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CHARACTERIZATION OF A SHALLOW URBAN AQUIFER IN ATLANTA, GEORGIA

by

JUDE WAGUESPACK

Under the Direction of Brian Meyer, PhD

ABSTRACT

The City of Atlanta is a rapidly growing urban center in the Southeastern U.S. whose increasing population will place considerable strain on the city's water supply in terms of quality and availability. The purpose of this research is to characterize the water quality and provide lithological context of an unconfined aquifer on Georgia State University (GSU) campus as a prospective non-potable water supply to meet Atlanta's demand for water. Two groundwater monitoring wells were installed at 100 Auburn Avenue and serve as the network by which the surficial aquifer was characterized and water quality assessed. Based on groundwater monitoring, water quality varies due to the occurrence of volatile organic compounds in one well exceeding EPA drinking water standards. In addition, the depth to bedrock varied significantly with topography. As a result, water quality and availability would need to be assessed on a site basis for non-potable use and production needs.

INDEX WORDS: Groundwater quality, Urban, Aquifer, Lithology, Atlanta, Water science

CHARACTERIZATION OF A SHALLOW URBAN AQUIFER IN ATLANTA, GEORGIA

by

JUDE WAGUESPACK

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

Master of Science

in the College of Arts and Sciences

Georgia State University

2019

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CHARACTERIZATION OF A SHALLOW URBAN AQUIFER IN ATLANTA, GEORGIA

by

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May 2019

DEDICATION

I dedicate this thesis to my friend and mentor, Russell Walter Kirn III. His influence, above all else, has shaped me into the human I am today.

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I would like to thank Dr. Meyer for his guidance on this project. I would also like to thank my committee, Dr. Pangle and Dr. Elliott, for their assistance. This research could not have been completed without Fabian Zowam and his unwavering curiosity as to my progress on the project. Without his unrelenting questions, I never would have learned what my project was about. I would also like to thank the Field Methods summer class of 2018 for hauling the GPR up and down the streets of Atlanta.

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LIST OF ABBREVIATIONS

| City of Atlanta | СоА |
|---|----------|
| Georgia State University | GSU |
| Monitoring Well (#) | MW01 |
| Soil Boring (#) | SB01 |
| Below Land Surface | BLS |
| Water Table | WT |
| X-Ray Diffraction | XRD |
| Ground Penetrating Radar | GPR |
| Direct Push Technology | DPT |
| Hollow Stem Auger | HSA |
| Environmental Protection Agency | EPA |
| (Semi)Volatile Organic Compounds | (S)VOCs |
| Total Dissolved Solids | TDS |
| United States Geological Survey | USGS |
| Quality Assurance and Quality Control | QA/QC |
| Below Detection Limit | BDL |
| National Oceanic and Atmospheric | NOAA |
| Administration | |
| Ground Penetrating Radar | GPR |
| National Atmospheric Deposition Program | NADP |
| Total Area of Study | TAS |
| Monitoring Well Network | MWN |
| (Primary/Secondary) Maximum Contaminant | (P/S)MCL |
| Level | |
| Atlanta Metropolitan Region | AMR |

1 INTRODUCTION

1.1 Purpose of the Study

The City of Atlanta (CoA) is a rapidly growing urban center in the Southeastern U.S. The population of the city is expected to increase by 2.5 million people by the year 2040 (Atlanta Regional Commission, 2015). The increasing population will place considerable strain on the city's water supply. 70% of the CoA's water supply comes from Lake Lanier, with an additional 13% supplied from the Chattahoochee and Coosa River Basins (Missimer et al., 2014). Aging and outdated infrastructure, as well as an increase in vehicle traffic, provide potential sources of water contaminants. Previous water quality studies of the CoA have focused predominantly on surface water, with little research existing regarding groundwater quality. Additionally, existing geologic cross-sections encompassing the study area are small scale and of lower resolution than the one created for this study. The purpose of this research is to determine the water quality and provide a detailed lithological context of the unconfined aquifer on GSU campus. The characterization of groundwater quality will allow for potential non-potable water use, including irrigation water and "make-up" water for heating, ventilation and air conditioning (HVAC) system needs.

This research will evaluate an alternative source of water by answering the following research questions: 1) *Does the shallow groundwater quality meet the water quality standards for non-potable use?* 2) *What is the physical framework of the shallow groundwater system and how does it vary spatially?*

The goals of the project will be accomplished by completing the following objectives: (1) Install two groundwater monitoring wells on Georgia State campus; (2) Collect and log continuous soil cores to approximately 40 feet below land surface; (3) Prepare boring logs and

1

monitoring well construction logs; (4) Collect and analyze water samples to characterize water quality; and (5) Assimilate lithological data into a cross-section of the study area. The analysis of these objectives will determine if the quality of shallow groundwater on Georgia State University campus meets non-potable water use standards. Future studies will then assess the availability and supply of water from the aquifer. Based on existing literature, we hypothesize that the water quality within an urban aquifer will not meet EPA drinking water standards but may instead be used as a non-potable water source.



Figure 1: Downtown Atlanta Area Map with Study Area

1.1.1 Importance of the Study

The study area lies within the Peachtree Creek Watershed. This watershed has shown a decreasing amount of groundwater recharge due to rapid runoff from an increasing amount of impervious surfaces (Rose and Peters, 2001). Fulton County withdraws 200.7 million gallons of water per day (Mgal/d) from surface water sources whereas only 4.8 Mgal/d is collected from groundwater (Lawrence, 2016). The monitoring wells used in this study will provide preliminary results of the quality of groundwater in downtown Atlanta with the intention of utilizing the groundwater as a non-potable water sources by providing an alternative water supply.

1.2 Background

1.2.1 Geology, climate, land-use

Georgia State University is located downtown in the City of Atlanta in the Piedmont Province within the state of Georgia. The Piedmont Province is characterized by hilly topography and features numerous stream valleys. This region is underlain by Paleozoic metamorphic rock, topped by a regolith with a ranging thickness of 0 – 164 feet (Rose and Peters, 2001; Higgins, M. W., et al., 2003). The basement lithology is composed of discrete belts of metamorphic rock and intruded igneous plutons. The migmatitic metamorphic rocks consist of gneisses, schists, and amphibolites, while the plutons are mostly biotite granitoids (Horton and Zullo, 1991; Alexander Speer and McSween Jr., 1994). The regolith is composed mostly of alluvium, sandy clay saprolite, and soils (Rose and Peters, 2001).

The climate of Georgia is classified as humid subtropical with an average annual summer temperature range from 72°F in the northeast to 82°F in southern regions. Average annual winter

temperatures vary from 39°F in the north to 55°F in the south (NOAA, n.d.). The Atlanta region receives 49.7 inches of annual precipitation distributed evenly throughout the year. The hilly terrain and urban infrastructure within the study area produce high rates of runoff from large storm surge events (Rose and Peters, 2001).

The Atlanta metropolitan region is a sprawling mixture of urban and suburban environments with an area of 8,376 mi². The 2015 population was 4,450,487 and had increased by over 1 million people in 15 years. The population is forecasted to grow by another 2.5 million by the year 2040 (Atlanta Regional Commission, 2019). The increasing population brings with it an increasing amount of impervious surfaces and concrete infrastructure. In 2010, low density urban land cover in Atlanta accounted for roughly 50% of the total land space (Shem and Shepherd, 2008). Continuous addition of concrete infrastructure and vehicle traffic, coupled with aging utilities, will increase the risk of contamination to surface and groundwater in the city.

1.2.2 Water Quality of Urban Environments

Urban environments are characterized by the replacement of natural permeable soils with impervious surfaces. Increasing amounts of impervious surfaces show a decrease in groundwater recharge of urban watersheds and an increase in stormwater runoff (Peters, 2009). Storm runoff significantly increases both peak discharge and contaminant concentrations in urban streams within hours (Characklis and Wiesner, 1997; Horowitz, 2009; Peters, 2009; Rose and Peters, 2001). Greater rates of discharge erode urban stream channels at a significantly higher rate than stream channels in natural environments (Peters, 2009). Increased erosion leads to a higher concentration of suspended sediments. Suspended sediments account for \geq 75% of annual fluxes of trace and major elements in Atlanta streams (Horowitz, 2009).

Contaminant concentrations in urban streams have been shown to exceed water quality standards for potable and non-potable use (Peters, 2009). Contamination sources include acidic rain, solid and liquid waste disposal, small and large scale industry discharges, stormwater runoff, leaking sewage systems, and automobile traffic (Carey et al., 2013; Choi, et al., 2005; Lee, et al., 2015; Rose and Peters, 2001). Trace metal concentrations of zinc (Zn) from surface street runoff are two orders of magnitude higher than non-urban stream concentrations. Zn is mobilized primarily during storm events from areas of traffic (Rose and Peters, 2001).

Urbanization directly affects stream quality by showing increased specific conductivity and increased concentrations of chloride (Cl⁻), sulfate (SO₄²⁻), and pesticides. Concentrations of nutrients in stream water did not necessarily correlate with urbanization but rather with the percentage of the watershed under forested cover (Gregory and Calhoun, 2007). However, streams in Atlanta showed elevated levels of SO₄²⁻, Cl⁻, K⁺, and Na⁺ that correlated with electrolytes found in human waste (Rose, 2007). Fecal coliform concentrations of Atlanta streams have been found to exceed the state of Georgia's water quality usage for any class. (Peters, 2009).

