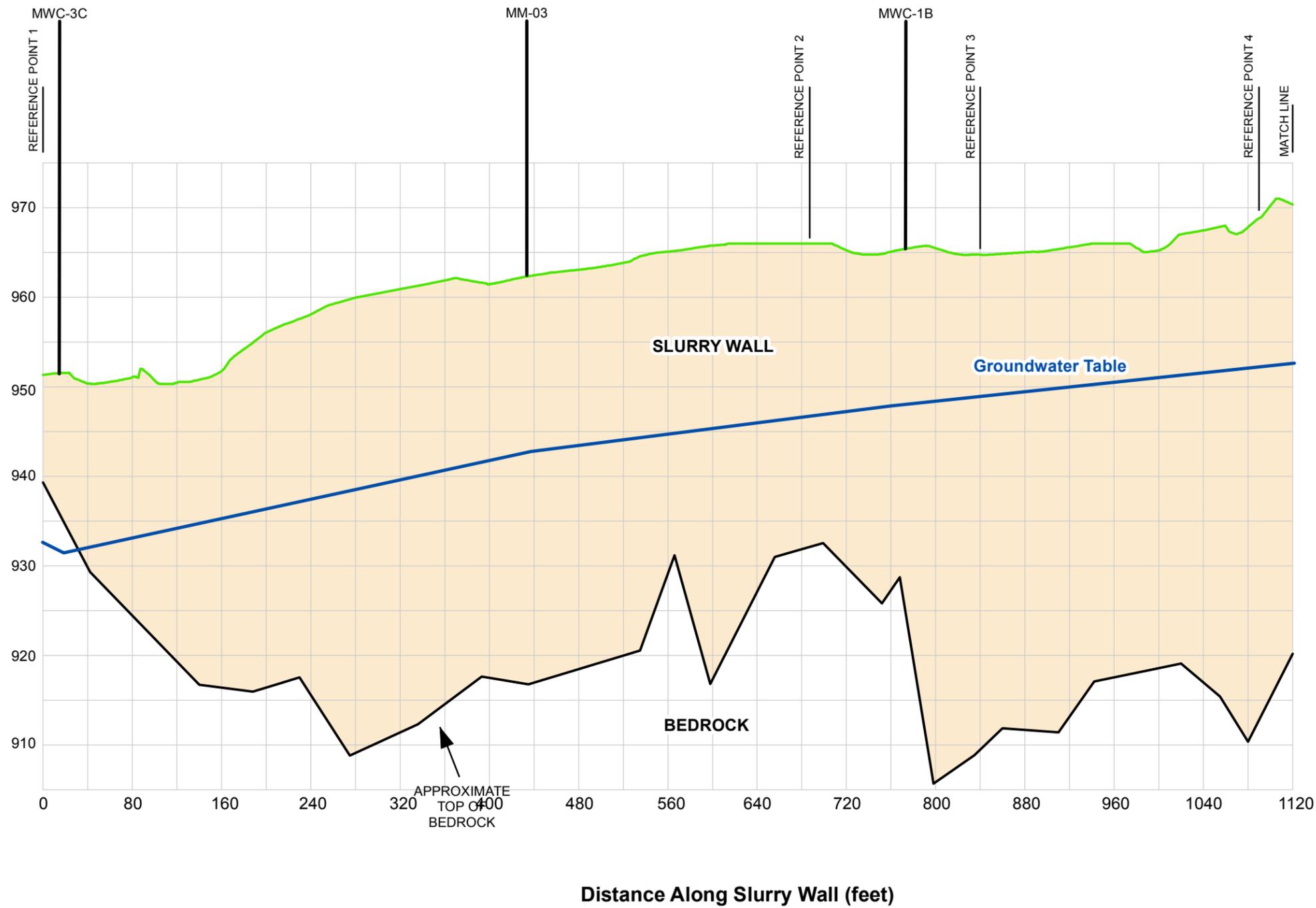
Client: Georgia World Congress Center

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

Date: 1/03/2013
Analyst: date.vonbusch



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
Subterrain Cross Section
of Slurry Wall Perimeter

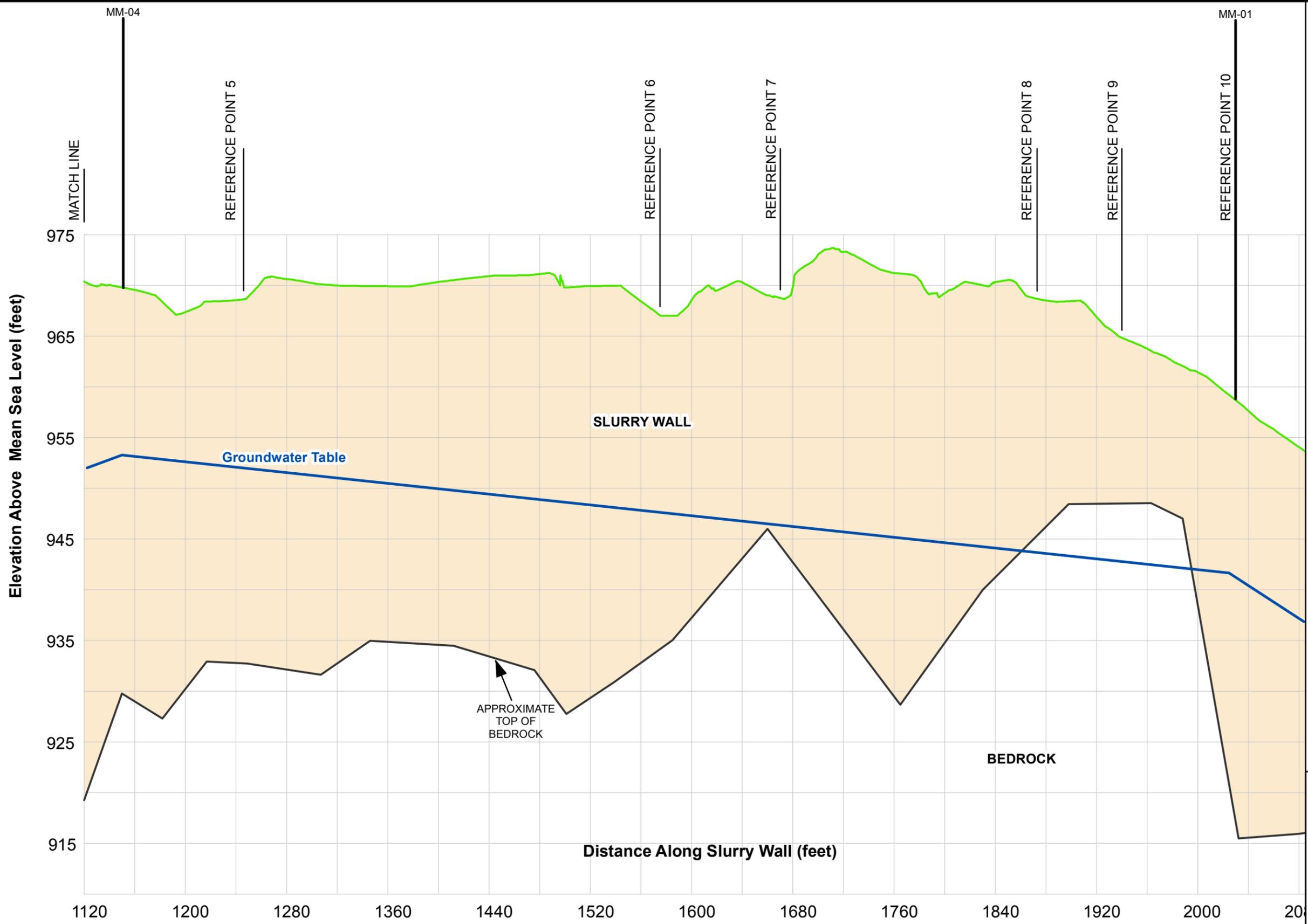
Proj. Name: 8th Annual Groundwater
Sampling Event
December 10-11, 2013
Northside Drive Landfill Site

Client: Georgia World Congress Center

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



Date:
2/9/2014
Analyst:
dale.vonbusch



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
Subterrain Cross Section
of Slurry Wall Perimeter

Proj. Name: 8th Annual Groundwater
Sampling Event
December 10-11, 2013
Northside Drive Landfill Site

Client: Georgia World Congress Center
City: Atlanta **County:** Fulton **State:** Georgia

Date: 2/9/2014
Analyst: dale.vonbusch

ENCLOSURE 2

TABLES

(Nine Pages)

TABLE 1
8TH ANNUAL GROUNDWATER SAMPLING REPORT
REGULATED SUBSTANCES FOR GROUNDWATER
NORTHSIDE DRIVE LANDFILL SITE

Regulated Substance	Frequency of Groundwater Monitoring*	Type 1 RRS (mg/L)	Analytical Method
Organics			
Acenaphthene	Quarterly for 2 years, then annually	2	SW-846 8310
Acenaphthylene	Quarterly for 2 years, then annually	PQL ^a : 0.023	SW-846 8310
Anthracene	Quarterly for 2 years, then annually	PQL ^a : 0.0066	SW-846 8310
Benzo(a)anthracene	Quarterly for 2 years, then annually	0.00013	SW-846 8310
Benzo(a)pyrene	Quarterly for 2 years, then annually	0.00023	SW-846 8310
Benzo(b)fluoranthene	Quarterly for 2 years, then annually	0.0002	SW-846 8310
Benzo(k)fluoranthene	Quarterly for 2 years, then annually	PQL ^a : 0.00017	SW-846 8310
Benzo(g,h,i)perylene	Quarterly for 2 years, then annually	PQL ^a : 0.00076	SW-846 8310
Chrysene	Quarterly for 2 years, then annually	0.0002 ^b	SW-846 8310
Dibenz(a,h)anthracene	Quarterly for 2 years, then annually	0.0003	SW-846 8310
Fluoranthene	Quarterly for 2 years, then annually	1	SW-846 8310
Fluorene	Quarterly for 2 years, then annually	1	SW-846 8310
Indeno(1,2,3-cd)pyrene	Quarterly for 2 years, then annually	0.00043	SW-846 8310
Naphthalene	Quarterly for 2 years, then annually	0.02	SW-846 8310
Phenanthrene	Quarterly for 2 years, then annually	PQL ^a : 0.0064	SW-846 8310
Pyrene	Quarterly for 2 years, then annually	1	SW-846 8310
Metals			
Beryllium	Quarterly for 2 years, then annually	0.004	SW-846 6010B
Lead	Quarterly for 2 years, then annually	0.015	SW-846 6010B
Mercury	Quarterly for 2 years, then annually	0.002	SW-846 7470A

Notes:

- * Frequency of groundwater monitoring may be modified only upon receipt of EPD's approval.
- 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.
- 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
8TH 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	
MM-01	Dec. 28-30, 2004	953.52	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	
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	
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	
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	
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	

TABLE 2
8TH 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	
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	
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	
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	

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
8TH 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	
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	
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	
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	
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	

TABLE 3
8TH ANNUAL GROUNDWATER SAMPLING REPORT
SUMMARY OF METALS ANALYTICAL RESULTS
NORTHSIDE DRIVE LANDFILL SITE

Well ID	Annual Sampling Event Date	Beryllium	Lead	Mercury
		(µg/L)	(µg/L)	(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	
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	
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	
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	
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	

TABLE 3
8TH ANNUAL GROUNDWATER SAMPLING REPORT
SUMMARY OF METALS ANALYTICAL RESULTS
NORTHSIDE DRIVE LANDFILL SITE

Notes:

J	Estimated value detected below Reporting Limit	NS	Not sampled; in 2004 MM-01 was covered with approximately 9 feet of soil and debris.
µg/L	Micrograms per liter		
M&M	Monitoring and maintenance		MM-03-DUP not collected prior to 2008.
NA	Analyte not analyzed for	RRS	Risk Reduction Standard
NL	Type 1 RRS not listed		Samples collected during relevant annual sampling event
NR	Analyte not reported		
<	Less than		

TABLE 4
8TH 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)	Flouranthene (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	< 0.20	< 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	< 0.20	< 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		
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		
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		
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		
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		

TABLE 4
8TH 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 12/10/13

Project / Client 2013 Annual Sampling Event

Overcast w/ sun later, windy, high of 45°F

0800 C. Jones and A. Skiles arrive on site.

- Have daily tailgate H&S meeting and see history

Well	Open air at well head	Breathing zone	DTW	TD
MM-04	0.0	0.0	17.11	45.35
MM-03	20.0	0.0	17.18	
MM-02	3.0	0.0	10.50	
MWC-3C	2.0	0.0	10.51	
MWC-3B	2.0	0.0	10.45	
MM-03	0.0	0.0	14.93	
MWC-1A			12.75	
MWC-1B			12.45	
MWC-1C			11.94	

FID unit is not operating correctly. Contact rental company and they are replacing unit. Well head readings will be collected again tomorrow morning.

1000 set up on MM-04

Well data is recorded on field sampling sheets.

DTW
DW-W 14.41

Location GWCC

Date 12/10/13

Project / Client 2013 Annual Sampling Event

1410 Collect sample from MM-04 (MS/MSD)
1605 Collect sample from MM-01
1713 Collect sample from MM-02
1730 Off site for the day

12/11/13

0800 C. Jones and A. Skiles arrive on site. Calibrate TVA 1,000 to reservoir head space of wells.

Well	@ well head	Breathing zone
MM-04	0.0	0.0
MM-01	0.3	0.0
MM-02	1.2	0.0
MWC-3C	0.0	0.0
MWC-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	0.25	0.0
DWW	0.0	0.0

0835 Begin purging MWC-3C, well data is recorded on field sampling sheets.
- Collect well head and breathing zone readings w/ FID.

12 128

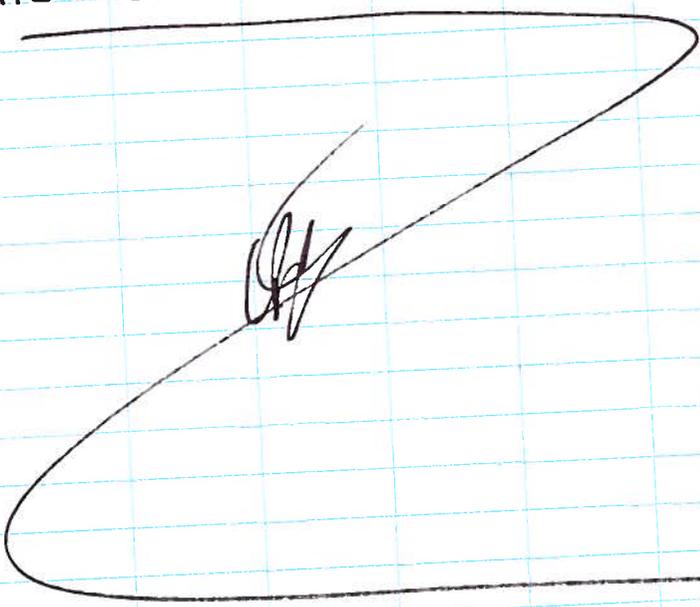
Location GWCC

Date 12/11/13

Project / Client 2013 Annual Sampling Event

- 2 1020 Collect sample from MWC-3C
- 1145 Collect sample from MWC-3B
- 1335 Collect sample from MM-03
- 1343 Collect sample from MM03-Prop
- 1508 Collect sample from MWC-1A
- 1603 Collect sample from MWC-1B
- 1645 Collect Field Blank _____
- M 1650 Collect Equipment Blank _____
- M 1840 Collect sample from MWC-1C
- M 1900 Dumped waste water into drums
- M 1915 Off-Site _____

M
- N
M
M



ENCLOSURE 4

GROUNDWATER SAMPLING DATA SHEETS

(18 Pages)

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)
8th Annual Sampling Event (December 2013)

Date: 12/10/13 Purge Start Time: 10:28 Time of Sample Collection: 14:10

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

Wells securely locked? Yes

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

Length of Screening Interval: _____ ft

Initial Depth to Water (DTW): 17.11 ft below TOC

DTW Prior to Sampling: 17.39 ft below TOC

Depth to Sample Intake (DTI): 21.94 ft below TOC

(should be center of screened interval, if possible)

Method of purging: Peristaltic Pump

Bladder Pump

Submersible Pump

Bailer

Three Well Volumes: 13.81 Gallons

Total Volume Purged: 14.80 Gallons

Actual Purge Rate: 0.06 Gallons/min

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

Well Calculations	
3 Well Volumes:	
TD - DTW = Water Column Length	
<u>45.35 - 17.11 = 28.24</u>	
Water Column Length * Well Diameter Constant = Well Volume	
<u>28.24 * 0.163 = 4.60</u>	
3 * Well Volume = 3 Well Volumes	
<u>3 * 4.60 = 13.81</u>	
<u>13.81 gal</u>	

PHYSIO-CHEMICAL PARAMETERS DURING PURGING											
Measurement Criterion	Initial Reading										Stabilization Criteria
Time	<u>10:28</u>	<u>13:56</u>	<u>14:01</u>	<u>14:06</u>	<u>1</u>						-
Breathing Zone FID Reading	<u>0.0</u>										
Well head FID Reading	<u>0.0</u>	-	-	-	-	-	-	-	-	-	-
pH		<u>6.08</u>	<u>6.09</u>	<u>6.07</u>							± 0.1
Temperature (°C)		<u>17.89</u>	<u>17.92</u>	<u>18.01</u>							-
Specific Conductivity (mS/cm)		<u>0.121</u>	<u>0.120</u>	<u>0.120</u>							± 5 %
Turbidity (NTU)		<u>0.07</u>	<u>0.02</u>	<u>0.06</u>							< 10
Depth to Water (ft)	<u>17.11</u>	<u>17.37</u>	<u>17.38</u>	<u>17.39</u>							-
Each Volume Purged (Gal)		<u>12.8</u>	<u>1</u>	<u>1</u>							-
Total Gallons Purged		<u>12.8</u>	<u>13.8</u>	<u>14.8</u>							-

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)

8th Annual Sampling Event (December 2013)

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, colorless

Comments: _____

Sample(s) Collected By: CS/AS

Analytical method to be written on COC: ~~RCRA~~^{TNL} metals
~~SVOCs~~ PAH

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)
8th Annual Sampling Event (December 2013)

Date: 12/10/13 Purge Start Time: 1458 Time of Sample Collection: 16:05

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

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): 17.18 ft below TOC

DTW Prior to Sampling: 19.4 ft below TOC

Depth to Sample Intake (DTI): 23.0 ft below TOC

(should be center of screened interval, if possible)

Method of purging: Peristaltic Pump

Bladder Pump

Submersible Pump

Bailer

Three Well Volumes: 5.06 Gallons

Total Volume Purged: 5.25 Gallons

Actual Purge Rate: 0.078 Gallons/min

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

Well Calculations	
3 Well Volumes:	
TD - DTW = Water Column Length	
<u>27.53 - 17.18 = 10.35</u>	
Water Column Length * Well Diameter Constant = Well Volume	
<u>10.35 * 1.69 = 1.36</u>	
3 * Well Volume = 3 Well Volumes	
3 * <u>1.69</u> =	<u>5.06</u>

PHYSIO-CHEMICAL PARAMETERS DURING PURGING											
Measurement Criterion	Initial Reading										Stabilization Criteria
Time		<u>1547</u>	<u>1552</u>	<u>1557</u>							-
Breathing Zone FID Reading	<u>0.0</u>										
Well head FID Reading	<u>0.3</u>	-	-	-	-	-	-	-	-	-	-
pH		<u>6.02</u>	<u>6.01</u>	<u>6.03</u>							± 0.1
Temperature (°C)		<u>18.06</u>	<u>18.03</u>	<u>18.15</u>							-
Specific Conductivity (mS/cm)		<u>0.243</u>	<u>0.247</u>	<u>0.254</u>							± 5 %
Turbidity (NTU)		<u>4.6</u>	<u>4.32</u>	<u>4.45</u>							< 10
Depth to Water (ft)	<u>17.18</u>	<u>18.77</u>	<u>19.06</u>	<u>19.40</u>							-
Each Volume Purged (Gal)		<u>4.2</u>	<u>0.5</u>	<u>0.5</u>							-
Total Gallons Purged		<u>4.2</u>	<u>4.75</u>	<u>5.25</u>							-

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)

8th Annual Sampling Event (December 2013)

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): Slightly cloudy when purging was initiated.

Comments: _____

Sample(s) Collected By: CS/AS

Analytical method to be written on COC: TAL
ICPA metals / SWOC PAH

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)
8th Annual Sampling Event (December 2013)

Date: 12/10/13

Purge Start Time: 16:38 Time of Sample Collection: 17:13 ^(E.S)

Sample ID/ Well Number: MM-02

Watertight Locking Cap Condition: Good

Wells securely locked? Yes

Total Depth (TD): 16.90 ft below top of casing (TOC)

Length of Screening Interval: _____ ft

Initial Depth to Water (DTW): 10.50 ft below TOC

DTW Prior to Sampling: 10.75 ft below TOC

Depth to Sample Intake (DTI): 12.5 ft below TOC

(should be center of screened interval, if possible)

Method of purging: Peristaltic Pump

_____ Bladder Pump

_____ Submersible Pump

_____ Bailer

Three Well Volumes: 3.13 Gallons

Total Volume Purged: 4 Gallons

Actual Purge Rate: 0.114 Gallons/min

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

Well Calculations	
3 Well Volumes:	
TD - DTW = Water Column Length	<u>16.9 - 10.5 = 6.4</u>
Water Column Length * Well Diameter Constant = Well Volume	<u>6.4 * .163 = 1.04</u>
3 * Well Volume = 3 Well Volumes	<u>3 * 1.04 =</u>
	<u>3.13</u>

PHYSIO-CHEMICAL PARAMETERS DURING PURGING											
Measurement Criterion	Initial Reading										Stabilization Criteria
Time		<u>1659</u>	<u>1704</u>	<u>1709</u>							-
Breathing Zone FID Reading	<u>0.0</u>										
Well head FID Reading	<u>1.2</u>	-	-	-	-	-	-	-	-	-	-
pH		<u>6.47</u>	<u>6.41</u>	<u>6.45</u>							± 0.1
Temperature (°C)		<u>19.20</u>	<u>19.25</u>	<u>19.20</u>							-
Specific Conductivity (mS/cm)		<u>0.397</u>	<u>0.399</u>	<u>0.399</u>							± 5 %
Turbidity (NTU)		<u>0.66</u>	<u>0.0</u>	<u>0.0</u>							< 10
Depth to Water (ft)	<u>10.5</u>	<u>10.74</u>	<u>10.75</u>	<u>10.75</u>							-
Each Volume Purged (Gal)		<u>2.5</u>	<u>.75</u>	<u>.75</u>							-
Total Gallons Purged		<u>2.5</u>	<u>3.25</u>	<u>4</u>							-

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)
8th Annual Sampling Event (December 2013)

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: NA

Sample(s) Collected By: CS/AS

Analytical method to be written on COC: ^{ITAL} BCR⁺ Metals / ~~SUR~~ PAH

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)
8th Annual Sampling Event (December 2013)

Date: 12/11/13 Purge Start Time: 08:35 Time of Sample Collection: 10:20

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

Wells securely locked? _____

Total Depth (TD): 29.30 ft below top of casing (TOC)

Length of Screening Interval: _____ ft

Initial Depth to Water (DTW): 10.51 ft below TOC

DTW Prior to Sampling: 11.55 ft below TOC

Depth to Sample Intake (DTI): 13.0 ft below TOC

(should be center of screened interval, if possible)

Method of purging: Peristaltic Pump

_____ Bladder Pump

_____ Submersible Pump

_____ Bailer

Three Well Volumes: 9.19 Gallons

Total Volume Purged: 9.75 Gallons

Actual Purge Rate: 0.093 Gallons/min

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

Well Calculations	
3 Well Volumes:	
TD - DTW = Water Column Length	
<u>29.3</u> - <u>10.51</u> = <u>18.79</u>	
Water Column Length * Well Diameter Constant = Well Volume	
<u>18.79</u> * <u>0.163</u> = <u>3.06</u>	
3 * Well Volume = 3 Well Volumes	
3 * <u>3.06</u> =	<u>9.19</u>

PHYSIO-CHEMICAL PARAMETERS DURING PURGING											
Measurement Criterion	Initial Reading										Stabilization Criteria
Time		1007	1012	1017							-
Breathing Zone FID Reading	0.0										
Well head FID Reading		-	-	-	-	-	-	-	-	-	-
pH		6.64	6.62	6.63							± 0.1
Temperature (°C)		18.86	19.85	19.01							-
Specific Conductivity (mS/cm)		0.556	0.556	0.557							± 5 %
Turbidity (NTU)		0.05	0.02	0.0							< 10
Depth to Water (ft)	10.51	11.49	11.49	11.55							-
Each Volume Purged (Gal)		8.25	.75	.75							-
Total Gallons Purged		8.25	9	9.75							-

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)
8th Annual Sampling Event (December 2013)

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: Clear, NA

Sample(s) Collected By: CS/AS

Analytical method to be written on COC: TAL Metals

PAH

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)
8th Annual Sampling Event (December 2013)

Date: 12/11/13

Purge Start Time: 10:35 Time of Sample Collection: 11:50

Sample ID/ Well Number: MWC-3 B

Watertight Locking Cap Condition: Good

Wells securely locked? yes

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

Length of Screening Interval: _____ ft

Initial Depth to Water (DTW): 10.45 ft below TOC

DTW Prior to Sampling: 11.41 ft below TOC

Depth to Sample Intake (DTI): 13.0 ft below TOC

(should be center of screened interval, if possible)

Method of purging: Peristaltic Pump

Bladder Pump

Submersible Pump

Bailer

Three Well Volumes: 7.56 Gallons

Total Volume Purged: 8.0 Gallons

Actual Purge Rate: 0.114 Gallons/min

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

Well Calculations	
3 Well Volumes:	
TD - DTW = Water Column Length	<u>24.88 - 10.45 = 14.43</u>
Water Column Length * Well Diameter Constant = Well Volume	<u>14.43 * .163 = 2.35</u>
3 * Well Volume = 3 Well Volumes	3 * <u>2.35</u> =
	7.06

PHYSIO-CHEMICAL PARAMETERS DURING PURGING									
Measurement Criterion	Initial Reading								Stabilization Criteria
Time		<u>11:31</u>	<u>11:36</u>	<u>11:41</u>	<u>11:46</u>				-
Breathing Zone FID Reading	<u>0.0</u>								
Well head FID Reading	<u>0.0</u>								
pH		<u>7.04</u>	<u>7.03</u>	<u>7.03</u>					± 0.1
Temperature (°C)		<u>19.28</u>	<u>19.30</u>	<u>19.29</u>					-
Specific Conductivity (mS/cm)		<u>0.599</u>	<u>0.597</u>	<u>0.599</u>					± 5 %
Turbidity (NTU)		<u>0.07</u>	<u>0.02</u>	<u>0.09</u>					< 10
Depth to Water (ft)	<u>10.45</u>	<u>11.40</u>	<u>11.44</u>	<u>11.41</u>					-
Each Volume Purged (Gal)		<u>6.75</u>	<u>1.50</u>	<u>.75</u>					-
Total Gallons Purged		<u>6.75</u>	<u>7.25</u>	<u>8.00</u>					-

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)

8th Annual Sampling Event (December 2013)

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: CS / -1 S

Analytical method to be written on COC: TAL Metals

PAH

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)
8th Annual Sampling Event (December 2013)

Date: 12/11/13

Purge Start Time: 13:19:12 Time of Sample Collection: 13:35

Sample ID/ Well Number: MM-03

Watertight Locking Cap Condition: Good

Wells securely locked? Yes

Total Depth (TD): 30.20 ft below top of casing (TOC)

Length of Screening Interval: _____ ft

Initial Depth to Water (DTW): 14.93 ft below TOC

DTW Prior to Sampling: 16.21 ft below TOC

Depth to Sample Intake (DTI): 17.0 ft below TOC

(should be center of screened interval, if possible)

Method of purging: Peristaltic Pump

Bladder Pump

Submersible Pump

Bailer

Three Well Volumes: 7.47 Gallons

Total Volume Purged: 7.8 Gallons

Actual Purge Rate: 0.101 Gallons/min

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

Well Calculations	
3 Well Volumes:	
TD - DTW = Water Column Length	
<u>30.2 - 14.93 = 15.27</u>	
Water Column Length * Well Diameter Constant = Well Volume	
<u>15.27 * .163 = 2.49</u>	
3 * Well Volume = 3 Well Volumes	
3 * <u>2.49</u> =	<u>7.47</u>

PHYSIO-CHEMICAL PARAMETERS DURING PURGING										
Measurement Criterion	Initial Reading									Stabilization Criteria
Time		1322	1327	1332						-
Breathing Zone FID Reading	0.0									
Well head FID Reading	0.0	-	-	-	-	-	-	-	-	-
pH		6.02	6.04	6.03						± 0.1
Temperature (°C)		20.22	20.32	20.00						-
Specific Conductivity (mS/cm)		0.239	0.243	0.224						± 5 %
Turbidity (NTU)		0.40	0.43	0.41						< 10
Depth to Water (ft)	14.93	16.31	16.28	16.01						-
Each Volume Purged (Gal)		6.5	0.6	0.7						-
Total Gallons Purged		6.5	7.1	7.8						-