Urban aquifers also show a decline in water quality compared to non-urban and rural aquifers (Choi, et al., 2005; Lee, et al., 2015). Seoul, South Korea is a comparable city to Atlanta because of similar geologic bedrock (granite, gneiss, and schist) and the average amount of annual precipitation (51.2 inches). Groundwater in Seoul was shown to have a significantly higher concentration of total dissolved solids in industrialized areas (average 585 mg/L) compared to forested areas (average 151 mg/L). Additionally, sewage leakage was shown to be a significant source of groundwater contamination in the city, accounting for >90% of annual groundwater recharge (Choi, et al., 2005).

1.2.3 Total Area of Study

For the purposes of this research, the study area is classified into two categories: Total Area of Study (TAS), and the Monitoring Well Network (MWN). The intention of this division is to provide a broader lithological context (within the TAS) for the smaller area of the MWN. The total area of study consists of an 87,383 m² (940,584 ft²) three block area in Downtown Atlanta on the GSU main campus. The northern and southern boundaries are John Wesley Dobbs Ave. and Auburn Ave., respectively. The western and eastern boundaries are Park Place and Piedmont Ave., respectively. This area encompasses soil borings SB01, SB02, and SB03; and monitoring wells MW01 and MW02. The subsurface lithology of the TAS was determined from the soil boring logs, XRD analysis of the sediment cores, and from survey of the area using ground penetrating radar (GPR).



Figure 2: Total Area of Study Location Map

1.2.4 Monitoring Well Network

The MWN consists of a smaller area within the TAS. The MWN encompasses an area of $1148 \text{ m}^2 (12,357 \text{ ft.}^2)$ and includes the groundwater monitoring wells MW01 and MW02, as well as soil boring SB03.

The monitoring wells were installed in April of 2018 at 100 Auburn Ave NE, Downtown Atlanta. An unsuccessful attempt was made to install two additional wells the same day but the drilling team experienced auger refusal due to the proximity of impenetrable bedrock to the land surface. Instead, at these locations, two soil cores (SB01 and SB02) were obtained with a recovery depth of 22 inches and 11.25 feet. Elevations of the top of the well casings of MW01 and MW02 are 1011.60' and 1007.93' above sea level, respectively. MW01 lies approximately



Figure 3: MWN Location Map

100 feet to the west of MW02. Each well extends 37 feet below land surface, screened from 21' BLS to 36' BLS. A complete soil core (SB03) was obtained from MW01. Water level was monitored manually at each well until the installation of a continuous water level data logger in MW01 in November of 2018 and MW02 in March 2019.

2 METHODS

2.1 Monitoring Wells

2.1.1 Well Installation

Two monitoring wells were installed by EMServices Inc. with a drill rig using Direct Push Technology (DPT) and a Hollow Stem Auger (HSA) system. Each well consists of a 2-inch diameter Schedule 40 PVC riser pipe that reaches a total depth of 37 feet BLS. The well screening is 15 feet in length and composed of Schedule 40 PVC with 0.01" slot size. The screen extends from 21-36 feet BLS. The PVC piping sits within a well-casing pipe filled with three distinct materials. The bottom 18 feet is filled with filter pack sand which surrounds the screened portion of the well to allow groundwater to enter the well. A bentonite clay seal 2 feet thick caps the top of the filter pack to provide a competent seal. Cement grout was placed from the bentonite seal to fill the remainder of the well-casing and to ensure stability of the riser pipe. A concrete pad 2'x 2' x 4" was installed at ground surface and serves as the housing and protection for the monitoring well. A traffic grade manhole cover within the concrete pad serves to protect and provide access to the wells.

2.1.2 Soil Borings

Initially, four monitoring wells were scheduled for installation but in two locations impenetrable bedrock was encountered close to the ground surface. Soil borings (SB01 and

SB02) were recovered in these locations with a recovery depth of 22 inches and 11.25 feet, respectively. A third soil boring (SB03) was obtained at the location of MW01 with a full recovery depth of 37 feet. Each soil core was obtained using DPT during the well installation and was removed from the HSA encased in a hollow plastic tube 1-inch in diameter. The cores were removed and stored in 5 foot intervals. Each boring was analyzed for mineral identification, grain size, sorting, and color. Sediment color was determined using the Munsell color system.

2.1.3 Water Level Logger

Depth to the water table in both wells was manually measured using a Solinst Water Level Meter Model 101 until the installation of a Solinst Levelogger Edge in MW01. The level logger was installed November 29, 2018 and programmed to record the water table depth in 12 hour intervals. Water table elevation was calculated by subtracting the depth to the water table from the elevation recorded at the top of the well casing. Barometric pressure data was obtained from the Hartsfield Jackson Airport weather station and used to correct the water table elevation from fluctuations associated with changes in atmospheric pressure. Atmospheric pressure was subtracted from the overhead pressure directly measured by the level logger within MW01.

2.1.4 Multiparameter Water Quality Meter

A YSI ProDSS multiparameter water quality meter was used to measure temperature, pH, conductivity, and dissolved oxygen and the instrument was calibrated for each parameter before use. A two-point calibration was performed for the pH sensor using known pH buffers of 4 and 7. Similarly, a traceable conductivity calibration solution was used to verify the accuracy of the conductivity sensors. The instrument was placed in an environment of 100% humidity for 5-10 minutes to calibrate the dissolved oxygen sensor using a one-point calibration. During

groundwater sampling or testing the instrument was allowed to operate until the parameter values stabilized, to ensure the collection of representative groundwater samples.

2.1.5 Groundwater Sample Collection and Geochemistry

Groundwater samples were obtained using a peristaltic pump. Each well was purged for a period of 15 minutes and geochemical parameters stabilized as per EPA methodologies before sample collection to assure an accurate analysis of the aquifer water and to ensure stable analyte concentrations. A total of 12 groundwater samples were collected during the course of this study.

The first two samples were collected in April of 2018. One liter of groundwater was collected from each well, preserved in coolers at temperatures not exceeding 2°C, and shipped to TestAmerica Laboratory in Savannah, GA. TestAmerica processed the samples and a blank according to applicable EPA standards for the following analytes: Volatile Organic Compounds (VOCs), Semivolatile Organic Compounds (SVOCs), Cl⁻ and SO₄²⁻ Anions, Total Hardness (as CaCO₃), Metals, Mercury, Alkalinity, and Total Dissolved Solids (TDS).

A total of ten samples were collected in 60 mL HDPE bottles to be analyzed using two ThermoFisher Dionex TM Aquion TM Ion Chromatographs courtesy of Dr. Sarah Ledford. The samples were prepared and analyzed in the Ledford Urban Hydrology Lab in the Geosciences Department of GSU. To capture temporal variation of the aquifer geochemistry, six of the ten well samples were collected and analyzed in November 2018, and the remaining 4 in February 2019. Each sample was analyzed for the following anions and cations: F⁻, Cl⁻, NO₂⁻, Br⁻, NO₃⁻, PO₄³⁻, SO₄²⁻, Na⁺, NH₄⁺, K⁺, Mg²⁺, and Ca²⁺.

Each sample was filtered through 0.47 micron MilliPore filter to remove any solid or undissolved material prior to analysis within 48 hours of collection and stored at 4°C before and after filtration. The filtration process is critical to avoid damaging the instrument and to prevent nitrogen species (NO₂⁻, NO₃⁻, NH₄⁺) from reacting with any solid, organic material or microbes. The ion chromatographs were calibrated by running five in-house standards with known concentrations of each ion and two USGS standards for calibration verification. Linear calibration curves for each ion were made and all demonstrated R² values of 0.99, with the exception of ammonium which was fit with a quadratic. QA/QC was performed by calculating percent error of all standards as well as percent change of any samples rerun. With the exception of the lowest concentration standard, all errors were <10%.

Piper diagrams were created using GW_Chart, freely distributed software from the USGS to characterize groundwater facies and evaluate geochemical trends or changes in groundwater composition during the study period. Due to the limitations of the ion chromatograph, values of CO_3^{2-} and HCO_3^{-} were only obtained from the samples analyzed by TestAmerica and were used when plotting the in-house samples. For the purposes of this study, CO_3^{2-} and HCO_3^{-} concentrations were assumed to be constant.



Figure 4: ThermoFisher Ion Chromatograph

2.2 Precipitation Data

2.2.1 Sample Collection and Geochemical Analysis

One liter of precipitation was collected October 2018 in a five-gallon bucket with a 6inch diameter funnel. An Olympic-standard ping-pong ball was placed inside the funnel and used to avert evaporation of collected rainwater thereby preventing an artificial increase in concentration of dissolved ions. An insect screen was fastened atop the funnel to prevent any detritus from falling inside the collector.

The rainwater was preserved in a cooler and shipped to the TestAmerica Laboratory for geochemical analysis. TestAmerica processed the samples and a blank according to applicable EPA standards for the following analytes: Cl^- and SO_4^{2-} Anions, Total Hardness (as CaCO₃), Metals, Alkalinity, and TDS. Ion concentrations were then plotted on a Piper Diagram. SO_4^{2-} and HCO_3^- values were both below the detection limit so according to standard practice the values

were halved when plotted on the diagram. The full analytical report can be found in Appendix B.