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)

8th Annual Sampling Event (December 2013)

Duplicate Sample Collected? Yes No (Sample ID of Duplicate): MM-03-700

(Sample Time of Duplicate): 1343

MS/MSD Sample Collected? Yes No

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

Comments: NA

Sample(s) Collected By: CS/AS

Analytical method to be written on COC: TAL Metals

FAT

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)
8th Annual Sampling Event (December 2013)

Date: 12/11/13 Purge Start Time: 1430 Time of Sample Collection: 15:08

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

Wells securely locked? yes 3
Total Depth (TD): 13.12.40 ft below top of casing (TOC)
Length of Screening Interval: _____ ft
Initial Depth to Water (DTW): 12.75 ft below TOC
DTW Prior to Sampling: 13.23 ft below TOC
Depth to Sample Intake (DTI): 15.00 ft below TOC

(should be center of screened interval, if possible)

Method of purging: Peristaltic Pump
 Bladder Pump
 Submersible Pump
 Bailer

Three Well Volumes: 2.76 Gallons
Total Volume Purged: 3.5 Gallons
Actual Purge Rate: 0.092 Gallons/min

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

Well Calculations	
3 Well Volumes:	
TD - DTW = Water Column Length	
<u>18.4</u>	- <u>12.75</u> = <u>5.65</u>
Water Column Length * Well Diameter Constant = Well Volume	
<u>5.65</u>	* <u>.163</u> = <u>0.92</u>
3 * Well Volume = 3 Well Volumes	
<u>3</u>	* <u>0.92</u> = <u>2.76</u>
<u>2.76</u>	

PHYSIO-CHEMICAL PARAMETERS DURING PURGING											
Measurement Criterion	Initial Reading										Stabilization Criteria
		1455	1500	1505							
Time		1455	1500	1505							-
Breathing Zone FID Reading	0.0										
Well head FID Reading	0.0	-	-	-	-	-	-	-	-	-	-
pH		5.90	5.91	5.91							± 0.1
Temperature (°C)		18.50	18.50	18.48							-
Specific Conductivity (mS/cm)		0.199	0.199	0.199							± 5 %
Turbidity (NTU)		0.33	0.34	0.31							< 10
Depth to Water (ft)	12.75	13.19	13.22	13.23							-
Each Volume Purged (Gal)		2.7	3	5							-
Total Gallons Purged		2.7	3	3.5							-

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)

8th Annual Sampling Event (December 2013)

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~~ ^{CS} slight sulfur-like odor

Comments: NA

Sample(s) Collected By: CS/AS

Analytical method to be written on COC: TAL Metals

PAH

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)
8th Annual Sampling Event (December 2013)

Date: 12/11/13

Purge Start Time: 1437 Time of Sample Collection: 16:03

Sample ID/ Well Number: MKC-13

Watertight Locking Cap Condition: good

Wells securely locked? yes

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

Length of Screening Interval: _____ ft

Initial Depth to Water (DTW): 12.45 ft below TOC

DTW Prior to Sampling: 18.26 ft below TOC

Depth to Sample Intake (DTI): 19.87 ft below TOC

(should be center of screened interval, if possible)

Method of purging: _____ Peristaltic Pump

_____ Bladder Pump

Submersible Pump

_____ Bailer

Three Well Volumes: 21.14 Gallons

Total Volume Purged: 23.25 Gallons

Actual Purge Rate: 0.27 Gallons/min

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

Well Calculations	
3 Well Volumes:	
TD - DTW = Water Column Length	
<u>55.68 - 12.45 = 43.23</u>	
Water Column Length * Well Diameter Constant = Well Volume	
<u>43.23 * .163 = 7.05</u>	
3 * Well Volume = 3 Well Volumes	
3 * <u>7.05</u> =	
<u>21.14</u>	

PHYSIO-CHEMICAL PARAMETERS DURING PURGING										
Measurement Criterion	Initial Reading									Stabilization Criteria
Time		15:50	15:55	16:00						-
Breathing Zone FID Reading										
Well head FID Reading		-	-	-	-	-	-	-	-	-
pH		6.02	5.91	5.90						± 0.1
Temperature (°C)		18.81	18.79	18.83						-
Specific Conductivity (mS/cm)		0.446	0.396	0.396						± 5 %
Turbidity (NTU)		1.54	1.11	1.59						< 10
Depth to Water (ft)		18.52	18.36	18.26						-
Each Volume Purged (Gal)		19.25	1.0	2.0						-
Total Gallons Purged		19.25	21.25	23.25						-

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)
8th Annual Sampling Event (December 2013)

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): No odor, clear

Comments: NA

Sample(s) Collected By: CJ/AS

Analytical method to be written on COC: TAL Metals

PAH

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)
8th Annual Sampling Event (December 2013)

Date: 12/11/13 Purge Start Time: 1627 Time of Sample Collection: 1840

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

Wells securely locked? Yes

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

Length of Screening Interval: _____ ft

Initial Depth to Water (DTW): 11.94 ft below TOC

DTW Prior to Sampling: 35.03 ft below TOC

Depth to Sample Intake (DTI): 36.02 ft below TOC

(should be center of screened interval, if possible)

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

Three Well Volumes: 31.55 Gallons

Total Volume Purged: 32.25 Gallons

Actual Purge Rate: 0.242 Gallons/min

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

Well Calculations	
3 Well Volumes:	
TD - DTW = Water Column Length	
<u>76.45 - 11.94 = 64.51</u>	
Water Column Length * Well Diameter Constant = Well Volume	
<u>64.51 * .163 = 10.52</u>	
3 * Well Volume = 3 Well Volumes	
3 * <u>10.52</u> =	
<u>31.55</u>	

PHYSIO-CHEMICAL PARAMETERS DURING PURGING										
Measurement Criterion	Initial Reading									Stabilization Criteria
Time		1827	1832	1837						-
Breathing Zone FID Reading	0.0									
Well head FID Reading	0.0	-	-	-	-	-	-	-	-	-
pH		6.25	6.20	6.17						± 0.1
Temperature (°C)		18.88	18.95	19.07						-
Specific Conductivity (mS/cm)		0.585	0.588	0.591						± 5 %
Turbidity (NTU)		0.10	0.07	0.19						< 10
Depth to Water (ft)	11.94	34.43	34.37	35.03						-
Each Volume Purged (Gal)		30.25	1	1						-
Total Gallons Purged		30.25	31.25	32.25						-

GROUNDWATER SAMPLING DATA SHEET

Georgia World Congress Center (GWCC)

8th Annual Sampling Event (December 2013)

Duplicate Sample Collected? Yes (Sample ID of Duplicate): _____
(Sample Time of Duplicate): _____

MS/MSD Sample Collected? Yes

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

Comments: NA

Sample(s) Collected By: CS/AS

Analytical method to be written on COC: TAL Metals
PAH

ENCLOSURE 5

DECEMBER 2013 QUARTERLY INSPECTION PHOTOGRAPHIC LOG

(35 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 10, 2013 **Orientation:** Aerial

Photographer: Tim Bricker, 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 10, 2013 **Orientation:** Aerial

Photographer: Tim Bricker, 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 10, 2013 **Orientation:** Aerial

Photographer: Tim Bricker, 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 10, 2013 **Orientation:** Aerial

Photographer: Tim Bricker, 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 10, 2013 **Orientation:** Northeast

Photographer: Tim Bricker, 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 10, 2013 **Orientation:** Aerial

Photographer: Tim Bricker, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 7
TETRA TECH**

Subject: Monitoring well, MM-01.

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

Date: December 10, 2013 **Orientation:** Aerial

Photographer: Tim Bricker, 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 10, 2013 **Orientation:** Aerial

Photographer: Tim Bricker, 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 10, 2013 **Orientation:** Aerial

Photographer: Tim Bricker, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 10
TETRA TECH**

Subject: Dewatering well at the northwest perimeter of the property.

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

Date: December 10, 2013 **Orientation:** Aerial

Photographer: Tim Bricker, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 11
TETRA TECH**

Subject: Monitoring well, MM-02 at the corner of John Street and Northside Drive.

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

Date: December 10, 2013 **Orientation:** Aerial

Photographer: Tim Bricker, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 12
TETRA TECH

Subject: Monitoring well, MWC-3C at the corner of John Street and Northside Drive.

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

Date: December 10, 2013 **Orientation:** Aerial

Photographer: Tim Bricker, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 13
TETRA TECH**

Subject: Monitoring well, MWC-3B at the corner of John Street and Northside Drive.

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

Date: December 10, 2013 **Orientation:** Aerial

Photographer: Tim Bricker, 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 10, 2013 **Orientation:** Aerial

Photographer: Tim Bricker, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 15
TETRA TECH**

Subject: Monitoring well, MM-03.

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

Date: December 10, 2013 **Orientation:** Aerial

Photographer: Tim Bricker, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 16
TETRA TECH**

Subject: Monitoring well, MWC-1A at the corner of John Street and Gray Street.

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

Date: December 10, 2013 **Orientation:** Aerial

Photographer: Tim Bricker, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 17
TETRA TECH

Subject: Monitoring well, MWC-1B at the corner of John Street and Gray Street.

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

Date: December 10, 2013 **Orientation:** Aerial

Photographer: Tim Bricker, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 18
TETRA TECH**

Subject: Monitoring well, MWC-1C at the corner of John Street and Gray Street.

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

Date: December 10, 2013 **Orientation:** Aerial

Photographer: Tim Bricker, 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 10, 2013 **Orientation:** Aerial

Photographer: Tim Bricker, 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 10, 2013 **Orientation:** Aerial

Photographer: Tim Bricker, 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 10, 2013 **Orientation:** Southeast

Photographer: Tim Bricker, 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 10, 2013 **Orientation:** Aerial

Photographer: Tim Bricker, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 23
TETRA TECH

Subject: Stormwater 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 10, 2013 **Orientation:** East

Photographer: Tim Bricker, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 24
TETRA TECH**

Subject: Stormwater drains located at the northwest parking lot perimeter.

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

Date: December 10, 2013 **Orientation:** Northwest

Photographer: Tim Bricker, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 25
TETRA TECH**

Subject: Stormwater drain located at the northwest parking lot perimeter.

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

Date: December 10, 2013 **Orientation:** North

Photographer: Tim Bricker, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 26
TETRA TECH**

Subject: Location of stormwater drain on the west side of the parking lot perimeter. A cargo container is being stored in front of the drain.

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

Date: December 10, 2013 **Orientation:** West

Photographer: Tim Bricker, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 26A
TETRA TECH

Subject: Close-up view of the stormwater drain located behind the cargo container stored along the west side of the parking lot perimeter.

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

Date: December 10, 2013 **Orientation:** Southwest

Photographer: Tim Bricker, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 27
TETRA TECH

Subject: A small crack in the asphalt leading to the stormwater drains on the eastern side of the parking lot. Stormwater flows in this low point of the parking lot, which has caused minor staining. 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 10, 2013 **Orientation:** Northeast

Photographer: Tim Bricker, 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 ¼ inch wide and ¼ 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 10, 2013 **Orientation:** East

Photographer: Tim Bricker, 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 $\frac{1}{4}$ 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 10, 2013 **Orientation:** East

Photographer: Tim Bricker, 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. A standard pen is used to show the approximate width of the crack. 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 10, 2013 **Orientation:** Aerial

Photographer: Tim Bricker, 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 10, 2013 **Orientation:** East

Photographer: Tim Bricker, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 32
TETRA TECH

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

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

Date: December 10, 2013 **Orientation:** Northeast

Photographer: Tim Bricker, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 33
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 10, 2013 **Orientation:** West

Photographer: Tim Bricker, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 34
TETRA TECH**

Subject: Granite plaque on the northern perimeter of the property. This plaque was noted to be missing in previous inspections due to overgrown brush.

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

Date: December 10, 2013 **Orientation:** Aerial

Photographer: Tim Bricker, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 35
TETRA TECH

Subject: Restored asphalt patch for direct push location DP-30, located in the northwest part of the parking lot.

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

Date: December 10, 2013 **Orientation:** East

Photographer: Tim Bricker, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 36
TETRA TECH**

Subject: Restored asphalt patch for direct push location DP-31, located in the north part of the parking lot.

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

Date: December 10, 2013 **Orientation:** East

Photographer: Tim Bricker, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 37
TETRA TECH

Subject: Restored asphalt patch for direct push location DP-32, located in the northeast part of the parking lot.

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

Date: December 10, 2013 **Orientation:** East

Photographer: Tim Bricker, PE
Tetra Tech



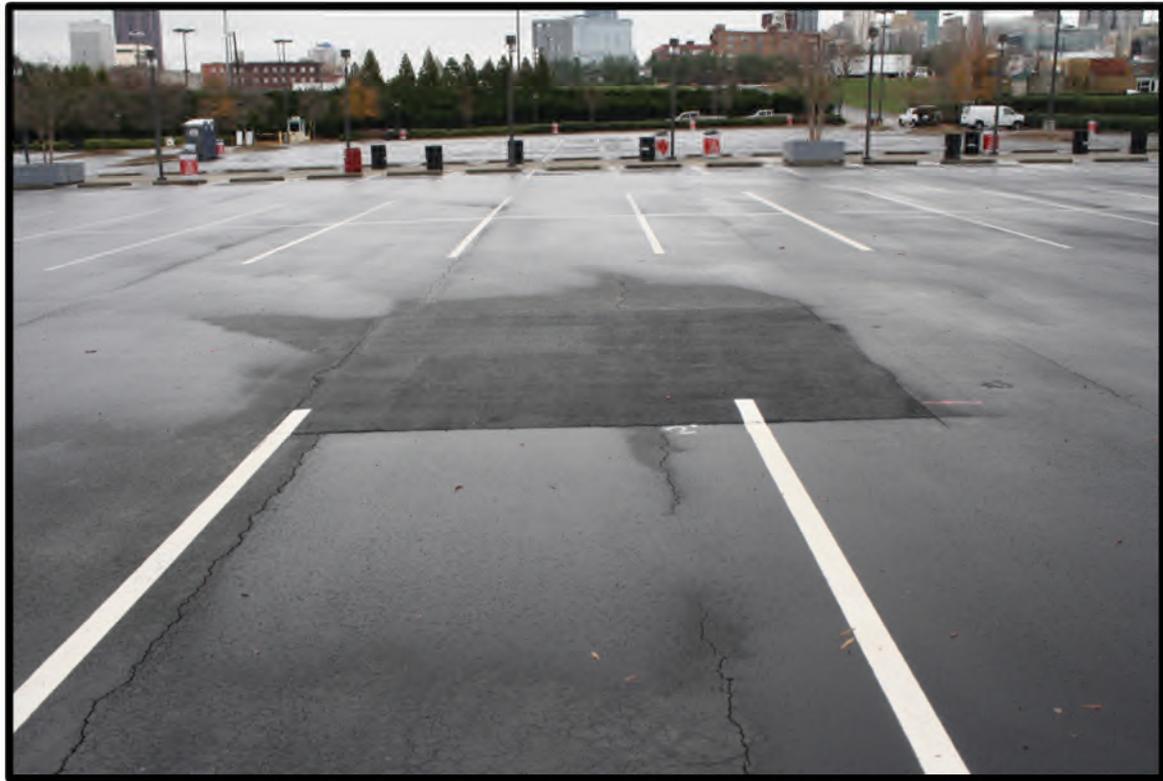
OFFICIAL PHOTOGRAPH NO. 38
TETRA TECH

Subject: Restored asphalt patch for direct push location DP-33, located in the southwest part of the parking lot.