2.2.2 Additional Rain Data

Quantitative precipitation data (rainfall totals) were obtained from the National Oceanic and Atmospheric Administration (NOAA) for the years of 2018 and 2019, collected at station US1GADK0028 in the Candler Park community in Atlanta. Qualitative



Figure 5: Precipitation Collector

precipitation data were obtained from the National Atmospheric Deposition Program (NADP) for the year of 2017, collected at station GA41 ten miles southwest of Griffin, Ga. This data included concentration values of the following ions: Cl⁻, Br⁻, NO₃⁻, SO₄²⁻, Na⁺, NH₄⁺, K⁺, and Ca²⁺. Additionally, the data contained values of pH and conductivity. This data was used to determine temporal variation of precipitation geochemistry and to provide a chemical baseline with which to compare the precipitation sample, RW01.

2.3 Lithology

2.3.1 Sample Collection and X-Ray Diffraction

A total of 19 sediment samples were taken from SB01, SB02, and SB03. When possible, samples were taken in increments of 30 inches until the end of the core. Due to the limited boring recovery only one sample was taken from SB01 at a depth of 12", while five samples were taken from SB02 at depths of 25", 60", 80", 120", and 130". SB03 features a full recovery of 35' obtained in multiple cores 5' in length. However, several of the 5' sections contained less than 5' of sediment representing consolidation or loss of the material. In the instances where the incomplete recovery of these cores overlapped the sampling scheme of 30-inch increments the sample was obtained as close as possible to the 30-inch mark. A total of 13 samples were obtained from SB03.

Each sample was dried in a Thelco lab oven at 55°C for 3 hours before being ground into powder using an SPEX sample pulverizer. The samples were pulverized for 15 minutes in a ceramic canister. Between each sample the canister was cleaned of sediment by running the instrument with standard quartz sand.

After pulverization, the samples were prepared in a randomly oriented mount and placed inside a Panalytical X'Pert Pro X-Ray Diffractometer. Mineral determination of the diffraction peaks was done using the Panalytical HighScore Plus identification software and referenced by hand-sample analysis of the soil borings. Quartz and biotite were readily identified in handsample, while the remaining clay minerals and oxides were determined to be weathering products of common minerals found within the protolith. The clay minerals halloysite and kaolinite are created from the hydration of feldspar, while montmorillonite may sometimes occur intermixed with kaolinite. Gibbsite is an aluminum hydroxide formed as the weathering product of feldspars or amphiboles.

Typically, the verification of specific clay minerals requires additional methodologies, such as ethylene glycol solvation, oriented mounts, and the sieving of clay-size particles for separate analysis. However, due to time constraints these methodologies proved beyond the scope of this study. As such, the identification of clay minerals in this project provides a tentative baseline with which future studies may evaluate.

2.3.2 Ground Penetrating Radar

Using a MALA Model GroundExplorer HDR, several profiles of the subsurface within the study area were obtained. Multiple runs were completed over the same area utilizing a 160 MHz antenna which provided imagery at depths up to ~60 feet BLS.



Figure 6: Researcher Fabian Zowam operating the GPR

The GPR data were post-processed for DC removal, Time-Zero adjustment, spatial interpolation, background removal, 2D spatial filtering, amplitude correction and bandpass filtering. The intention of DC removal is to remove a constant signal component if present. Time-Zero Adjustment corrects the zero-point of the vertical time scale to the time-zero of the radar wave emitted from the antenna. Spatial interpolation was used to recalculate the horizontal scale by interpolating the traces of the regular profile interval. Due to the nature of radar detection, the strongest signal received comes directly from the transmitting antenna. Background removal accounts for this signal and removes it as needed. 2D spatial filtering averages the raw sample signal to enhance the visual output. Amplitude correction acts as an automatic gain control equalizing the wave amplitudes of the vertical traces. Bandpass filtering increases the signal/noise ratio by filtering either the low or high end frequencies received.

3 RESULTS

3.1 Water Quality

3.1.1 Chemical Composition

Initial results acquired from TestAmerica in April of 2018 indicate VOC and SVOC

concentrations in MW01 to be below the EPA's Maximum Contaminant Level (MCL) of which

there is no known or expected health risk. An exceedance was noted in MW02 for

tetrachloroethylene (aka PCE) at 6.0 $\mu g/L$ versus an MCL of 5.0 $\mu g/L$. A full report of the

TestAmerica sample results can be found in Appendix B. Anion and cation concentrations of all

samples are summarized in Table 1.

| Sample ID | Fluoride | Chloride | Nitrite | Bromide | Nitrate | Phosphate | Sulfate | Sodium | Ammonium | Potassium | Magnesium | Calcium |
|-----------|----------|----------|---------|---------|---------|-----------|----------|---------|----------|-----------|-----------|---------|
| | mg F/L | mg Cl/L | mg N/L | mg Br/L | mg N/L | mg P/L | mg SO4/L | mg Na/L | mg N/L | mg K/L | mg Mg/L | mg Ca/L |
| MW01-1 | 0.0945 | 23.4090 | bdl | 0.1870 | 7.5076 | bdl | 141.7516 | 24.3467 | bdl | 4.1637 | 17.7545 | 17.4171 |
| MW01-2 | 0.0807 | 23.4713 | bdl | 0.1828 | 7.5321 | 0.0965 | 137.7971 | 24.3933 | 0.0003 | 4.1309 | 17.6892 | 16.8818 |
| MW01-3 | 0.0799 | 23.1835 | bdl | 0.1798 | 7.4160 | 0.0907 | 139.0176 | 24.3835 | bdl | 4.1307 | 17.7242 | 17.2051 |
| MW01-A | 0.0684 | 22.0876 | 0.0165 | 0.1280 | 7.7975 | N/A | 75.7813 | 27.3106 | 0.0717 | 4.3177 | 14.7481 | 1.1747 |
| MW01-B | 0.0915 | 22.1479 | 0.0166 | 0.1326 | 7.7741 | N/A | 76.0385 | 27.3776 | 0.0743 | 4.3577 | 14.6565 | 1.1589 |
| MW01-TA | N/A | 23 | N/A | N/A | N/A | N/A | 120 | 24 | N/A | 4.5 | 18 | 25 |
| MW02-1 | 0.1052 | 24.4237 | 0.0359 | 0.1091 | 3.4590 | bdl | 146.3336 | 22.2760 | 0.0094 | 5.0466 | 14.8188 | 23.3293 |
| MW02-2 | 0.0602 | 24.3309 | 0.0348 | 0.1100 | 3.4494 | bdl | 144.6595 | 22.3085 | 0.0082 | 4.8596 | 14.7205 | 23.6243 |
| MW02-3 | 0.1030 | 24.7917 | 0.0344 | 0.1099 | 3.5242 | bdl | 146.8977 | 22.2758 | 0.0080 | 4.6739 | 14.5766 | 23.7703 |
| MW02-A | 0.0438 | 16.3012 | N/A | 0.0644 | 2.1952 | N/A | 82.0740 | 15.0470 | 0.0235 | 3.9196 | 9.0298 | 17.2103 |
| MW02-B | 0.0576 | 16.7115 | N/A | 0.0718 | 2.2716 | 0.0087 | 86.6997 | 15.7164 | 0.0228 | 3.9945 | 9.5845 | 17.7490 |
| MW02-TA | N/A | 24 | N/A | N/A | N/A | N/A | 160 | 27 | N/A | 6.4 | 20 | 35 |
| RW01 | N/A | 0.41 | N/A | N/A | N/A | N/A | 0.20 | 0.49 | N/A | 0.66 | 0.13 | 0.61 |

Table 1: Ion Concentrations of MW01, MW02, and RW01

MW01-TA and MW02-TA represent baseline concentration values obtained by TestAmerica. Samples MW01-1, MW01-2, MW01-3, MW02-1, MW02-2, and MW02-3 were analyzed in the Ledford Urban Hydrology Lab in November of 2018. Samples MW01-A, MW01-B, MW02-A, and MW02-B were analyzed from the same lab in February of 2019. Groundwater temperature, pH, conductivity, and dissolved oxygen results collected from the YSI multiparameter meter are displayed below, in Table 2.

| Date: 06/12/18 | 11:48 | 11:55 | 11:58 |
|----------------------|-------|-------|-------|
| Temperature (°C) | 21.2 | 21.2 | 21.2 |
| рН | 5.20 | 5.20 | 5.20 |
| Conductivity (μS/cm) | 373.0 | 378.1 | 380.8 |
| Dissolved Oxygen | 34% | 33% | 32% |

 Table 2: Physiochemical data of MW01

3.2 Additional Precipitation Analysis

3.2.1 Chemical Composition

| Site | Characteri | stics | Dissolved Constituents (mg/L) | | | | | | |
|----------------|--------------|-------|-------------------------------|-------|-------|-------|-------|------------|--|
| siteID seas yr | | | Ca | Mg | К | Na | Cl | SO4 | |
| GA41 | Winter | 2015 | 0.024 | 0.012 | 0.013 | 0.094 | 0.171 | 0.45 | |
| GA41 | Spring | 2015 | 0.067 | 0.034 | 0.108 | 0.148 | 0.259 | 0.525 | |
| GA41 | Summer | 2015 | 0.092 | 0.038 | 0.208 | 0.059 | 0.114 | 0.598 | |
| GA41 | Fall | 2015 | 0.02 | 0.018 | 0.082 | 0.066 | 0.123 | 0.271 | |
| GA41 | Winter | 2016 | 0.027 | 0.023 | 0.05 | 0.126 | 0.229 | 0.302 | |
| GA41 | Spring | 2016 | 0.067 | 0.018 | 0.035 | 0.115 | 0.199 | 0.456 | |
| GA41 | Summer | 2016 | 0.077 | 0.018 | 0.028 | 0.068 | 0.106 | 0.418 | |
| GA41 | 41 Fall 2016 | | 0.03 | 0.023 | 0.051 | 0.114 | 0.187 | 0.206 | |
| GA41 | Winter | 2017 | 0.041 | 0.012 | 0.014 | 0.092 | 0.175 | 0.411 | |
| GA41 | Spring | 2017 | 0.096 | 0.03 | 0.043 | 0.183 | 0.331 | 0.575 | |
| GA41 | Summer | 2017 | 0.07 | 0.016 | 0.035 | 0.066 | 0.114 | 0.303 | |
| GA41 | Fall | 2017 | 0.024 | 0.02 | 0.09 | 0.123 | 0.237 | 0.208 | |
| RW01 | Fall | 2018 | 0.61 | 0.13 | 0.66 | 0.49 | 0.41 | 0.2 | |

Table 3: Ion concentrations established by NADP compared with sample RW01

Data obtained from NADP, summarized in Table 3, was used to provide a baseline with which to compare the precipitation sample RW01 before the sample was compared with the

geochemistry of groundwater. The results obtained indicate higher concentrations of all dissolved constituents within RW01 with the exception of SO₄.

3.3 Physical Framework of Aquifer System

3.3.1 Water Table and Precipitation Accumulation

Depth to the water table was first recorded on 6/27/2018 and was 12.75' BLS at MW01 and 9.60' BLS at MW02. The calculated elevation (hydraulic head) of the water table on this date was 998.85' ASL at MW01. The water table elevation did not fluctuate significantly during the course of this study. The greatest deviation was measured to be 1.10'. Groundwater temperature did not vary more than 0.25°C from November to March.



Figure 7: Water Table Elevation and Temperature



Figure 8: Water Table Elevation and Precipitation Accumulation

Water table response to rain events occurs within a period of one to two days. The water table begins to fall within a similar time period after several days without precipitation.

3.3.2 Soil Boring and XRD

Three soil borings were obtained and characterized for this study. The soil boring and monitoring well construction logs can be found in Appendix A. A total of 19 samples were collected for XRD analysis between the three borings, and the diffraction patterns can be found in Appendix C. SB01 was obtained from 26 Auburn Ave. and has a recovery depth of 22". Three attempts were made to install a complete monitoring well, and each attempt experienced auger refusal at depths from 2', 5.5', and 17' BLS. Refusal was due to impenetrable bedrock, and the varying depths in such a small area showcase the uneven topography of the bedrock surface. SB01 consists of a light gray sand with extensive lithics, with most ranging in size from 1-2 mm and the largest of 25.4 mm. XRD Analysis revealed the dominant mineralogy to be quartz, biotite, and halloysite.

SB02 was obtained behind the College of Law at 85 Park Place and has a recovery depth of 135". Of the 135" depth, only 65.5" of sediment was recovered representing consolidation of sediment. Auger refusal occurred at 11.25' BLS once again due to impenetrable bedrock. SB02 consists of a 12" top layer of brown sand rich in organic material with some lithics. The rest of the boring is a mixture of sand and fine sand with color ranging from an oxidized reddish brown to a lighter grey with lithics at greater depths. XRD analysis revealed the dominant mineralogy to be quartz, biotite, gibbsite, and clay minerals of montmorillonite and kaolinite.

SB03 was obtained from the completed MW01 at 100 Auburn Ave. and features a full recovery depth of 35'. Loose, unconsolidated sands compose the first ten feet of the core. From 10 - 27', the sandy sediments are more densely packed than those above. From 27 - 35' the material was harder and more compacted and composed of fine sands mixed with lithic fragments in the final three feet. Of particular importance are the abundance of lithics within the final three feet representing partially weathered bedrock, further showing the proximity of bedrock close to the land surface within the study area. XRD analysis revealed the dominant mineralogy to be quartz, biotite, gibbsite, and K-feldspar throughout the boring. Clay mineralogy transitions from halloysite and montmorillonite near the land surface to kaolinite below the water table (from depths of 13' to the bottom of the well).

3.3.3 GPR

Four GPR profiles of the TAS were made, and the transects are classified as follows: (1) A W-E transect along Auburn Ave. from Woodruff Park to Piedmont Ave.; (2) A N-S transect along Courtland St. from John Wesley Dobbs Ave. to Auburn Ave.; (3) A 140 ft. transect obtained at the site of SB02 behind the GSU College of Law; and (4) A W-E transect from

MW01 to MW02.

The four GPR profiles are displayed in Figures 12-15 and the image contrast was adjusted for ease of visibility. The raw images are attached in Appendix D. Monitoring well, soil borings, and street



Figure 9: GPR Transect Location Map

locations are labeled on each. Soil borings and monitoring wells are represented to scale within their respective profiles. Hatch marks were drawn to establish the screened portion of each monitoring well.

Transects 2-4 display four distinct units or radar facies as determined by differences in reflective banding. The top unit ranges from 0-10 feet BLS and consists of lightly colored broad reflections. The second unit consists of much brighter but equally broad reflections with a varying total depth throughout each profile. The third unit displays lighter and more narrow banding than the first two, while the fourth unit is lighter still and more broad than the third.



Figure 10: Transect 1



Figure 11: Transect 2


Figure 12: Transect 3



Figure 13: Transect 4

Transect 1 represents a cross-sectional profile of the TAS and as such, the reflective bandings display more complex features over a wider area. The four distinctly banded units seen in transects 2 - 4 are similar in appearance in Transect 1. However, the depths of each unit vary spatially throughout the profile. Additionally, several unique banding patterns were identified near Courtland St. featuring prominently bright and broad reflections that vary in terms of horizontality.

4 **DISCUSSION**

4.1 Evaluation of Water Quality

4.1.1 Chemical Analysis

On a piper diagram displayed in Figure 16, the groundwater samples showed no dominant cation type, a sulfate rich anion type, and plots within the Ca-SO₄ hydrochemical facies. The precipitation sample, RW01, shows no dominant cation type, a bicarbonate rich anion type, and plots close to the boundary between the magnesium bicarbonate and mixed type hydrochemical facies. The facies distinction between precipitation and groundwater is most likely attributed to groundwater mixing with wastewater effluents rich in SO_4^{2-} and Cl^- .



Figure 14: Piper Diagram of MW01, MW02, and RW01

The geochemistry of MW01 samples showed little to no temporal change in Cl and K. The samples obtained in the fall show an increase in SO₄ concentration by 20 ppm from the baseline data, a decrease in Ca concentration by 8 ppm, and little change in Na and Mg values. Those tested in February show a marked decrease in SO₄, Mg, and Ca concentrations of ~65 ppm, 3 ppm, and 16 ppm, respectively. Na values increased by 3 ppm from November to February. Groundwater geochemistry of MW02 exhibited decreasing concentrations of all ions from fall to spring. The Cl concentration in the fall was similar to the baseline values, but decreased by 8 ppm in February. SO₄ values dropped from the baseline of 160 ppm to ~145 ppm in November, then further to ~84 ppm in February. Similarly, Na values decreased from 27 ppm to 22 ppm to 15 ppm, Mg from 20 ppm to 14 ppm to 9 ppm, and Ca from 35 ppm to 23 ppm to 17 ppm. K values decreased from 6.4 ppm to 4.8 ppm to 4.0 ppm.

Although cation and anion concentrations in MW02 decreased from November to February, their relative percentages remained around the same as indicated by their fixed positions on the piper diagram. This indicates dilution of the groundwater, probably due to a high amount of precipitation and groundwater recharge during this time period. The same phenomenon was not seen in MW01, as the relative percentages of cations and anions fluctuated in the samples analyzed in February. This fluctuation was driven primarily by a decrease in Ca, suggesting dilution may not be the only factor leading to temporal changes in cation/anion concentrations. One interpretation is that Na values increased slightly during this time, possibly due to ion-exchange of Na and Ca, but the seasonal mechanism of this exchange remains unknown. Future studies could offer greater insight into the temporal variation of groundwater geochemistry and determine the groundwater source contributions from precipitation and inflow from sanitary sewer systems.

Water Quality Standards

EPA guidelines have established National Drinking Water Regulations that determine water quality standards for public and private use. PMCLs are mandatory water quality standards established for drinking water contaminants proven to pose a risk to human health. The primary standards relevant to this study include disinfectants, disinfection byproducts, and inorganic and organic chemicals. SMCIs are non-mandatory water quality guidelines for 15 contaminants that do not pose a health risk but assist in managing drinking water for aesthetic concerns such as color, odor, and taste. Secondary standard contaminants, while not dangerous to human health, pose several problems related to aesthetic, cosmetic, and technical effects produced by elevated contamination levels and low pH. Excess metals within drinking water can cause unpleasant odors or taste, and excess silver can cause skin discoloration (although does not impair bodily function). Some metals, such as copper, iron, manganese, and zinc, can lead to corrosive water that may compromise utility pipes and underground infrastructure. Excess chloride and low pH has also been shown to increase corrosivity of water (EPA, 2017).