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

Date: December 10, 2013 **Orientation:** East

Photographer: Tim Bricker, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 39
TETRA TECH**

Subject: Restored asphalt patch for direct push location DP-34, located in the south part of the parking lot.

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

Date: December 10, 2013 **Orientation:** East

Photographer: Tim Bricker, PE
Tetra Tech



OFFICIAL PHOTOGRAPH NO. 40
TETRA TECH

Subject: Restored asphalt patch for direct push location DP-35, located in the southeast part of the parking lot.

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

Date: December 10, 2013 **Orientation:** East

Photographer: Tim Bricker, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 41
TETRA TECH**

Subject: Cargo containers stored along the western side of the parking lot.

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

Date: December 10, 2013 **Orientation:** Southwest

Photographer: Tim Bricker, PE
Tetra Tech



**OFFICIAL PHOTOGRAPH NO. 42
TETRA TECH**

Subject: Crack in sidewalk with markings for natural gas line (yellow), located on the northern corner of the site by the intersection of John Street and Gray Street.

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

Date: December 10, 2013 **Orientation:** South-southwest

Photographer: Tim Bricker, PE
Tetra Tech

ENCLOSURE 6

CHAIN OF CUSTODY FORM

(Two Pages)

7979 GSRI Avenue, Baton Rouge, Louisiana 70820-7402
Phone 225.769.4900 • Fax 225.767.5717

Lab use only

Client Name

Client #

Workorder #

Due Date

Report to:

Client: Tetra Tech
Address: 1955 Evergreen Blvd
Bld 200 Ste 300
Duluth ga 30096
Contact: Jessica Vickers
Phone: 678-775-3080
Fax:

Bill to:

Client: Tetra Tech
Address:
Contact: Jessica Vickers
Phone:
Fax:

Analytical Requests & Method

Lab use only:

Custody Seal
used yes no
intact yes no

Temperature °C _____

P.O. Number _____ Project Name/Number GWCC / 103Z294001.001

Sampled By: Christopher Jones and Amber Skiles

Matrix ¹	Date	Time (2400)	CO	EP	G	rab	Sample Description	Preservatives	No Con-tainers
W	12/10/13	1410					MM-04	Ice/HNO ₃	6
		1605					MM-01		3
		1713					MM-02		
	12/14/13	1020					MWC-3C		
		1145					MWC-3B		
		1335					MM-03		
		1343					MM-03-Dup		
		1508					MWC-1A		
		1603					MWC-1B		
		1840					MWC-1C		
		1645					Field Blank		
		1650					Equipment Blank		

TAL Metals
PAH

Remarks:

MS/MSD

Lab ID

12/13
1, 13, 14
2
3
4
5
6
7
8
9
10
11
12

Client ID: 4449 - Tetra Tech
SDG: 213121327
Due Date: 12/20/13



Turn Around Time: 24-48 hrs. 3 days 1 week Standard Other

Relinquished by: (Signature) <u>[Signature]</u>	Received by: (Signature) <u>[Signature]</u>	Date: <u>12/12/13</u>	Time: <u>0850</u>
Relinquished by: (Signature) <u>[Signature]</u>	Received by: (Signature) <u>[Signature]</u>	Date: <u>12/13/13</u>	Time: <u>1105</u>
Relinquished by: (Signature) _____	Received by: (Signature) _____	Date: _____	Time: _____

Note: 7973 84574980
1.4
1.7
1.6
2.9
E20

WHITE: CLIENT FINAL REPORT — CANARY: LABORATORY — PINK: CLIENT



SAMPLE DELIVERY GROUP 213121327		CHECKLIST	YES	NO	NA
Client 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 Law , Brittany P.	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) 12/13/13	Were all containers received in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Were all VOA vials received with no 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: E20	Temp(°C)	None	None
7973 8457 4980		1.4		
		1.7		
		1.6		
		2.9		

NOTES	
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ENCLOSURE 7

DATA VALIDATION REPORTS

(Five Pages)

Site Name: Georgia World Congress Center (GWCC) – 8th 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 4, 2014

Report Number	Matrix	Sample ID
213121327	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, EQUIPMENT BLANK, and FIELD BLANK

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 8th annual sampling event conducted on December 10 and 11, 2013. The samples were analyzed under report number 213121327 by Gulf Coast Analytical Laboratories, Inc. (GCAL), Baton Rouge, Louisiana. GCAL analyzed all samples for PAHs by SW-846 Method 8310, and total TAL metals by SW-846 Methods 6010C 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 only qualifier used for this project’s data validation was “J+,” which is defined as “the analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.”

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
- Laboratory Duplicate Results
- Field Duplicate Results

GWCC – 8th Annual Groundwater Sampling Event
February 4, 2014

- 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 recovery for calcium (125 percent) was above the 80 to 120 percent acceptance criteria. Therefore, the calcium result for sample MM-04 was qualified as estimated (flagged “J+”).

Overall

The overall quality of this data package was acceptable. One calcium result 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
8th Annual Groundwater Sampling Event - GWCC

Parameter	Sample Identification						
	MM-01	MM-02	MM-03	MM-03-DUP	MM-04	MWC-1A	MWC-1B
PAHs (µg/L)							
1-Methylnaphthalene	<1.25	<1.05	1.39	<1.11	<1.18	<1.18	<1.11
2-Methylnaphthalene	<1.25	<1.05	<1.18	<1.11	<1.18	<1.18	<1.11
Acenaphthene	<1.25	<1.05	<1.18	<1.11	<1.18	<1.18	<1.11
Acenaphthylene	<1.25	<1.05	<1.18	<1.11	<1.18	<1.18	<1.11
Anthracene	<0.125	<0.105	<0.118	<0.111	<0.118	<0.118	<0.111
Benzo(a)anthracene	<0.125	<0.105	<0.118	<0.111	<0.118	<0.118	<0.111
Benzo(a)pyrene	<0.125	<0.105	<0.118	<0.111	<0.118	<0.118	<0.111
Benzo(b)fluoranthene	<0.188	<0.158	<0.176	<0.167	<0.176	<0.176	<0.167
Benzo(k)fluoranthene	<0.313	<0.263	<0.294	<0.278	<0.294	<0.294	<0.278
Benzo(g,h,i)perylene	<0.125	<0.105	<0.118	<0.111	<0.118	<0.118	<0.111
Chrysene	<0.125	<0.105	<0.118	<0.111	<0.118	<0.118	<0.111
Dibenzo(a,h)anthracene	<0.125	<0.105	<0.118	<0.111	<0.118	<0.118	<0.111
Fluoranthene	<0.313	<0.263	0.638	0.556	<0.294	0.675	<0.278
Fluorene	<0.625	<0.526	<0.588	<0.556	<0.588	<0.588	<0.556
Indeno(1,2,3-cd)pyrene	<0.313	<0.263	<0.294	<0.278	<0.294	<0.294	<0.278
Naphthalene	<0.625	<0.526	1.76	1.58	<0.538	<0.538	<0.556
Phenanthrene	<0.125	<0.105	0.430	0.414	<0.118	<0.118	<0.111
Pyrene	<0.313	<0.263	<0.294	<0.278	<0.294	0.406	<0.278
Metals, Total (mg/L)							
Aluminum	<0.20	<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	<0.060
Arsenic	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Barium	0.047	0.088	0.12	0.11	0.025	0.056	0.10
Beryllium	<0.0040	<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	<0.0050
Calcium	32.4	44.2	29.2	27.4	7.69 J+	29.6	51.6
Chromium	<0.010	<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	<0.010
Copper	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Iron	0.30	<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	<0.015
Magnesium	2.48	9.54	5.85	5.43	1.82	4.29	7.76
Manganese	0.038	0.24	0.30	0.31	<0.015	0.89	<0.015
Mercury	<0.00020	<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	<0.030
Nickel	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Potassium	10.0	7.51	2.74	2.64	1.42	1.88	3.96
Selenium	<0.040	<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	<0.010
Sodium	2.76	20.8	13.4	12.3	10.2	8.92	20.8
Thallium	<0.020	<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	<0.020
Zinc	0.93	<0.020	<0.020	<0.020	0.024	<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 high.
µg/L = Micrograms per liter
mg/L = Milligrams per liter
PAHs = Polycyclic aromatic hydrocarbons

Table 1
Validated Analytical Results
8th Annual Groundwater Sampling Event - GWCC

Parameter	Sample Identification				
	MWC-1C	MWC-3B	MWC-3C	EQUIPMENT BLANK	FIELD BLANK
PAHs (µg/L)					
1-Methylnaphthalene	<1.11	<1.18	<1.11	<1.25	<1.18
2-Methylnaphthalene	<1.11	<1.18	<1.11	<1.25	<1.18
Acenaphthene	<1.11	<1.18	<1.11	<1.25	<1.18
Acenaphthylene	<1.11	<1.18	<1.11	<1.25	<1.18
Anthracene	<0.111	<0.118	<0.111	<0.125	<0.118
Benzo(a)anthracene	<0.111	<0.118	<0.111	<0.125	<0.118
Benzo(a)pyrene	<0.111	<0.118	<0.111	<0.125	<0.118
Benzo(b)fluoranthene	<0.167	<0.176	<0.167	<0.188	<0.176
Benzo(k)fluoranthene	<0.278	<0.294	<0.278	<0.313	<0.294
Benzo(g,h,i)perylene	<0.111	<0.118	<0.111	<0.125	<0.118
Chrysene	<0.111	<0.118	<0.111	<0.125	<0.118
Dibenzo(a,h)anthracene	<0.111	<0.118	<0.111	<0.125	<0.118
Fluoranthene	<0.278	<0.294	<0.278	<0.313	<0.294
Fluorene	<0.556	<0.588	<0.556	<0.625	<0.588
Indeno(1,2,3-cd)pyrene	<0.278	<0.294	<0.278	<0.313	<0.294
Naphthalene	<0.556	<0.588	<0.556	<0.625	<0.588
Phenanthrene	<0.111	<0.118	<0.111	<0.125	<0.118
Pyrene	<0.278	<0.294	<0.278	<0.313	<0.294
Metals, Total (mg/L)					
Aluminum	<0.20	<0.20	<0.20	<0.20	<0.20
Antimony	<0.060	<0.060	<0.060	<0.060	<0.060
Arsenic	<0.020	<0.020	<0.020	<0.020	<0.020
Barium	0.12	0.12	0.061	<0.010	<0.010
Beryllium	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
Cadmium	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Calcium	75.3	80.8	75.8	<0.80	<0.80
Chromium	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt	<0.010	<0.010	<0.010	<0.010	<0.010
Copper	<0.020	<0.020	<0.020	<0.020	<0.020
Iron	<0.20	<0.20	<0.20	<0.20	<0.20
Lead	<0.015	<0.015	<0.015	<0.015	<0.015
Magnesium	14.5	24.4	20.7	<0.10	<0.10
Manganese	<0.015	2.60	0.75	<0.015	<0.015
Mercury	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum	<0.030	<0.030	<0.030	<0.030	<0.030
Nickel	<0.040	<0.040	<0.040	<0.040	<0.040
Potassium	6.22	8.18	5.09	<0.50	<0.50
Selenium	<0.040	<0.040	<0.040	<0.040	<0.040
Silver	<0.010	<0.010	<0.010	<0.010	<0.010
Sodium	22.9	26.1	29.7	<1.00	<1.00
Thallium	<0.020	<0.020	<0.020	<0.020	<0.020
Vanadium	<0.020	<0.020	<0.020	<0.020	<0.020
Zinc	<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 high.
µg/L = Micrograms per liter
mg/L = Milligrams per liter
PAHs = Polycyclic aromatic hydrocarbons

ATTACHMENT A

LABORATORY ANALYTICAL RESULTS

(47 Pages)

ANALYTICAL RESULTS

PERFORMED BY

GULF COAST ANALYTICAL LABORATORIES, INC.

7979 GSRI Avenue
Baton Rouge, LA 70820

Report Date 12/20/2013

GCAL Report 213121327



Deliver To Tetra Tech EMI
1955 Evergreen Blvd.
Bldg. 200, Ste. 300
Duluth, GA 30096
678-775-3104

Attn Jessica Vickers

Project GWCC

CASE NARRATIVE

Client: Tetra Tech **Report:** 213121327

Gulf Coast Analytical Laboratories received and analyzed the sample(s) listed on the sample cross-reference 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 6010C analysis for prep batch 521902, the MS and/or MSD recovery is outside the control limits for Calcium. The LCS recovery is within control limits. This indicates the analysis is in control and the sample is affected by matrix interference. A post-digestion spike was performed on the QC sample for this batch with a recovery of 90%.

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 Utilized in this Report

ND	Indicates the result was Not Detected at the specified RDL
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
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
RDL	Reporting Detection Limit
00:00	Reported as a time equivalent to 12:00 AM

Reporting Flags Utilized in this Report

J	Indicates the result is between the MDL and RDL
U	Indicates the compound was analyzed for but not detected
B	Indicates the analyte was detected in the associated Method Blank

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 standard 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 213121327

Report Sample Summary

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132701	MM-04	Water	12/10/2013 14:10	12/13/2013 11:05
21312132702	MM-01	Water	12/10/2013 16:05	12/13/2013 11:05
21312132703	MM-02	Water	12/10/2013 17:13	12/13/2013 11:05
21312132704	MWC-3C	Water	12/11/2013 10:20	12/13/2013 11:05
21312132705	MWC-3B	Water	12/11/2013 11:45	12/13/2013 11:05
21312132706	MM-03	Water	12/11/2013 13:35	12/13/2013 11:05
21312132707	MM-03-DUP	Water	12/11/2013 13:43	12/13/2013 11:05
21312132708	MWC-1A	Water	12/11/2013 15:08	12/13/2013 11:05
21312132709	MWC-1B	Water	12/11/2013 16:03	12/13/2013 11:05
21312132710	MWC-1C	Water	12/11/2013 18:40	12/13/2013 11:05
21312132711	FIELD BLANK	Water	12/11/2013 16:45	12/13/2013 11:05
21312132712	EQUIPMENT BLANK	Water	12/11/2013 16:50	12/13/2013 11:05
21312132713	MM-04 MS	Water	12/10/2013 14:10	12/13/2013 11:05
21312132714	MM-04 MSD	Water	12/10/2013 14:10	12/13/2013 11:05

Summary of Compounds Detected

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132701	MM-04	Water	12/10/2013 14:10	12/13/2013 11:05

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-39-3	Barium	0.025	0.010		mg/L
7439-95-4	Magnesium	1.82	0.20		mg/L
7440-09-7	Potassium	1.42	0.50		mg/L
7440-23-5	Sodium	10.2	1.00		mg/L
7440-66-6	Zinc	0.024	0.020		mg/L

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	7.69	0.80		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132702	MM-01	Water	12/10/2013 16:05	12/13/2013 11:05

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-39-3	Barium	0.047	0.010		mg/L
7439-89-6	Iron	0.30	0.20		mg/L
7439-95-4	Magnesium	2.48	0.20		mg/L
7439-96-5	Manganese	0.038	0.015		mg/L
7440-09-7	Potassium	10.0	0.50		mg/L
7440-23-5	Sodium	2.76	1.00		mg/L
7440-66-6	Zinc	0.93	0.020		mg/L

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	32.4	0.80		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132703	MM-02	Water	12/10/2013 17:13	12/13/2013 11:05

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-39-3	Barium	0.088	0.010		mg/L
7439-95-4	Magnesium	9.54	0.20		mg/L
7439-96-5	Manganese	0.24	0.015		mg/L
7440-09-7	Potassium	7.51	0.50		mg/L
7440-23-5	Sodium	20.8	1.00		mg/L

Summary of Compounds Detected (con't)

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132703	MM-02	Water	12/10/2013 17:13	12/13/2013 11:05

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	44.2	0.80		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132704	MWC-3C	Water	12/11/2013 10:20	12/13/2013 11:05

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-39-3	Barium	0.061	0.010		mg/L
7439-95-4	Magnesium	20.7	0.20		mg/L
7439-96-5	Manganese	0.75	0.015		mg/L
7440-09-7	Potassium	5.09	0.50		mg/L
7440-23-5	Sodium	29.7	1.00		mg/L

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	75.8	0.80		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132705	MWC-3B	Water	12/11/2013 11:45	12/13/2013 11:05

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-39-3	Barium	0.12	0.010		mg/L
7439-95-4	Magnesium	24.4	0.20		mg/L
7439-96-5	Manganese	2.60	0.015		mg/L
7440-09-7	Potassium	8.18	0.50		mg/L
7440-23-5	Sodium	26.1	1.00		mg/L

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	80.8	0.80		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132706	MM-03	Water	12/11/2013 13:35	12/13/2013 11:05

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-39-3	Barium	0.12	0.010		mg/L
7439-95-4	Magnesium	5.85	0.20		mg/L

Summary of Compounds Detected (con't)

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132706	MM-03	Water	12/11/2013 13:35	12/13/2013 11:05

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-96-5	Manganese	0.30	0.015		mg/L
7440-09-7	Potassium	2.74	0.50		mg/L
7440-23-5	Sodium	13.4	1.00		mg/L

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	29.2	0.80		mg/L

EPA 8310

CAS#	Parameter	Result	RDL	REG LIMIT	Units
90-12-0	1-Methylnaphthalene	1.39	1.18		ug/L
206-44-0	Fluoranthene	0.638	0.294		ug/L
91-20-3	Naphthalene	1.76	0.588		ug/L
85-01-8	Phenanthrene	0.430	0.118		ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132707	MM-03-DUP	Water	12/11/2013 13:43	12/13/2013 11:05

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-39-3	Barium	0.11	0.010		mg/L
7439-95-4	Magnesium	5.43	0.20		mg/L
7439-96-5	Manganese	0.31	0.015		mg/L
7440-09-7	Potassium	2.64	0.50		mg/L
7440-23-5	Sodium	12.3	1.00		mg/L

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	27.4	0.80		mg/L

EPA 8310

CAS#	Parameter	Result	RDL	REG LIMIT	Units
206-44-0	Fluoranthene	0.556	0.278		ug/L
91-20-3	Naphthalene	1.58	0.556		ug/L
85-01-8	Phenanthrene	0.414	0.111		ug/L

Summary of Compounds Detected (con't)

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132708	MWC-1A	Water	12/11/2013 15:08	12/13/2013 11:05

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-39-3	Barium	0.056	0.010		mg/L
7439-95-4	Magnesium	4.29	0.20		mg/L
7439-96-5	Manganese	0.89	0.015		mg/L
7440-09-7	Potassium	1.88	0.50		mg/L
7440-23-5	Sodium	8.92	1.00		mg/L

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	29.6	0.80		mg/L

EPA 8310

CAS#	Parameter	Result	RDL	REG LIMIT	Units
206-44-0	Fluoranthene	0.675	0.294		ug/L
129-00-0	Pyrene	0.406	0.294		ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132709	MWC-1B	Water	12/11/2013 16:03	12/13/2013 11:05

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-39-3	Barium	0.10	0.010		mg/L
7439-95-4	Magnesium	7.76	0.20		mg/L
7440-09-7	Potassium	3.96	0.50		mg/L
7440-23-5	Sodium	20.8	1.00		mg/L

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	51.6	0.80		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132710	MWC-1C	Water	12/11/2013 18:40	12/13/2013 11:05

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-39-3	Barium	0.12	0.010		mg/L
7439-95-4	Magnesium	14.5	0.20		mg/L
7440-09-7	Potassium	6.22	0.50		mg/L
7440-23-5	Sodium	22.9	1.00		mg/L

Summary of Compounds Detected (con't)

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132710	MWC-1C	Water	12/11/2013 18:40	12/13/2013 11:05

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	75.3	0.80		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132713	MM-04 MS	Water	12/10/2013 14:10	12/13/2013 11:05

EPA 7470A

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-97-6	Mercury	0.0047	0.00020		mg/L

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7429-90-5	Aluminum	4.73	0.20		mg/L
7440-36-0	Antimony	0.50	0.060		mg/L
7440-38-2	Arsenic	0.50	0.020		mg/L
7440-39-3	Barium	0.52	0.010		mg/L
7440-41-7	Beryllium	0.49	0.0040		mg/L
7440-43-9	Cadmium	0.49	0.0050		mg/L
7440-47-3	Chromium	0.49	0.010		mg/L
7440-48-4	Cobalt	0.49	0.010		mg/L
7440-50-8	Copper	0.49	0.020		mg/L
7439-89-6	Iron	4.83	0.20		mg/L
7439-92-1	Lead	0.50	0.015		mg/L
7439-95-4	Magnesium	6.39	0.20		mg/L
7439-96-5	Manganese	0.50	0.015		mg/L
7439-98-7	Molybdenum	0.49	0.030		mg/L
7440-02-0	Nickel	0.49	0.040		mg/L
7440-09-7	Potassium	10.9	0.50		mg/L
7782-49-2	Selenium	0.49	0.040		mg/L
7440-22-4	Silver	0.49	0.010		mg/L
7440-23-5	Sodium	28.5	1.00		mg/L
7440-28-0	Thallium	0.50	0.020		mg/L
7440-62-2	Vanadium	0.50	0.020		mg/L
7440-66-6	Zinc	0.50	0.020		mg/L

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	12.2	0.80		mg/L

EPA 8310

CAS#	Parameter	Result	RDL	REG LIMIT	Units
90-12-0	1-Methylnaphthalene	4.53	2.00		ug/L
91-57-6	2-Methylnaphthalene	4.46	2.00		ug/L

Summary of Compounds Detected (con't)

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132713	MM-04 MS	Water	12/10/2013 14:10	12/13/2013 11:05

EPA 8310

CAS#	Parameter	Result	RDL	REG LIMIT	Units
83-32-9	Acenaphthene	5.13	2.00		ug/L
208-96-8	Acenaphthylene	4.96	2.00		ug/L
120-12-7	Anthracene	7.18	0.200		ug/L
56-55-3	Benzo(a)anthracene	9.38	0.200		ug/L
50-32-8	Benzo(a)pyrene	7.78	0.200		ug/L
205-99-2	Benzo(b)fluoranthene	8.51	0.300		ug/L
191-24-2	Benzo(g,h,i)perylene	7.84	0.500		ug/L
207-08-9	Benzo(k)fluoranthene	7.97	0.200		ug/L
218-01-9	Chrysene	8.64	0.200		ug/L
53-70-3	Dibenz(a,h)anthracene	7.76	0.200		ug/L
206-44-0	Fluoranthene	8.19	0.500		ug/L
86-73-7	Fluorene	5.64	1.00		ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	7.86	0.500		ug/L
91-20-3	Naphthalene	3.90	1.00		ug/L
85-01-8	Phenanthrene	7.35	0.200		ug/L
129-00-0	Pyrene	8.20	0.500		ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132714	MM-04 MSD	Water	12/10/2013 14:10	12/13/2013 11:05

EPA 7470A

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-97-6	Mercury	0.0051	0.00020		mg/L

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7429-90-5	Aluminum	5.37	0.20		mg/L
7440-36-0	Antimony	0.57	0.060		mg/L
7440-38-2	Arsenic	0.56	0.020		mg/L
7440-39-3	Barium	0.58	0.010		mg/L
7440-41-7	Beryllium	0.55	0.0040		mg/L
7440-43-9	Cadmium	0.55	0.0050		mg/L
7440-47-3	Chromium	0.55	0.010		mg/L
7440-48-4	Cobalt	0.55	0.010		mg/L
7440-50-8	Copper	0.56	0.020		mg/L
7439-89-6	Iron	5.49	0.20		mg/L
7439-92-1	Lead	0.56	0.015		mg/L
7439-95-4	Magnesium	7.25	0.20		mg/L
7439-96-5	Manganese	0.57	0.015		mg/L
7439-98-7	Molybdenum	0.57	0.030		mg/L
7440-02-0	Nickel	0.55	0.040		mg/L
7440-09-7	Potassium	12.4	0.50		mg/L
7782-49-2	Selenium	0.56	0.040		mg/L
7440-22-4	Silver	0.55	0.010		mg/L
7440-23-5	Sodium	32.5	1.00		mg/L

Summary of Compounds Detected (con't)

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132714	MM-04 MSD	Water	12/10/2013 14:10	12/13/2013 11:05

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-28-0	Thallium	0.57	0.020		mg/L
7440-62-2	Vanadium	0.56	0.020		mg/L
7440-66-6	Zinc	0.56	0.020		mg/L

EPA 6010C

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	13.9	0.80		mg/L

EPA 8310

CAS#	Parameter	Result	RDL	REG LIMIT	Units
90-12-0	1-Methylnaphthalene	4.65	2.00		ug/L
91-57-6	2-Methylnaphthalene	4.56	2.00		ug/L
83-32-9	Acenaphthene	5.60	2.00		ug/L
208-96-8	Acenaphthylene	5.46	2.00		ug/L
120-12-7	Anthracene	7.56	0.200		ug/L
56-55-3	Benzo(a)anthracene	9.65	0.200		ug/L
50-32-8	Benzo(a)pyrene	7.96	0.200		ug/L
205-99-2	Benzo(b)fluoranthene	8.68	0.300		ug/L
191-24-2	Benzo(g,h,i)perylene	7.83	0.500		ug/L
207-08-9	Benzo(k)fluoranthene	8.12	0.200		ug/L
218-01-9	Chrysene	8.89	0.200		ug/L
53-70-3	Dibenz(a,h)anthracene	7.82	0.200		ug/L
206-44-0	Fluoranthene	8.02	0.500		ug/L
86-73-7	Fluorene	6.30	1.00		ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	7.89	0.500		ug/L
91-20-3	Naphthalene	3.74	1.00		ug/L
85-01-8	Phenanthrene	7.51	0.200		ug/L
129-00-0	Pyrene	8.34	0.500		ug/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132701	MM-04	Water	12/10/2013 14:10	12/13/2013 11:05

EPA 8310

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/17/2013 09:00	521926	EPA 8310	1	12/17/2013 17:46	HCP	522126

CAS#	Parameter	Result	RDL	REG LIMIT	Units
90-12-0	1-Methylnaphthalene	ND	1.18		ug/L
91-57-6	2-Methylnaphthalene	ND	1.18		ug/L
83-32-9	Acenaphthene	ND	1.18		ug/L
208-96-8	Acenaphthylene	ND	1.18		ug/L
120-12-7	Anthracene	ND	0.118		ug/L
56-55-3	Benzo(a)anthracene	ND	0.118		ug/L
50-32-8	Benzo(a)pyrene	ND	0.118		ug/L
205-99-2	Benzo(b)fluoranthene	ND	0.176		ug/L
191-24-2	Benzo(g,h,i)perylene	ND	0.294		ug/L
207-08-9	Benzo(k)fluoranthene	ND	0.118		ug/L
218-01-9	Chrysene	ND	0.118		ug/L
53-70-3	Dibenz(a,h)anthracene	ND	0.118		ug/L
206-44-0	Fluoranthene	ND	0.294		ug/L
86-73-7	Fluorene	ND	0.588		ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.294		ug/L
91-20-3	Naphthalene	ND	0.588		ug/L
85-01-8	Phenanthrene	ND	0.118		ug/L
129-00-0	Pyrene	ND	0.294		ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
92-94-4	p-Terphenyl	4.71	3.43	ug/L	73	40 - 115

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 10:00	521908	EPA 7470A	1	12/16/2013 11:11	CMB	522001

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-97-6	Mercury	ND	0.00020		mg/L

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 18:34	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	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	0.025	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

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132701	MM-04	Water	12/10/2013 14:10	12/13/2013 11:05

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 18:34	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-95-4	Magnesium	1.82	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	1.42	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	10.2	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	0.024	0.020		mg/L

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/17/2013 19:07	CMB	522127

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	7.69	0.80		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132702	MM-01	Water	12/10/2013 16:05	12/13/2013 11:05