Baseline results of groundwater samples collected from MW01 indicate VOC and SVOC concentrations to be below PMCL standards. A tetrachloroethylene (aka PCE) concentration of $6.0 \ \mu g/L$ in MW02 exceeds the EPA's MCL of $5.0 \ \mu g/L$. MW01 was determined to have a Mn concentration of 0.32 ppm. MW02 was determined to have concentrations of Mn, Al, and Fe, equal to 2.9 ppm, 2.4 ppm, and 2.7 ppm, respectively. These values exceed the EPA's recommended SMCL of 0.05 ppm Mn, 0.05 to 0.2 ppm Al, and 0.3 ppm Fe. The pH of the groundwater within the MWN is moderately acidic at 5.20, below the SMCL range of 6.5 - 8.5. The elevated levels of Mn and Fe, coupled with the low pH, could lead to the corrosion of utility pipes within the study area. If compromised, the leaking sewage pipes would provide a future source of contamination within the aquifer system.

| | | | Dissolved Constituents (mg/L) | | | | | | |
|-----------------|--------------------------------|------|-------------------------------|-------|-------|------|-------|-----------------|------|
| Site | Characteristics | | Ca | Mg | Na | к | Cl | SO ₄ | рН |
| | Rural Streams | Mean | 2.48 | 2.10 | 3.68 | 1.33 | 4.87 | 2.11 | 6.16 |
| | N = 12 | SD | * | * | * | * | * | * | 0.17 |
| Atlanta | Chattahoochee River | Mean | 5.42 | 1.25 | 10.65 | 2.65 | 14.21 | 7.01 | 6.42 |
| Surface | N = 9 | SD | * | * | * | * | * | * | 0.23 |
| Water (Rose, | Developed Basins within AMR | Mean | 9.62 | 2.09 | 8.14 | 2.46 | 12.15 | 5.28 | 6.56 |
| 2007) | N = 9 | SD | * | * | * | * | * | * | 0.23 |
| | AMR CSO Basins | Mean | 18.36 | 3.61 | 18.35 | 4.80 | 31.78 | 22.42 | 6.45 |
| | N = 5 | SD | * | * | * | * | * | * | 0.42 |
| | Forested | Mean | 21.9 | 1.5 | 11.9 | 1.1 | 11.1 | 13.2 | 6.9 |
| | N = 15 | SD | 6.6 | 0.4 | 4.4 | 0.5 | 6.4 | 4.6 | 0.5 |
| Social SK | Residential | Mean | 51.6 | 11.4 | 26.5 | 3.1 | 59.3 | 33 | 6.5 |
| Ground | N = 22 | SD | 10.9 | 5.5 | 10.0 | 1.5 | 15.5 | 30.0 | 0.4 |
| Ground- | Agricultural | Mean | 46.2 | 9.6 | 25.5 | 3.8 | 53.7 | 21.1 | 6.4 |
| (Choi of | N = 14 | SD | 20.2 | 3.7 | 10.6 | 1.9 | 33.6 | 16.3 | 0.3 |
| (Ch0), et | Traffic | Mean | 54.7 | 8.5 | 47.4 | 7 | 49.9 | 56.1 | 6.4 |
| al., 2004) | N = 16 | SD | 19.5 | 2.0 | 18.7 | 7.2 | 11.5 | 13.1 | 0.3 |
| | Industrialized | Mean | 84.2 | 23.1 | 42.2 | 2.4 | 97.5 | 74.9 | 6.6 |
| | N = 12 | SD | 32.3 | 6.0 | 38.0 | 0.8 | 43.2 | 60.5 | 0.3 |
| | MW01-Nov | Mean | 17.17 | 17.72 | 24.37 | 4.14 | 23.35 | 139.52 | 5.2 |
| | N = 3 | SD | 0.22 | 0.03 | 0.02 | 0.02 | 0.12 | 1.65 | ** |
| Atlanta | MW01-Feb | Mean | 1.17 | 14.70 | 27.34 | 4.34 | 22.12 | 75.91 | 5.2 |
| Cround | N = 2 | SD | 0.01 | 0.05 | 0.03 | 0.02 | 0.03 | 0.13 | ** |
| Ground- | MW02-Nov | Mean | 23.57 | 14.71 | 22.29 | 4.86 | 24.52 | 145.96 | 5.2 |
| water | N = 3 | SD | 0.18 | 0.10 | 0.02 | 0.15 | 0.20 | 0.95 | ** |
| | MW02-Feb | Mean | 17.48 | 9.31 | 15.38 | 3.96 | 16.51 | 84.39 | 5.2 |
| | N = 2 | SD | 0.27 | 0.28 | 0.34 | 0.04 | 0.21 | 2.31 | ** |

Table 4: Summary of physiochemical data comparison between Atlanta surface waters, Seoul groundwater, and Atlanta groundwater

Table 4 presents a summary comparison of the pH and dissolved constituents found within Atlanta surface waters, Seoul groundwater, and Atlanta groundwater. Atlanta surface water data was obtained and adapted from Rose, 2007. The mean values of the dissolved constituents obtained from Rose were converted from meq/L to mg/L, and so the standard deviations could not be converted or displayed in this table. The standard deviation values can instead be found within the article source. The standard deviation of pH values were not calculated for the monitoring well samples due to the limited data set obtained.

In a 2007 study, Seth Rose determined the highest concentrations of surface water pollutants within the Atlanta Metropolitan Region (AMR) were found in "urbanized basins

directly receiving treated effluent and combined sewer overflow (CSO) basins". Urban basins with main sewage trunk lines and urbanized basins represent the basin types with succeeding levels of solute concentration. Rose suggested that leaking sewer lines and septic tank systems were the predominant sources of low-level non-point contamination that is affecting shallow groundwater chemistry within the AMR. Rose also determined that Na, K, and Cl ion concentrations were atypical of waters with a comparable lithological subsurface and noted that these ions are the prevailing electrolytes in human waste. Similarly, in a 2004 study, Byoung-Young Choi and colleagues determined the highest concentrations of groundwater contaminants (Ca, Mg, Na, K, Cl, and SO⁴) in Seoul, South Korea were found in industrialized and traffic areas. Na, K, and Cl ion contamination sources were determined to originate from wastewater, industrial effluents, and deicing road salt.

Chemical analysis of MW01 and MW02 reveal Ca concentrations comparable to those found within AMR CSO Basins, but below the levels found within forested areas in Seoul. This suggests the contaminant origin in Seoul could likely be contributed to sources other than wastewater, such as leather industry or deicing salt (Choi, et al. 2005) and is not as great a concern in Atlanta. Mg and Na values were determined to exceed values in AMR CSO Basins and are similar to several urban environment types in Seoul. K concentrations are comparable to AMR CSO Basins and agricultural areas in Seoul. Cl levels within the monitoring wells were significantly lower than urban environments in Seoul, once again suggesting the prevalence of deicing salt in South Korea. Cl ions were found to be less than those in AMR CSO Basins but greater than developed basins. Notably, sulfate concentrations were considerably higher than found in both Atlanta surface waters and groundwater in Seoul. Vehicle traffic and waste-water treatment has been shown to be a significant source of sulfate pollution within urban groundwaters (Pitt, et al. 1999; Rose, 2007). Given similar traffic densities between both cities, this suggests that a larger contribution of sulfate contamination in Atlanta comes from sewer leakage.

The pH within the MWN is more acidic than both the surface waters in the AMR and the groundwater in Seoul. Groundwater pH typically decreases due to anthropogenic pollution related to acidic wastewater rich in organic matter and industrial effluents (Choi, et al., 2005). Water-rock interactions typically raise the pH of groundwater. As the groundwater within the MWN displays a much lower pH than those seen in Atlanta surface waters and Seoul groundwater, anthropogenic pollution must increase the acidity to a greater extent than the bedrock neutralizes.

4.2 Additional Precipitation Analysis

4.2.1 Chemical and Seasonal Variation

Sample RW01 plots within range of the NADP baseline data. Cyclical variation was seen in calcium concentrations as they decreased in colder months and increased in warmer months. It should be noted that RW01 was collected in the Fall but displays a calcium concentration equal to NADP's Spring and Summer samples. However, as RW01 contained higher concentrations of all dissolved constituents (with the exception of SO₄), it is possible that with a larger sample size the same cyclical variation could be seen at higher concentrations. Seasonal variation of precipitation chemistry and its effect on groundwater geochemistry may be addressed in future studies.



Figure 15: Piper Diagram of NADP data and sample RW01

4.3 Physical Framework of Aquifer System

4.3.1 Soil Boring and XRD

Based upon the soil boring logs and XRD analysis of 19 samples, sediment mineralogy and grain size did not vary significantly. The greatest amount of variation was seen in SB03, as loose, unconsolidated sediments transition into more compacted materials below 10 feet. The difference in consolidation marks a distinct boundary between a surficial alluvium layer and a layer of saprolite. Below the extent of the saprolite the materials became harder and more compacted in the final eight feet of the soil boring. Lithic fragments became more abundant within the last three feet of the boring, implying proximity to the upper extent of a weathered regolith and bedrock.

The separation of alluvium and saprolite layers was also indicated by XRD analysis of samples taken from the three soil borings. The mineralogy of SB03 transitions from a dominance of quartz, biotite, halloysite, and montmorillonite to a prominence of kaolinite below the water table. The kaolinite within the sediments most likely occurs as a hydration product of halloysite.