EPA 8310

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/17/2013 09:00	521926	EPA 8310	1	12/17/2013 18:05	HCP	522126

CAS#	Parameter	Result	RDL	REG LIMIT	Units
90-12-0	1-Methylnaphthalene	ND	1.25		ug/L
91-57-6	2-Methylnaphthalene	ND	1.25		ug/L
83-32-9	Acenaphthene	ND	1.25		ug/L
208-96-8	Acenaphthylene	ND	1.25		ug/L
120-12-7	Anthracene	ND	0.125		ug/L
56-55-3	Benzo(a)anthracene	ND	0.125		ug/L
50-32-8	Benzo(a)pyrene	ND	0.125		ug/L
205-99-2	Benzo(b)fluoranthene	ND	0.188		ug/L
191-24-2	Benzo(g,h,i)perylene	ND	0.313		ug/L
207-08-9	Benzo(k)fluoranthene	ND	0.125		ug/L
218-01-9	Chrysene	ND	0.125		ug/L
53-70-3	Dibenz(a,h)anthracene	ND	0.125		ug/L
206-44-0	Fluoranthene	ND	0.313		ug/L
86-73-7	Fluorene	ND	0.625		ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.313		ug/L
91-20-3	Naphthalene	ND	0.625		ug/L
85-01-8	Phenanthrene	ND	0.125		ug/L
129-00-0	Pyrene	ND	0.313		ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
92-94-4	p-Terphenyl	5	3.78	ug/L	76	40 - 115

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 10:00	521908	EPA 7470A	1	12/16/2013 11:21	CMB	522001

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-97-6	Mercury	ND	0.00020		mg/L

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 19:05	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	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	0.047	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	0.30	0.20		mg/L
7439-92-1	Lead	ND	0.015		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132702	MM-01	Water	12/10/2013 16:05	12/13/2013 11:05

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 19:05	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-95-4	Magnesium	2.48	0.20		mg/L
7439-96-5	Manganese	0.038	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	10.0	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	2.76	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	0.93	0.020		mg/L

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/17/2013 19:39	CMB	522127

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	32.4	0.80		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132703	MM-02	Water	12/10/2013 17:13	12/13/2013 11:05

EPA 8310

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/17/2013 09:00	521926	EPA 8310	1	12/17/2013 18:24	HCP	522126

CAS#	Parameter	Result	RDL	REG LIMIT	Units
90-12-0	1-Methylnaphthalene	ND	1.05		ug/L
91-57-6	2-Methylnaphthalene	ND	1.05		ug/L
83-32-9	Acenaphthene	ND	1.05		ug/L
208-96-8	Acenaphthylene	ND	1.05		ug/L
120-12-7	Anthracene	ND	0.105		ug/L
56-55-3	Benzo(a)anthracene	ND	0.105		ug/L
50-32-8	Benzo(a)pyrene	ND	0.105		ug/L
205-99-2	Benzo(b)fluoranthene	ND	0.158		ug/L
191-24-2	Benzo(g,h,i)perylene	ND	0.263		ug/L
207-08-9	Benzo(k)fluoranthene	ND	0.105		ug/L
218-01-9	Chrysene	ND	0.105		ug/L
53-70-3	Dibenz(a,h)anthracene	ND	0.105		ug/L
206-44-0	Fluoranthene	ND	0.263		ug/L
86-73-7	Fluorene	ND	0.526		ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.263		ug/L
91-20-3	Naphthalene	ND	0.526		ug/L
85-01-8	Phenanthrene	ND	0.105		ug/L
129-00-0	Pyrene	ND	0.263		ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
92-94-4	p-Terphenyl	4.21	3.08	ug/L	73	40 - 115

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 10:00	521908	EPA 7470A	1	12/16/2013 11:23	CMB	522001

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-97-6	Mercury	ND	0.00020		mg/L

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 19:12	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	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	0.088	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

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132703	MM-02	Water	12/10/2013 17:13	12/13/2013 11:05

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 19:12	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-95-4	Magnesium	9.54	0.20		mg/L
7439-96-5	Manganese	0.24	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	7.51	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	20.8	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 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/17/2013 19:45	CMB	522127

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	44.2	0.80		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132704	MWC-3C	Water	12/11/2013 10:20	12/13/2013 11:05

EPA 8310

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/17/2013 09:00	521926	EPA 8310	1	12/17/2013 18:43	HCP	522126

CAS#	Parameter	Result	RDL	REG LIMIT	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	ND	0.111		ug/L
129-00-0	Pyrene	ND	0.278		ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
92-94-4	p-Terphenyl	4.44	3.28	ug/L	74	40 - 115

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 10:00	521908	EPA 7470A	1	12/16/2013 11:25	CMB	522001

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-97-6	Mercury	ND	0.00020		mg/L

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 19:18	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	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
7440-47-3	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

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132704	MWC-3C	Water	12/11/2013 10:20	12/13/2013 11:05

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 19:18	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-95-4	Magnesium	20.7	0.20		mg/L
7439-96-5	Manganese	0.75	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	5.09	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	29.7	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 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/17/2013 19:52	CMB	522127

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	75.8	0.80		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132705	MWC-3B	Water	12/11/2013 11:45	12/13/2013 11:05

EPA 8310

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/17/2013 09:00	521926	EPA 8310	1	12/17/2013 19:02	HCP	522126

CAS#	Parameter	Result	RDL	REG LIMIT	Units
90-12-0	1-Methylnaphthalene	ND	1.18		ug/L
91-57-6	2-Methylnaphthalene	ND	1.18		ug/L
83-32-9	Acenaphthene	ND	1.18		ug/L
208-96-8	Acenaphthylene	ND	1.18		ug/L
120-12-7	Anthracene	ND	0.118		ug/L
56-55-3	Benzo(a)anthracene	ND	0.118		ug/L
50-32-8	Benzo(a)pyrene	ND	0.118		ug/L
205-99-2	Benzo(b)fluoranthene	ND	0.176		ug/L
191-24-2	Benzo(g,h,i)perylene	ND	0.294		ug/L
207-08-9	Benzo(k)fluoranthene	ND	0.118		ug/L
218-01-9	Chrysene	ND	0.118		ug/L
53-70-3	Dibenz(a,h)anthracene	ND	0.118		ug/L
206-44-0	Fluoranthene	ND	0.294		ug/L
86-73-7	Fluorene	ND	0.588		ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.294		ug/L
91-20-3	Naphthalene	ND	0.588		ug/L
85-01-8	Phenanthrene	ND	0.118		ug/L
129-00-0	Pyrene	ND	0.294		ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
92-94-4	p-Terphenyl	4.71	3.74	ug/L	79	40 - 115

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 10:00	521908	EPA 7470A	1	12/16/2013 11:27	CMB	522001

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-97-6	Mercury	ND	0.00020		mg/L

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 19:37	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	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	0.12	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

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132705	MWC-3B	Water	12/11/2013 11:45	12/13/2013 11:05

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 19:37	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-95-4	Magnesium	24.4	0.20		mg/L
7439-96-5	Manganese	2.60	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	8.18	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	26.1	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 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/17/2013 20:11	CMB	522127

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	80.8	0.80		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132706	MM-03	Water	12/11/2013 13:35	12/13/2013 11:05

EPA 8310

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/17/2013 09:00	521926	EPA 8310	1	12/17/2013 19:20	HCP	522126

CAS#	Parameter	Result	RDL	REG LIMIT	Units
90-12-0	1-Methylnaphthalene	1.39	1.18		ug/L
91-57-6	2-Methylnaphthalene	ND	1.18		ug/L
83-32-9	Acenaphthene	ND	1.18		ug/L
208-96-8	Acenaphthylene	ND	1.18		ug/L
120-12-7	Anthracene	ND	0.118		ug/L
56-55-3	Benzo(a)anthracene	ND	0.118		ug/L
50-32-8	Benzo(a)pyrene	ND	0.118		ug/L
205-99-2	Benzo(b)fluoranthene	ND	0.176		ug/L
191-24-2	Benzo(g,h,i)perylene	ND	0.294		ug/L
207-08-9	Benzo(k)fluoranthene	ND	0.118		ug/L
218-01-9	Chrysene	ND	0.118		ug/L
53-70-3	Dibenz(a,h)anthracene	ND	0.118		ug/L
206-44-0	Fluoranthene	0.638	0.294		ug/L
86-73-7	Fluorene	ND	0.588		ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.294		ug/L
91-20-3	Naphthalene	1.76	0.588		ug/L
85-01-8	Phenanthrene	0.430	0.118		ug/L
129-00-0	Pyrene	ND	0.294		ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
92-94-4	p-Terphenyl	4.71	4.45	ug/L	95	40 - 115

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 10:00	521908	EPA 7470A	1	12/16/2013 11:32	CMB	522001

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-97-6	Mercury	ND	0.00020		mg/L

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 19:44	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	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	0.12	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

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132706	MM-03	Water	12/11/2013 13:35	12/13/2013 11:05

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 19:44	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-95-4	Magnesium	5.85	0.20		mg/L
7439-96-5	Manganese	0.30	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	2.74	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	13.4	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 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/17/2013 20:17	CMB	522127

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	29.2	0.80		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132707	MM-03-DUP	Water	12/11/2013 13:43	12/13/2013 11:05

EPA 8310

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/17/2013 09:00	521926	EPA 8310	1	12/18/2013 09:57	HCP	522211

CAS#	Parameter	Result	RDL	REG LIMIT	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	0.556	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	1.58	0.556		ug/L
85-01-8	Phenanthrene	0.414	0.111		ug/L
129-00-0	Pyrene	ND	0.278		ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
92-94-4	p-Terphenyl	4.44	4.23	ug/L	95	40 - 115

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 10:00	521908	EPA 7470A	1	12/16/2013 11:34	CMB	522001

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-97-6	Mercury	ND	0.00020		mg/L

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 19:50	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	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	0.11	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

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132707	MM-03-DUP	Water	12/11/2013 13:43	12/13/2013 11:05

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 19:50	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-95-4	Magnesium	5.43	0.20		mg/L
7439-96-5	Manganese	0.31	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	2.64	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	12.3	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 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/17/2013 20:24	CMB	522127

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	27.4	0.80		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132708	MWC-1A	Water	12/11/2013 15:08	12/13/2013 11:05

EPA 8310

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/17/2013 09:00	521926	EPA 8310	1	12/18/2013 10:16	HCP	522211

CAS#	Parameter	Result	RDL	REG LIMIT	Units	
90-12-0	1-Methylnaphthalene	ND	1.18		ug/L	
91-57-6	2-Methylnaphthalene	ND	1.18		ug/L	
83-32-9	Acenaphthene	ND	1.18		ug/L	
208-96-8	Acenaphthylene	ND	1.18		ug/L	
120-12-7	Anthracene	ND	0.118		ug/L	
56-55-3	Benzo(a)anthracene	ND	0.118		ug/L	
50-32-8	Benzo(a)pyrene	ND	0.118		ug/L	
205-99-2	Benzo(b)fluoranthene	ND	0.176		ug/L	
191-24-2	Benzo(g,h,i)perylene	ND	0.294		ug/L	
207-08-9	Benzo(k)fluoranthene	ND	0.118		ug/L	
218-01-9	Chrysene	ND	0.118		ug/L	
53-70-3	Dibenz(a,h)anthracene	ND	0.118		ug/L	
206-44-0	Fluoranthene	0.675	0.294		ug/L	
86-73-7	Fluorene	ND	0.588		ug/L	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.294		ug/L	
91-20-3	Naphthalene	ND	0.588		ug/L	
85-01-8	Phenanthrene	ND	0.118		ug/L	
129-00-0	Pyrene	0.406	0.294		ug/L	
CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
92-94-4	p-Terphenyl	4.71	3.5	ug/L	74	40 - 115

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 10:00	521908	EPA 7470A	1	12/16/2013 11:36	CMB	522001

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-97-6	Mercury	ND	0.00020		mg/L

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 19:56	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	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	0.056	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

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132708	MWC-1A	Water	12/11/2013 15:08	12/13/2013 11:05

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 19:56	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-95-4	Magnesium	4.29	0.20		mg/L
7439-96-5	Manganese	0.89	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	1.88	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	8.92	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 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/17/2013 20:30	CMB	522127

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	29.6	0.80		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132709	MWC-1B	Water	12/11/2013 16:03	12/13/2013 11:05

EPA 8310

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/17/2013 09:00	521926	EPA 8310	1	12/18/2013 10:34	HCP	522211

CAS#	Parameter	Result	RDL	REG LIMIT	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	ND	0.111		ug/L
129-00-0	Pyrene	ND	0.278		ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
92-94-4	p-Terphenyl	4.44	3.51	ug/L	79	40 - 115

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 10:00	521908	EPA 7470A	1	12/16/2013 11:37	CMB	522001

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-97-6	Mercury	ND	0.00020		mg/L

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 20:03	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	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
7440-47-3	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

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132709	MWC-1B	Water	12/11/2013 16:03	12/13/2013 11:05

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 20:03	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-95-4	Magnesium	7.76	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	3.96	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	20.8	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 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/17/2013 20:37	CMB	522127

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	51.6	0.80		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132710	MWC-1C	Water	12/11/2013 18:40	12/13/2013 11:05

EPA 8310

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/17/2013 09:00	521926	EPA 8310	1	12/18/2013 10:53	HCP	522211

CAS#	Parameter	Result	RDL	REG LIMIT	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	ND	0.111		ug/L
129-00-0	Pyrene	ND	0.278		ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
92-94-4	p-Terphenyl	4.44	3.49	ug/L	79	40 - 115

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 10:00	521908	EPA 7470A	1	12/16/2013 11:39	CMB	522001

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-97-6	Mercury	ND	0.00020		mg/L

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 20:09	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	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	0.12	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

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132710	MWC-1C	Water	12/11/2013 18:40	12/13/2013 11:05

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 20:09	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-95-4	Magnesium	14.5	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	6.22	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	22.9	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 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/17/2013 20:43	CMB	522127

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	75.3	0.80		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132711	FIELD BLANK	Water	12/11/2013 16:45	12/13/2013 11:05

EPA 8310

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/17/2013 09:00	521926	EPA 8310	1	12/18/2013 11:12	HCP	522211