4.3.2 GPR

Transects 2 and 4 showcase similar lithological features as interpreted based upon the four distinct banding units or radar facies mentioned previously. A surficial layer of loose, unconsolidated residuum approximately 12 feet thick is distinguished by a lack of reflections, indicating a porous medium lacking in compositional variation. Immediately below, a layer of saturated sediments is evidenced by brightly contrasting broad reflectors. These reflections are indicative of a greater variation within the medium, as water-saturated sediments alter GPR transmission speeds within a small spatial area due to variance in water composition and sediment compaction. The transition between these two layers indicates the surface of the water table, at approximately 13' BLS, and is verified by water level measurements from MW01 and MW02. This layer varies in thickness, extending to ~28' BLS at MW01 and ~25' BLS at MW02, and undulating in between. The layer of saturated sediments corresponds to the loosely compacted layers of sand evident within SB03. A compacted or dense layer of weathered bedrock lies below the saturated sediments as indicated by fainter and more narrow reflective banding due to considerable attenuation of the radar signal. This layer shows less variance in

sediment compaction and saturation indicated by consistent band thickness and relative horizontality. This layer corresponds to the more compacted layers of sand seen with SB03. The thickness of this unit varies more at the upper contact than the lower, extending to ~40' BLS at MW01 and ~38' BLS at MW02, undulating slightly in between. The deepest unit of bedrock is indicated by the very light reflective banding due to almost complete attenuation of the radar signal that remains horizontal throughout the profile, showcasing even less compositional variation than the weathered bedrock and saturated sediments found above. Depth to the bedrock begins ~40' BLS and extends further than the maximum vertical range of the GPR (60' BLS).



Figure 16: Transect 1 with labeled features





Figure 18: Transect 3 with labeled features



Figure 19: Transect 4 with labeled features

Transect 3 features 4 reflective banding units similar in appearance to those seen in Transects 2 and 4, but auger refusal during SB02 collection leads to a different lithological interpretation. A surficial layer of loose, unconsolidated residuum is seen again, but with a thickness of only 3 - 5' BLS. Immediately below, broad and lightly contrasting reflections indicate a partially weathered bedrock that extends to depths ~12' BLS. The undulatory nature of the banding implies the regolith is composed of large, fractured blocks of impenetrable bedrock close to the land surface. Brightly contrasting broad bands below this unit are interpreted as a partially weathered and saturated bedrock as water flows through a network of fractures. Beginning at a depth ranging from 25 - 30' BLS, and extending further than the maximum vertical range of the GPR, the bedrock is shown to have features similar to the bedrock seen in the other transects. The lightly contrasting horizontal reflective bands imply a lack of fractures or faulting and therefore does not allow the transmission of water through the unit. Transect 1 represents a cross-sectional profile of the TAS and includes a combination of features seen within transects 2 - 4. From Peachtree St. to a distance of 1200 feet the extent of the weathered bedrock atop the bedrock is shown to vary significantly. Around 100 feet to the east of SB01, the brightly contrasting and broadly undulating reflective bands representing partially weathered and saturated bedrock transition into an equally bright but more tightly undulating series of reflections. From around 750 – 900 feet distance a clear sinuous reflection is seen dipping from ~12' BLS before ending at bedrock 30' BLS. This reflection represents the termination of the large, fractured blocks of impenetrable bedrock that led to augur refusal at SB01 and SB02. At this boundary, the surficial layer of residuum increases in thickness from 5 to 12' and is underlain by a saturated and more heavily weathered bedrock. Underneath Courtland St., from a distance of 1200 – 1375 feet, brightly contrasting and very broad reflective banding transition into a series of bright parabolas indicating a possible sewage access area and several utility pipes underneath the surface. The final 600 feet of the profile show a similar subsurface lithology seen in transect 4 of the MWN.

4.3.3 Subsurface Lithology

A cross section of the TAS and MWN was made based upon observations of the soil borings and GPR transects and can be found in Figure 22.

Paleozoic metamorphic rock consisting of gneiss, schist, and amphibolite compose the bedrock underneath the study area. Depth to the bedrock surface was found to vary from ~28' BLS west of the existing well to greater than 40' BLS further east. Weathering of the bedrock has produced a fractured regolith with a varying spatial extent and is composed mostly of residuum and a fine sandy saprolite. The behavior of the regolith varies according to the degree of weathering. I believe the regolith encountered at soil boring locations SB01 and SB02 to be

less-weathered than in the MWN due to the rejection of the auger when drilling SB01 and SB02. Auger refusal is indicative of larger blocks of impenetrable bedrock intermingled within the regolith. Greater amounts of weathering in the MWN have created a layer of saprolite in between surficial residuum and the upper boundary of weathered bedrock. The contact between the residuum and saprolite layers was found to correspond with the water table, suggesting that the spatial extent of the aquifer is limited within the TAS to the MWN. It should be noted that the limit of the aquifer is not an immediate boundary, but rather a transitional one. The aquifer is most likely recharged from inaccessible groundwater flowing east from within the fractured bedrock underlying the TAS. This is verified by a measurement taken at the existing well (with a total well depth of 37.5' BLS) that determined the depth to the water table to be 34.2' BLS. With only 3.3 feet of water within the well, the existing well most likely passes through bedrock. Knowing the vertical extent of the bedrock is critical for future research within the study area if additional monitoring wells are to be installed.

Groundwater flow direction is dictated by the hydraulic head, calculated to be 1006.3' ASL at the existing well, 998.7' ASL at MW01, and 998.1' ASL at MW02. In the MWN, groundwater flows from West to East following the topography downhill until it recharges one of the many tributaries of Peachtree Creek.



Figure 20: Subsurface lithology of the Total Area of Study and Monitoring Well Network; blue arrows indicate groundwater flow direction

5 CONCLUSIONS

Surface water quality in the City of Atlanta has been shown to contain higher concentrations of contaminants than rural or non-urban watersheds (Peters, 2009; Rose, 2007). Elevated levels of SO₄²⁻, Cl⁻, K⁺, and Na⁺ in Atlanta streams have been attributed to sewage overflow and infiltration (Rose, 2007). Of the two monitoring wells that compose the MWN, water quality was determined to be variable based on the occurrence of PCE in MW02. While non-potable use would not normally consider drinking water standards, non-potable water use for irrigation would still have to consider direct human exposure and incidental ingestion. As a result, water quality would need to be assessed on a site basis for non-potable use. Additionally, chemical analysis of 12 groundwater samples determined that concentrations of the dissolved constituents Ca, Mg, Na, K, and SO₄ were greater than those found within surface waters surrounding the study area.

A lithological map of the study area was produced to provide a broader geologic context for the MWN. Four GPR transects of the TAS indicate a varying subsurface lithology consisting of four distinct units. A surficial layer of loose, unconsolidated residuum increases in thickness from West to East and is underlain by a layer of saturated sediments within the MWN. A transitional layer of partially weathered regolith and bedrock underlie the TAS and depth to bedrock is extremely variable and related to topography. As a result, water availability would need to be assessed on a site basis to meet production needs.