CAS#	Parameter	Result	RDL	REG LIMIT	Units
90-12-0	1-Methylnaphthalene	ND	1.18		ug/L
91-57-6	2-Methylnaphthalene	ND	1.18		ug/L
83-32-9	Acenaphthene	ND	1.18		ug/L
208-96-8	Acenaphthylene	ND	1.18		ug/L
120-12-7	Anthracene	ND	0.118		ug/L
56-55-3	Benzo(a)anthracene	ND	0.118		ug/L
50-32-8	Benzo(a)pyrene	ND	0.118		ug/L
205-99-2	Benzo(b)fluoranthene	ND	0.176		ug/L
191-24-2	Benzo(g,h,i)perylene	ND	0.294		ug/L
207-08-9	Benzo(k)fluoranthene	ND	0.118		ug/L
218-01-9	Chrysene	ND	0.118		ug/L
53-70-3	Dibenz(a,h)anthracene	ND	0.118		ug/L
206-44-0	Fluoranthene	ND	0.294		ug/L
86-73-7	Fluorene	ND	0.588		ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.294		ug/L
91-20-3	Naphthalene	ND	0.588		ug/L
85-01-8	Phenanthrene	ND	0.118		ug/L
129-00-0	Pyrene	ND	0.294		ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
92-94-4	p-Terphenyl	4.71	3.38	ug/L	72	40 - 115

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 10:00	521908	EPA 7470A	1	12/16/2013 11:41	CMB	522001

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-97-6	Mercury	ND	0.00020		mg/L

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 20:16	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	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
7440-47-3	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

GCAL ID 21312132711	Client ID FIELD BLANK	Matrix Water	Collect Date/Time 12/11/2013 16:45	Receive Date/Time 12/13/2013 11:05
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EPA 6010C

Prep Date 12/15/2013 08:05	Prep Batch 521902	Prep Method EPA 3010A	Dilution 1	Analyzed 12/16/2013 20:16	By CMB	Analytical Batch 522040
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CAS#	Parameter	Result	RDL	REG LIMIT	Units
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 6010C

Prep Date 12/15/2013 08:05	Prep Batch 521902	Prep Method EPA 3010A	Dilution 1	Analyzed 12/17/2013 20:49	By CMB	Analytical Batch 522127
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CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	ND	0.80		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132712	EQUIPMENT BLANK	Water	12/11/2013 16:50	12/13/2013 11:05

EPA 8310

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/17/2013 09:00	521926	EPA 8310	1	12/18/2013 11:30	HCP	522211

CAS#	Parameter	Result	RDL	REG LIMIT	Units
90-12-0	1-Methylnaphthalene	ND	1.25		ug/L
91-57-6	2-Methylnaphthalene	ND	1.25		ug/L
83-32-9	Acenaphthene	ND	1.25		ug/L
208-96-8	Acenaphthylene	ND	1.25		ug/L
120-12-7	Anthracene	ND	0.125		ug/L
56-55-3	Benzo(a)anthracene	ND	0.125		ug/L
50-32-8	Benzo(a)pyrene	ND	0.125		ug/L
205-99-2	Benzo(b)fluoranthene	ND	0.188		ug/L
191-24-2	Benzo(g,h,i)perylene	ND	0.313		ug/L
207-08-9	Benzo(k)fluoranthene	ND	0.125		ug/L
218-01-9	Chrysene	ND	0.125		ug/L
53-70-3	Dibenz(a,h)anthracene	ND	0.125		ug/L
206-44-0	Fluoranthene	ND	0.313		ug/L
86-73-7	Fluorene	ND	0.625		ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.313		ug/L
91-20-3	Naphthalene	ND	0.625		ug/L
85-01-8	Phenanthrene	ND	0.125		ug/L
129-00-0	Pyrene	ND	0.313		ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
92-94-4	p-Terphenyl	5	3.52	ug/L	70	40 - 115

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 10:00	521908	EPA 7470A	1	12/16/2013 11:43	CMB	522001

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-97-6	Mercury	ND	0.00020		mg/L

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 20:22	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	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
7440-47-3	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

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132712	EQUIPMENT BLANK	Water	12/11/2013 16:50	12/13/2013 11:05

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 20:22	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	Units
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 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/17/2013 20:56	CMB	522127

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	ND	0.80		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132713	MM-04 MS	Water	12/10/2013 14:10	12/13/2013 11:05

EPA 8310

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/17/2013 09:00	521926	EPA 8310	1	12/18/2013 11:49	HCP	522211

CAS#	Parameter	Result	RDL	REG LIMIT	Units
90-12-0	1-Methylnaphthalene	4.53	2.00		ug/L
91-57-6	2-Methylnaphthalene	4.46	2.00		ug/L
83-32-9	Acenaphthene	5.13	2.00		ug/L
208-96-8	Acenaphthylene	4.96	2.00		ug/L
120-12-7	Anthracene	7.18	0.200		ug/L
56-55-3	Benzo(a)anthracene	9.38	0.200		ug/L
50-32-8	Benzo(a)pyrene	7.78	0.200		ug/L
205-99-2	Benzo(b)fluoranthene	8.51	0.300		ug/L
191-24-2	Benzo(g,h,i)perylene	7.84	0.500		ug/L
207-08-9	Benzo(k)fluoranthene	7.97	0.200		ug/L
218-01-9	Chrysene	8.64	0.200		ug/L
53-70-3	Dibenz(a,h)anthracene	7.76	0.200		ug/L
206-44-0	Fluoranthene	8.19	0.500		ug/L
86-73-7	Fluorene	5.64	1.00		ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	7.86	0.500		ug/L
91-20-3	Naphthalene	3.90	1.00		ug/L
85-01-8	Phenanthrene	7.35	0.200		ug/L
129-00-0	Pyrene	8.20	0.500		ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
92-94-4	p-Terphenyl	8	6.09	ug/L	76	40 - 115

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 10:00	521908	EPA 7470A	1	12/16/2013 11:13	CMB	522001

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-97-6	Mercury	0.0047	0.00020		mg/L

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 18:40	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7429-90-5	Aluminum	4.73	0.20		mg/L
7440-36-0	Antimony	0.50	0.060		mg/L
7440-38-2	Arsenic	0.50	0.020		mg/L
7440-39-3	Barium	0.52	0.010		mg/L
7440-41-7	Beryllium	0.49	0.0040		mg/L
7440-43-9	Cadmium	0.49	0.0050		mg/L
7440-47-3	Chromium	0.49	0.010		mg/L
7440-48-4	Cobalt	0.49	0.010		mg/L
7440-50-8	Copper	0.49	0.020		mg/L
7439-89-6	Iron	4.83	0.20		mg/L
7439-92-1	Lead	0.50	0.015		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132713	MM-04 MS	Water	12/10/2013 14:10	12/13/2013 11:05

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 18:40	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-95-4	Magnesium	6.39	0.20		mg/L
7439-96-5	Manganese	0.50	0.015		mg/L
7439-98-7	Molybdenum	0.49	0.030		mg/L
7440-02-0	Nickel	0.49	0.040		mg/L
7440-09-7	Potassium	10.9	0.50		mg/L
7782-49-2	Selenium	0.49	0.040		mg/L
7440-22-4	Silver	0.49	0.010		mg/L
7440-23-5	Sodium	28.5	1.00		mg/L
7440-28-0	Thallium	0.50	0.020		mg/L
7440-62-2	Vanadium	0.50	0.020		mg/L
7440-66-6	Zinc	0.50	0.020		mg/L

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/17/2013 19:13	CMB	522127

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	12.2	0.80		mg/L

GCAL ID	Client ID	Matrix	Collect Date/Time	Receive Date/Time
21312132714	MM-04 MSD	Water	12/10/2013 14:10	12/13/2013 11:05

EPA 8310

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/17/2013 09:00	521926	EPA 8310	1	12/18/2013 12:08	HCP	522211

CAS#	Parameter	Result	RDL	REG LIMIT	Units
90-12-0	1-Methylnaphthalene	4.65	2.00		ug/L
91-57-6	2-Methylnaphthalene	4.56	2.00		ug/L
83-32-9	Acenaphthene	5.60	2.00		ug/L
208-96-8	Acenaphthylene	5.46	2.00		ug/L
120-12-7	Anthracene	7.56	0.200		ug/L
56-55-3	Benzo(a)anthracene	9.65	0.200		ug/L
50-32-8	Benzo(a)pyrene	7.96	0.200		ug/L
205-99-2	Benzo(b)fluoranthene	8.68	0.300		ug/L
191-24-2	Benzo(g,h,i)perylene	7.83	0.500		ug/L
207-08-9	Benzo(k)fluoranthene	8.12	0.200		ug/L
218-01-9	Chrysene	8.89	0.200		ug/L
53-70-3	Dibenz(a,h)anthracene	7.82	0.200		ug/L
206-44-0	Fluoranthene	8.02	0.500		ug/L
86-73-7	Fluorene	6.30	1.00		ug/L
193-39-5	Indeno(1,2,3-cd)pyrene	7.89	0.500		ug/L
91-20-3	Naphthalene	3.74	1.00		ug/L
85-01-8	Phenanthrene	7.51	0.200		ug/L
129-00-0	Pyrene	8.34	0.500		ug/L

CAS#	Surrogate	Conc. Spiked	Conc. Rec	Units	% Recovery	Rec Limits
92-94-4	p-Terphenyl	8	6.34	ug/L	79	40 - 115

EPA 7470A

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 10:00	521908	EPA 7470A	1	12/16/2013 11:14	CMB	522001

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-97-6	Mercury	0.0051	0.00020		mg/L

EPA 6010C

Prep Date	Prep Batch	Prep Method	Dilution	Analyzed	By	Analytical Batch
12/15/2013 08:05	521902	EPA 3010A	1	12/16/2013 18:46	CMB	522040

CAS#	Parameter	Result	RDL	REG LIMIT	Units
7429-90-5	Aluminum	5.37	0.20		mg/L
7440-36-0	Antimony	0.57	0.060		mg/L
7440-38-2	Arsenic	0.56	0.020		mg/L
7440-39-3	Barium	0.58	0.010		mg/L
7440-41-7	Beryllium	0.55	0.0040		mg/L
7440-43-9	Cadmium	0.55	0.0050		mg/L
7440-47-3	Chromium	0.55	0.010		mg/L
7440-48-4	Cobalt	0.55	0.010		mg/L
7440-50-8	Copper	0.56	0.020		mg/L
7439-89-6	Iron	5.49	0.20		mg/L
7439-92-1	Lead	0.56	0.015		mg/L

GCAL ID 21312132714	Client ID MM-04 MSD	Matrix Water	Collect Date/Time 12/10/2013 14:10	Receive Date/Time 12/13/2013 11:05
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EPA 6010C

Prep Date 12/15/2013 08:05	Prep Batch 521902	Prep Method EPA 3010A	Dilution 1	Analyzed 12/16/2013 18:46	By CMB	Analytical Batch 522040
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CAS#	Parameter	Result	RDL	REG LIMIT	Units
7439-95-4	Magnesium	7.25	0.20		mg/L
7439-96-5	Manganese	0.57	0.015		mg/L
7439-98-7	Molybdenum	0.57	0.030		mg/L
7440-02-0	Nickel	0.55	0.040		mg/L
7440-09-7	Potassium	12.4	0.50		mg/L
7782-49-2	Selenium	0.56	0.040		mg/L
7440-22-4	Silver	0.55	0.010		mg/L
7440-23-5	Sodium	32.5	1.00		mg/L
7440-28-0	Thallium	0.57	0.020		mg/L
7440-62-2	Vanadium	0.56	0.020		mg/L
7440-66-6	Zinc	0.56	0.020		mg/L

EPA 6010C

Prep Date 12/15/2013 08:05	Prep Batch 521902	Prep Method EPA 3010A	Dilution 1	Analyzed 12/17/2013 19:20	By CMB	Analytical Batch 522127
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CAS#	Parameter	Result	RDL	REG LIMIT	Units
7440-70-2	Calcium	13.9	0.80		mg/L

General Chromatography Quality Control Summary

Analytical Batch 522126 Prep Batch 521926 Prep Method EPA 8310		Client ID MB521926 GCAL ID 1265822 Sample Type Method Blank Prep Date 12/17/2013 09:00 Analytical Date 12/17/2013 16:31 Matrix Water		LCS521926 1265823 LCS 12/17/2013 09:00 12/17/2013 16:50 Water			LCSD521926 1265824 LCSD 12/17/2013 09:00 12/17/2013 17:09 Water					
EPA 8310		Units	ug/L	Spike	Result	% R	Control	Result	% R	RPD	RPD	Limit
		Result	RDL	Added			Limits % R					
83-32-9	Acenaphthene	ND	1.00	5.00	3.52	70	23 - 153	3.05	61	14	14	30
208-96-8	Acenaphthylene	ND	1.00	5.00	3.18	64	50 - 125	2.86	57	11	11	30
120-12-7	Anthracene	ND	0.100	5.00	4.06	81	54 - 124	3.92	78	4	4	30
56-55-3	Benzo(a)anthracene	ND	0.100	5.00	4.99	100	55 - 130	4.89	98	2	2	30
205-99-2	Benzo(b)fluoranthene	ND	0.150	5.00	4.67	93	58 - 129	4.47	89	4	4	30
207-08-9	Benzo(k)fluoranthene	ND	0.100	5.00	4.54	91	54 - 140	4.35	87	4	4	30
191-24-2	Benzo(g,h,i)perylene	ND	0.250	5.00	4.53	91	51 - 120	4.58	92	1	1	30
50-32-8	Benzo(a)pyrene	ND	0.100	5.00	4.38	88	59 - 120	5.15	103	16	16	30
218-01-9	Chrysene	ND	0.100	5.00	4.60	92	61 - 133	4.56	91	1	1	30
53-70-3	Dibenz(a,h)anthracene	ND	0.100	5.00	4.60	92	47 - 120	5.27	105	14	14	30
206-44-0	Fluoranthene	ND	0.250	5.00	4.28	86	57 - 125	4.41	88	3	3	30
86-73-7	Fluorene	ND	0.500	5.00	3.44	69	34 - 129	3.17	63	8	8	30
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.250	5.00	4.57	91	58 - 120	4.47	89	2	2	30
91-20-3	Naphthalene	ND	0.500	5.00	3.01	60	28 - 155	2.84	57	6	6	30
85-01-8	Phenanthrene	ND	0.100	5.00	3.98	80	55 - 123	4.00	80	1	1	30
129-00-0	Pyrene	ND	0.250	5.00	4.26	85	60 - 137	4.33	87	2	2	30
90-12-0	1-Methylnaphthalene	ND	1.00	5.00	3.51	70	44 - 130	3.03	61	15	15	30
91-57-6	2-Methylnaphthalene	ND	1.00	5.00	3.41	68	42 - 120	3.06	61	11	11	30
Surrogate												
92-94-4	p-Terphenyl	3.37	84	4	3.32	83	40 - 115	3.6	90			

Analytical Batch 522211 Prep Batch 521926 Prep Method EPA 8310		Client ID MM-04 GCAL ID 21312132701 Sample Type SAMPLE Prep Date 12/17/2013 09:00 Analytical Date 12/17/2013 17:46 Matrix Water		MM-04 MS 21312132713 MS 12/17/2013 09:00 12/18/2013 11:49 Water			MM-04 MSD 21312132714 MSD 12/17/2013 09:00 12/18/2013 12:08 Water					
EPA 8310		Units	ug/L	Spike	Result	% R	Control	Result	% R	RPD	RPD	Limit
		Result	RDL	Added			Limits % R					
90-12-0	1-Methylnaphthalene	0.00	1.18	10.0	4.53	45	44 - 130	4.65	47	3	3	30
91-57-6	2-Methylnaphthalene	0.00	1.18	10.0	4.46	45	42 - 120	4.56	46	2	2	30

General Chromatography Quality Control Summary

Analytical Batch 522211 Prep Batch 521926 Prep Method EPA 8310		Client ID MM-04 GCAL ID 21312132701 Sample Type SAMPLE Prep Date 12/17/2013 09:00 Analytical Date 12/17/2013 17:46 Matrix Water			MM-04 MS 21312132713 MS 12/17/2013 09:00 12/18/2013 11:49 Water			MM-04 MSD 21312132714 MSD 12/17/2013 09:00 12/18/2013 12:08 Water			
EPA 8310		Units	ug/L	Spike	Result	% R	Control	Result	% R	RPD	RPD
		Result	RDL	Added			Limits % R				Limit
83-32-9	Acenaphthene	0.00	1.18	10.0	5.13	51	23 - 153	5.60	56	9	30
208-96-8	Acenaphthylene	0.00	1.18	10.0	4.96	50	50 - 125	5.46	55	10	30
120-12-7	Anthracene	0.00	0.118	10.0	7.18	72	54 - 124	7.56	76	5	30
56-55-3	Benzo(a)anthracene	0.00	0.118	10.0	9.38	94	55 - 130	9.65	97	3	30
50-32-8	Benzo(a)pyrene	0.00	0.118	10.0	7.78	78	59 - 120	7.96	80	2	30
205-99-2	Benzo(b)fluoranthene	0.00	0.176	10.0	8.51	85	58 - 129	8.68	87	2	30
191-24-2	Benzo(g,h,i)perylene	0.00	0.294	10.0	7.84	78	51 - 120	7.83	78	0	30
207-08-9	Benzo(k)fluoranthene	0.00	0.118	10.0	7.97	80	54 - 140	8.12	81	2	30
218-01-9	Chrysene	0.00	0.118	10.0	8.64	86	61 - 133	8.89	89	3	30
53-70-3	Dibenz(a,h)anthracene	0.00	0.118	10.0	7.76	78	47 - 120	7.82	78	1	30
206-44-0	Fluoranthene	0.00	0.294	10.0	8.19	82	57 - 125	8.02	80	2	30
86-73-7	Fluorene	0.00	0.588	10.0	5.64	56	34 - 129	6.30	63	11	30
193-39-5	Indeno(1,2,3-cd)pyrene	0.00	0.294	10.0	7.86	79	58 - 120	7.89	79	0	30
91-20-3	Naphthalene	0.00	0.588	10.0	3.90	39	28 - 155	3.74	37	4	30
85-01-8	Phenanthrene	0.00	0.118	10.0	7.35	74	55 - 123	7.51	75	2	30
129-00-0	Pyrene	0.00	0.294	10.0	8.20	82	60 - 137	8.34	83	2	30
Surrogate											
92-94-4	p-Terphenyl	3.43	73	8	6.09	76	40 - 115	6.34	79		

Inorganics Quality Control Summary

Analytical Batch 522001 Prep Batch 521908 Prep Method EPA 7470A	Client ID MB521908 GCAL ID 1265655 Sample Type Method Blank Prep Date 12/15/2013 10:00 Analytical Date 12/16/2013 11:04 Matrix Water	LCS521908 1265656 LCS 12/15/2013 10:00 12/16/2013 11:06 Water					
EPA 7470A		Units Result	mg/L RDL	Spike Added	Result	% R	Control Limits % R
7439-97-6	Mercury	ND	0.00020	0.0050	0.0047	94	80 - 120

Analytical Batch 522001 Prep Batch 521908 Prep Method EPA 7470A	Client ID MM-04 GCAL ID 21312132701 Sample Type SAMPLE Prep Date 12/15/2013 10:00 Analytical Date 12/16/2013 11:11 Matrix Water	MM-04 MS 21312132713 MS 12/15/2013 10:00 12/16/2013 11:13 Water	MM-04 MSD 21312132714 MSD 12/15/2013 10:00 12/16/2013 11:14 Water								
EPA 7470A		Units Result	mg/L RDL	Spike Added	Result	% R	Control Limits % R	Result	% R	RPD	RPD Limit
7439-97-6	Mercury	0.0	0.00020	0.0050	0.0047	94	80 - 120	0.0051	101	8	20

Analytical Batch 522001 Prep Batch 521908 Prep Method EPA 7470A Dissolved	Client ID MA01MW003 GCAL ID 21312132001 Sample Type SAMPLE Prep Date 12/15/2013 10:00 Analytical Date 12/16/2013 11:16 Matrix Water	MA01MW003-ms 21312132002 MS 12/15/2013 10:00 12/16/2013 11:18 Water	MA01MW003-sd 21312132003 MSD 12/15/2013 10:00 12/16/2013 11:20 Water								
EPA 7470A		Units Result	mg/L RDL	Spike Added	Result	% R	Control Limits % R	Result	% R	RPD	RPD Limit
7439-97-6	Mercury	0.0	0.00020	0.0050	0.0044	89		0.0038	76	15	

Inorganics Quality Control Summary

EPA 6010C		Units	mg/L	Spike	Result	% R	Control
		Result	RDL	Added			Limits % R
7429-90-5	Aluminum	ND	0.20	5.00	4.82	96	80 - 120
7440-36-0	Antimony	ND	0.060	0.50	0.51	101	80 - 120
7440-38-2	Arsenic	ND	0.020	0.50	0.50	100	80 - 120
7440-39-3	Barium	ND	0.010	0.50	0.50	99	80 - 120
7440-41-7	Beryllium	ND	0.0040	0.50	0.49	97	80 - 120
7440-43-9	Cadmium	ND	0.0050	0.50	0.49	98	80 - 120
7440-70-2	Calcium	ND	0.80	5.00	4.94	99	80 - 120
7440-47-3	Chromium	ND	0.010	0.50	0.49	98	80 - 120
7440-48-4	Cobalt	ND	0.010	0.50	0.50	99	80 - 120
7440-50-8	Copper	ND	0.020	0.50	0.50	99	80 - 120
7439-89-6	Iron	ND	0.20	5.00	4.78	96	80 - 120
7439-92-1	Lead	ND	0.015	0.50	0.51	102	80 - 120
7439-95-4	Magnesium	ND	0.20	5.00	4.84	97	80 - 120
7439-96-5	Manganese	ND	0.015	0.50	0.50	100	80 - 120
7439-98-7	Molybdenum	ND	0.030	0.50	0.50	100	80 - 120
7440-02-0	Nickel	ND	0.040	0.50	0.50	100	80 - 120
7440-09-7	Potassium	ND	0.50	10.0	9.53	95	80 - 120
7782-49-2	Selenium	ND	0.040	0.50	0.49	98	80 - 120
7440-22-4	Silver	ND	0.010	0.50	0.49	99	80 - 120
7440-23-5	Sodium	ND	1.00	20.0	18.7	93	80 - 120
7440-28-0	Thallium	ND	0.020	0.50	0.51	101	80 - 120
7440-62-2	Vanadium	ND	0.020	0.50	0.50	99	80 - 120
7440-66-6	Zinc	ND	0.020	0.50	0.48	96	80 - 120

Inorganics Quality Control Summary

Analytical Batch 522040 Prep Batch 521902 Prep Method EPA 3010A		Client ID MM-04 GCAL ID 21312132701 Sample Type SAMPLE Prep Date 12/15/2013 08:05 Analytical Date 12/16/2013 18:34 Matrix Water		MM-04 MS 21312132713 MS 12/15/2013 08:05 12/16/2013 18:40 Water			MM-04 MSD 21312132714 MSD 12/15/2013 08:05 12/16/2013 18:46 Water				
EPA 6010C		Units	mg/L	Spike	Result	% R	Control	Result	% R	RPD	RPD
		Result	RDL	Added			Limits % R				Limit
7429-90-5	Aluminum	0.0	0.20	5.00	4.73	95	80 - 120	5.37	107	13	20
7440-36-0	Antimony	0.0	0.060	0.50	0.50	101	80 - 120	0.57	114	13	20
7440-38-2	Arsenic	0.0	0.020	0.50	0.50	99	80 - 120	0.56	113	11	20
7440-39-3	Barium	0.025	0.010	0.50	0.52	98	80 - 120	0.58	111	11	20
7440-41-7	Beryllium	0.0	0.0040	0.50	0.49	97	80 - 120	0.55	110	12	20
7440-43-9	Cadmium	0.0	0.0050	0.50	0.49	97	80 - 120	0.55	110	12	20
7440-47-3	Chromium	0.0	0.010	0.50	0.49	98	80 - 120	0.55	110	12	20
7440-48-4	Cobalt	0.0	0.010	0.50	0.49	98	80 - 120	0.55	109	12	20
7440-50-8	Copper	0.0	0.020	0.50	0.49	98	80 - 120	0.56	111	13	20
7439-89-6	Iron	0.055	0.20	5.00	4.83	95	80 - 120	5.49	109	13	20
7439-92-1	Lead	0.0040	0.015	0.50	0.50	99	80 - 120	0.56	112	11	20
7439-95-4	Magnesium	1.82	0.20	5.00	6.39	91	80 - 120	7.25	108	13	20
7439-96-5	Manganese	0.0	0.015	0.50	0.50	101	80 - 120	0.57	113	13	20
7439-98-7	Molybdenum	0.0	0.030	0.50	0.49	98	80 - 120	0.57	114	15	20
7440-02-0	Nickel	0.0	0.040	0.50	0.49	97	80 - 120	0.55	109	12	20
7440-09-7	Potassium	1.42	0.50	10.0	10.9	95	80 - 120	12.4	110	13	20
7782-49-2	Selenium	0.0	0.040	0.50	0.49	99	80 - 120	0.56	112	13	20
7440-22-4	Silver	0.0031	0.010	0.50	0.49	97	80 - 120	0.55	109	12	20
7440-23-5	Sodium	10.2	1.00	20.0	28.5	91	80 - 120	32.5	111	13	20
7440-28-0	Thallium	0.0	0.020	0.50	0.50	100	80 - 120	0.57	114	13	20
7440-62-2	Vanadium	0.0052	0.020	0.50	0.50	99	80 - 120	0.56	111	11	20
7440-66-6	Zinc	0.024	0.020	0.50	0.50	96	80 - 120	0.56	108	11	20

Inorganics Quality Control Summary

Analytical Batch 522127 Prep Batch 521902 Prep Method EPA 3010A	Client ID MM-04 GCAL ID 21312132701 Sample Type SAMPLE Prep Date 12/15/2013 08:05 Analytical Date 12/17/2013 19:07 Matrix Water	MM-04 MS 21312132713 MS 12/15/2013 08:05 12/17/2013 19:13 Water	MM-04 MSD 21312132714 MSD 12/15/2013 08:05 12/17/2013 19:20 Water		
EPA 6010C	Units mg/L Result RDL	Spike Added	Result % R Control Limits % R	Result % R RPD	RPD Limit
7440-70-2 Calcium	7.69 0.80	5.00	12.2 89 80 - 120	13.9 125*	13 20

7979 GSRI Avenue, Baton Rouge, Louisiana 70820-7402
Phone 225.769.4900 • Fax 225.767.5717

Lab use only

Client Name

Client #

Workorder #

Due Date

Report to:

Client: Tetra Tech
Address: 1955 Evergreen Blvd
Bld 200 Ste 300
Duluth ga 30096
Contact: Jessica Vickers
Phone: 678-775-3080
Fax:

Bill to:

Client: Tetra Tech
Address:
Contact: Jessica Vickers
Phone:
Fax:

Analytical Requests & Method

Lab use only:

Custody Seal
used yes no
intact yes no

Temperature °C _____

P.O. Number _____ Project Name/Number GWCC / 103Z294001.001

Sampled By: Christopher Jones and Amber Skiles

Matrix ¹	Date	Time (2400)	COC	Grab	Sample Description	Preservatives	No Con-tainers
W	12/10/13	1410			MM-04	Ice/HNO ₃	6
		1605			MM-01		3
		1713			MM-02		
	12/14/13	1020			MWC-3C		
		1145			MWC-3B		
		1335			MM-03		
		1343			MM-03-Dup		
		1508			MWC-1A		
		1603			MWC-1B		
		1840			MWC-1C		
		1645			Field Blank		
		1650			Equipment Blank		

TAL Metals
PAH

Remarks:

MS/MSD

Lab ID

12/13
1, 13, 14
2
3
4
5
6
7
8
9
10
11
12

Client ID: 4449 - Tetra Tech
SDG: 213121327
Due Date: 12/20/13



Turn Around Time: 24-48 hrs. 3 days 1 week Standard Other

Relinquished by: (Signature) <u>[Signature]</u>	Received by: (Signature) <u>[Signature]</u>	Date: <u>12/12/13</u>	Time: <u>0850</u>
Relinquished by: (Signature) <u>[Signature]</u>	Received by: (Signature) <u>[Signature]</u>	Date: <u>12/13/13</u>	Time: <u>1105</u>
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Note: 7973 84574980
1.4
1.7
1.6
2.9
E20

By submitting these samples, you agree to the terms and conditions contained in our most recent schedule of services.

WHITE: CLIENT FINAL REPORT — CANARY: LABORATORY — PINK: CLIENT



SAMPLE DELIVERY GROUP 213121327		CHECKLIST	YES	NO	NA
Client 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 Law , Brittany P.	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) 12/13/13	Were all containers received in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		Were all VOA vials received with no 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: E20	Temp(°C)	None	None
7973 8457 4980		1.4		
		1.7		
		1.6		
		2.9		

NOTES	
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ATTACHMENT B

LABORATORY CERTIFICATION SHEET

(One Page)



February 7, 2014

GCAL, LLC
7979 GSRI Avenue
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 GSRI Avenue 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, 2013
Expiration:	June 30, 2014

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,

Allison Naquin, Director of Quality and Technical Services