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APPENDICES

Appendix A: Monitoring Well Construction Log and Soil Boring Logs

| (| © EOSCIENCES MONITORING CONSTRUCTION | | G WELL | BOREHOLE/WELL NUMBER: SB-03/MW-01 | | |
|---------------|---|---|--------------------------------|--------------------------------------|---|--|
| | ^w EOSCIENCES | CONSTRUCTIO | N DIAGRAM | PAGE NO. 1 OF 1 | | |
| PRO | JECT NAME: GEORGIA STATE UNIV | TOTAL BOREHOLE DEPTH: 37 FE | EET BELOW LA | AND SURFACE (BLS) | | |
| W.O | .#: <u>N/A</u> | NORTHING: 3,738,227.89 | | | | |
| LOC | ATION: Atlanta, Georgia | EASTING: 742,294.96 | | | | |
| DRII | LLING COMPANY: EMServices Inc. | | TOP OF CASING ELEV. IN FEET: _ | 1,011.60 | | |
| DRII | L RIG TYPE: Direct Push Technology/H | ollow Stem Auger (DPT/HSA) | AIR MONITORING INSTRUMENT | · | | |
| DRI | LUNG METHOD: HSA | | WELL CASING DIAMETER: 2 IN | THESID | | |
| DKI | ELING METHOD. DET Mensee | | CONDICISION DIAMETER. | | | |
| SAW | IPLING METHOD: DPT Macrocore | | COMMENTS. | | | |
| LOG | GED BY: Jude Waguespack WEATHE | R: Cloudy, light drizzle | | | | |
| DAT | E BEGUN: <u>04/07/2018</u> DATE CC | DMPLETED: 04/07/2018 | | | | |
| H BGS ET) | LITHO | LOGIC LOG | | | | |
| DEPTI (FE) | LITHOLOGY - SB03 | DESCRIPTION | MONITORING | WELL CON | STRUCTION | |
| | | | TRAFFIC GRADE MANHOLE | | CONCRETE PAD (2' X 2' X 4'') | |
| | | LAND SURFACE | | | | |
| 0 | 0.0.0 | Fine loose sand with lithics | | FI | ° ∆°∆ | |
| - | in the second | Fine loose sand | ł P. | ₀ ∀ | | |
| - | 44 | Biotite, Halloysite | | > \ \ \ | | |
| - | | No Recovery | | | | |
| | y 0 2 C 0. 0 | Biotite - Fine loose sand w/ lithics | | ő ő | RISER PIPE ID: 2-INCH | |
| - | 27 | Coarse loose sand Biotite, Hallovsite, Montmorillonite | | 7 0 | TYPE: SCH. 40 PVC | |
| - 1 | | Very fine loose sand | | | | |
| 10 | | No Recovery | | | | |
| | | Biotite, Halloysite, Montmorillonite | CEMENT | | | |
| - | - 47 · · · | Biotite, Kaolinite | | í ≚ ¦ö | -12.05' | |
| | | | | | | |
| _ | | No Recovery Kaolinita | | | | |
| - | | Fine sand w/ 1-2 mm laminations | | | | |
| | 47. | Kaolinite, Montmorillonite | 7 | 5 Ŭ | BENTONITE SEAL THICKNESS: 2 FEET | |
| _ | | | | _ | TOP: -17 FEET BLS BOTTOM: -19 FEET BLS | |
| 20- | | Biotite, Kaolinite, Hallovsite | 1 13 | | Lorion. Dibiblo | |
| | | | EILTED BACK SAND | | | |
| | 47 | Biotite, Kaolinite | THICKNESS: 18 FEET | | | |
| - | | No Recovery | BOTTOM: -37 FEET BLS | | | |
| | * | Kaolinite | 1 6 | | 6000000 | |
| | | | | | SCREEN ID: 2-INCH TYPE OF SCREEN: PVC | |
| - | 4 | Kaolinite, Gibbsite, Montmorillonite, Biotite | 4 1: | | LENGTH OF SCREEN: 15.00 FEET | |
| - | | Fine hard sand w/ 2.5 mm lithic | 1 1. | | TOP OF SCREEN: -21.0 FEET BUS | |
| 30 | · · · · · · · · · · · · · · · · · · · | Biotite, Gibbsite, K-Spar | 1 1 | | BOTTOM OF | |
| | | Disting Kaslinita K.Coss | 4 1 | | SUREEN: -30 FEET BLS | |
| - | é | Fine hard sand w/ 1-2 mm lithics | 1 12 | | | |
| | | No Recovery | j : | | | |
| | | |] [: | | | |
| - | | | l | | | |
| | Sand/ With lithics With lit | nd/ XRD No hics Sample Site Recovery | TOTAL DEPTH | H = 37.00 F | EET BLS | |

| 0 | | | | BOREHOLE NUMBER: SB-01/SB-02 |
|--|--|--|---|---|
| Ø | W EOSCIENCES | Soll box | | PAGE NO. 1 OF 1 |
| PRO W.C DRI DRI DRI SAM LOC DAT | DJECT NAME: <u>GEORGIA STATE UNI</u> D.#: <u>N/A</u> CATION: <u>Atlanta. Georgia</u> LLING COMPANY <u>EMServices Inc.</u> LL RIG TYPE: <u>Direct Push Technology/</u> LLING METHOD <u>HSA</u> APLING METHOD: <u>DPT Macrocore</u> GGED BY: <u>Jude Waguespack</u> WEATHE TE BEGUN: <u>04/07/2018</u> DATE CO | VERSITY Hollow Stem Auger (DPT/HSA) R: <u>Cloudy</u> , light drizzle MPLETED: <u>04/07/2018</u> | TOTAL BOREHOLE DEPTH <u>, 5 FE</u> NORTHING: <u>3,738,147 (SB01); 3,73</u> EASTING: <u>742,058 (SB01); 742,060</u> TOP OF CASING ELEV. IN FEET <u>3</u> AIR MONITORING INSTRUMENT WELL CASING DIAMETER <u>; N/A</u> COMMENTS: | ET (SB-01)/11.25 FEET (SB02) BLS 8,238 (SB02) (SB02) //A |
| BGS T) | LITHO | LOGIC LOG | LI | HOLOGIC LOG |
| DEPTH (FEE | LITHOLOGY - SB01 | DESCRIPTION | LITHOLOGY - SB02 | DESCRIPTION |
| 0 | ŭ 0' 0' 0 0. 6 a 0.0 0 0 0 | LAND SURFACE Fine loose sand with lithics Biotite, Halloysite | 6'0.8'''''.6. | LAND SURFACE Fine loose sand with lithics Gibbsite, Montmorillonite |
| - | | No Recovery | | No Recovery |
| | | | | Gibbsite - Fine sand Gibbsite, Montmorillonite No Recovery |
| | | | | Kaolinite, Montmorillonite Biotite, Gibbsite - Fine sand |
| 20 | | | | |
| 30 | | | | |
| | Sand/ With lithics | Fine sand/ $b \circ o \circ o \circ c$ $b \circ o \circ o \circ c$ With lithics | XRD Sample Site | No Recovery |

Appendix B: TestAmerica Results



<u>TestAmerica</u>

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc. TestAmerica Savannah 5102 LaRoche Avenue Savannah, GA 31404 Tel: (912)354-7858

TestAmerica Job ID: 680-150889-1 Client Project/Site: Monitoring Well Installation

For:

Georgia State University Dept of GeoSciences 24 Peachtree Center Avenue Suite 340 Atlanta, Georgia 30303

Attn: Dr. Brian Meyer

Mik Com

Authorized for release by: 4/20/2018 4:48:23 PM

Keaton Conner, Project Manager I (813)885-7427 keaton.conner@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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

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

Definitions/Glossary

| Client: Georg Project/Site: | jia State University TestAmerica Job ID: 680-150889-1 Monitoring Well Installation | 2 |
|---------------------------------------|---|---|
| Qualifiers | | 3 |
| GC/MS VOA | | |
| Qualifier | Qualifier Description | |
| U | Indicates the analyter was analyzed for but not detected. | |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. | 5 |
| * | LCS or LCSD is outside acceptance limits. | |
| * | RPD of the LCS and LCSD exceeds the control limits | |
| GC/MS Semi | i VOA | |
| Qualifier | Qualifier Description | |
| U | Indicates the analyte was analyzed for but not detected. | |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. | |
| Х | Surrogate is outside control limits | |
| HPLC/IC | | |
| Qualifier | Qualifier Description | |
| U | Indicates the analyte was analyzed for but not detected. | |
| Metals | | |
| Qualifier | Qualifier Description | |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. | |
| U | Indicates the analyte was analyzed for but not detected. | |
| F1 | MS and/or MSD Recovery is outside acceptance limits. | |
| F2 | MS/MSD RPD exceeds control limits | |
| 4 | MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not | |
| в | applicable. Compound was found in the blank and sample. | |
| General Che | mistry | |
| Qualifier | Qualifier Description | |
| | Indicates the analyte was analyzed for but not detected | |
| J | Result is less than the RL but oreater than or equal to the MDL and the concentration is an approximate value. | |
| HF | Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request. | |
| Glossary | | |
| Abbreviation | These commonly used abbreviations may or may not be present in this report | |
| × × × × × × × × × × × × × × × × × × × | Listed under the "D" column to designate that the result is reported on a dry weight basis | |
| %R | Percent Recovery | |
| CFL | Contains Free Liquid | |
| CNF | Contains No Free Liquid | |
| DER | Duplicate Error Ratio (normalized absolute difference) | |
| Dil Fac | Dilution Factor | |
| DL | Detection Limit (DoD/DOE) | |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample | |
| DLC | Decision Level Concentration (Radiochemistry) | |
| EDL | Estimated Detection Limit (Dioxin) | |
| LOD | Limit of Detection (DoD/DOE) | |
| LOQ | Limit of Quantitation (DoD/DOE) | |
| MDA | Minimum Detectable Activity (Radiochemistry) | |
| MDC | Minimum Detectable Concentration (Radiochemistry) | |
| MDL | Method Detection Limit | |
| ML | Minimum Level (Dioxin) | |
| NC | Not Calculated | |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) | |
| PQL | Practical Quantitation Limit | |
| | | |

TestAmerica Savannah

Definitions/Glossary

| Client: Georg | ia State University | TestAmerica Job ID: 680-150889-1 | | | |
|--|--|----------------------------------|--|--|--|
| Project/Site: Monitoring Well Installation | | | | | |
| Glossary | Continued) | | | | |
| Abbreviation | These commonly used abbreviations may or may not be present in this report. | | | | |
| QC | Quality Control | | | | |
| RER | Relative Error Ratio (Radiochemistry) | | | | |
| RL | Reporting Limit or Requested Limit (Radiochemistry) | | | | |
| RPD | Relative Percent Difference, a measure of the relative difference between two points | | | | |
| TEF | Toxicity Equivalent Factor (Dioxin) | | | | |
| TEQ | Toxicity Equivalent Quotient (Dioxin) | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

TestAmerica Savannah

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Sample Summary

Client: Georgia State University Project/Site: Monitoring Well Installation

| Lab Sample ID | Client Sample ID | Matrix | Collected Received |
|---------------|------------------|--------|-------------------------------|
| 680-150889-1 | SB04 | Solid | 04/09/18 14:00 04/10/18 08:00 |
| 680-150889-2 | MW-01 | Water | 04/09/18 09:00 04/10/18 08:00 |
| 680-150889-3 | MW-02 | Water | 04/09/18 09:55 04/10/18 08:00 |
| 680-150889-4 | Trip Blank | Water | 04/09/18 00:00 04/10/18 08:00 |

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TestAmerica Savannah

4/20/2018

TestAmerica Job ID: 680-150889-1

Case Narrative

Client: Georgia State University Project/Site: Monitoring Well Installation

Job ID: 680-150889-1

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE

Client: Georgia State University

Project: Monitoring Well Installation

Report Number: 680-150889-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT

The samples were received on 4/10/2018 8:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 1.2° C and 1.7° C.

RECEIPT EXCEPTIONS

A trip blank was submitted for analysis with these samples; however, it was not listed on the Chain of Custody (COC).

The COC was incomplete as received: A sample collection date nor sample collection time was not provided for samples -2 (MW-01) and -3 (MW-02). The client supplied this information via phone.

TCLP VOLATILE ORGANIC COMPOUNDS (GC-MS)

Sample SB04 (680-150889-1) was analyzed for TCLP volatile organic compounds (GC-MS) in accordance with EPA SW-846 Methods 1311/8260B. The samples were leached on 04/11/2018 and analyzed on 04/13/2018.

Sample SB04 (680-150889-1)[20X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

VOLATILE ORGANIC COMPOUNDS (GC-MS)

Sample SB04 (680-150889-1) was analyzed for Volatile Organic Compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were prepared and analyzed on 04/11/2018.

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

VOLATILE ORGANIC COMPOUNDS (GC-MS)

Samples MW-01 (680-150889-2), MW-02 (680-150889-3) and Trip Blank (680-150889-4) were analyzed for Volatile Organic Compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 04/11/2018.

4-Methyl-2-pentanone recovered outside of criteria low for LCSD 680-519398/5. 4-Methyl-2-pentanone exceeded the RPD limit. Refer to the QC report for details.

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

TCLP SEMIVOLATILE ORGANIC COMPOUNDS (GC-MS)

Sample SB04 (680-150889-1) was analyzed for TCLP semivolatile organic compounds (GC-MS) in accordance with EPA SW846 Methods 1311 / 8270D. The samples were leached on 04/11/2018, prepared on 04/12/2018 and analyzed on 04/17/2018.

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TestAmerica Savannah 4/20/2018 4

TestAmerica Job ID: 680-150889-1

| Case Narrative | |
|---|---|
| Client: Georgia State University TestAmerica Job ID: 680-150889-1 Project/Site: Monitoring Well Installation TestAmerica Job ID: 680-150889-1 | |
| Job ID: 680-150889-1 (Continued) | |
| Laboratory: TestAmerica Savannah (Continued) | Λ |
| 2.4.6-Tribromophenol (Surr), 2-Fluorobiphenvl. 2-Fluorophenol (Surr), Nitrobenzene-d5 (Surr), Phenol-d5 (Surr) and Terphenvl-d14 (Surr) | 4 |
| recovered outside of criteria high for LB 680-519572/1-B. Refer to the QC report for details. | |
| No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page. | |
| SEMIVOLATILE ORGANIC COMPOUNDS (GC-MS) | |
| Sample SB04 (680-150889-1) was analyzed for Semivolatile Organic Compounds (GC-MS) in accordance with EPA SW-846 Method | |
| 8270D. The samples were prepared on 04/11/2018 and analyzed on 04/15/2018. | |
| To analytical of quality issues were noted, other than those described above of in the Deminions/Clossary page. | |
| SEMIVOLATILE ORGANIC COMPOUNDS (AQUEOUS) | |
| Samples MW-01 (680-150889-2) and MW-02 (680-150889-3) were analyzed for Semivolatile Organic Compounds (Aqueous) in accordance with EPA SW-846 Method 8270D. The samples were prepared on 04/12/2018 and analyzed on 04/16/2018. | |
| No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page. | |

METALS (ICP) - TCLP

Sample SB04 (680-150889-1) was analyzed for Metals (ICP) - TCLP in accordance with EPA SW-846 Methods 1311/6010C. The samples were leached on 04/11/2018, prepared on 04/18/2018 and analyzed on 04/19/2018.

Arsenic and Silver recovered outside of criteria low for the MS and MSD of sample SB04 (680-150889-1) in batch 680-520874. Silver exceeded the RPD limit.

The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount.

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

METALS (ICP)

Sample SB04 (680-150889-1) was analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared and analyzed on 04/11/2018.

Chromium recovered outside of criteria low for the MS of sample SB04 (680-150889-1) in batch 680-519787. Barium failed the recovery criteria high.

Chromium and Selenium recovered outside of criteria low for the MSD of sample SB04 (680-150889-1) in batch 680-519787.

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

METALS (ICP)

Samples MW-01 (680-150889-2) and MW-02 (680-150889-3) were analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 04/14/2018 and analyzed on 04/18/2018.

Iron was detected in method blank MB 680-520055/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

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

MERCURY - TCLP

Sample SB04 (680-150889-1) was analyzed for mercury - TCLP in accordance with EPA SW-846 Methods 1311/7470A. The samples were leached on 04/11/2018, prepared on 04/13/2018 and analyzed on 04/16/2018.

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

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TestAmerica Savannah 4/20/2018

| Case Narrative | | |
|--|--|---|
| Client: Georgia State University | TestAmerica Job ID: 680-150889-1 | |
| Project/Site: Monitoring Well Installation | | |
| Job ID: 680-150889-1 (Continued) | | |
| Laboratory: TestAmerica Savannah (Continued) | | 4 |
| TOTAL MERCURY | | 5 |
| Samples MW-01 (680-150889-2) and MW-02 (680-150889-3) were analyzed for total mercury 7470A. The samples were prepared on 04/11/2018 and analyzed on 04/13/2018. | in accordance with EPA SW-846 Methods | 6 |
| No analytical or quality issues were noted, other than those described above or in the Definition | ons/Glossary page. | |
| TOTAL MERCURY Sample SB04 (680-150889-1) was analyzed for total mercury in accordance with EPA SW-84 prepared on 04/10/2018 and analyzed on 04/12/2018. | 6 Method 7471B. The samples were | |
| No analytical or quality issues were noted, other than those described above or in the Definition | ons/Glossary page. | |
| IGNITABILITY FOR SOLIDS | | |
| Sample SB04 (680-150889-1) was analyzed for ignitability for solids in accordance with EPA sanalyzed on 04/12/2018. | SW-846 Method 1030. The samples were | |
| The following sample did not ignite: SB04 (680-150889-1); therefore, an ignitability value could reported as "No Burn" (NB). | d not be obtained. The result has been | |

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

ALKALINITY

Samples MW-01 (680-150889-2) and MW-02 (680-150889-3) were analyzed for alkalinity in accordance with SM 2320B. The samples were analyzed on 04/10/2018.

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

TOTAL DISSOLVED SOLIDS

Samples MW-01 (680-150889-2) and MW-02 (680-150889-3) were analyzed for total dissolved solids in accordance with SM 2540C. The samples were analyzed on 04/11/2018.

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

TOTAL CYANIDE

Sample SB04 (680-150889-1) was analyzed for total cyanide in accordance with EPA SW-846 Method 9012B. The samples were prepared and analyzed on 04/12/2018.

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

TOTAL SULFIDE

Sample SB04 (680-150889-1) was analyzed for total sulfide in accordance with EPA SW-846 Method 9034. The samples were prepared and analyzed on 04/12/2018.

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

CORROSIVITY (PH)

Sample SB04 (680-150889-1) was analyzed for corrosivity (pH) in accordance with EPA SW-846 Method 9045D. The samples were analyzed on 04/19/2018.

This analysis is considered a field test and is to be performed within 15 minutes of collection. This sample(s) was performed in the laboratory outside the 15 minute timeframe.

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

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TestAmerica Savannah 4/20/2018

| Case Narrative | |
|--|--------|
| Client: Georgia State University TestAmerica Job ID: 680-150 Project/Site: Monitoring Well Installation TestAmerica Job ID: 680-150 |)889-1 |
| Job ID: 680-150889-1 (Continued) | 3 |
| Laboratory: TestAmerica Savannah (Continued) | 4 |
| 9056 ANIONS Samples MW-01 (680-150889-2) and MW-02 (680-150889-3) were analyzed for 9056 Anions in accordance with SW 846 9056. The samples were analyzed on 04/12/2018. | 5 |
| Samples MW-01 (680-150889-2)[5X] and MW-02 (680-150889-3)[5X] required dilution prior to analysis. The reporting limits have been | 6 |
| adjusted accordingly. | |
| No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page. | |
| PERCENT SOLIDS/MOISTURE Sample SB04 (680-150889-1) was analyzed for Percent Solids/Moisture in accordance with TestAmerica SOP. The samples were analyzed on 04/11/2018. | |
| No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page. | |
| TOTAL HARDNESS (AS CACO3) BY CALCULATION | |

TOTAL HARDNESS (AS CACO3) BY CALCULATION Samples MW-01 (680-150889-2) and MW-02 (680-150889-3) were analyzed for total hardness (as CaCO3) by calculation in accordance with SM 2340B. The samples were analyzed on 04/20/2018.

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

Client: Georgia State University Project/Site: Monitoring Well Installation

Client Sample ID: SB04 Date Collected: 04/09/18 14:00

Date Received: 04/10/18 08:00

TestAmerica Job ID: 680-150889-1

Lab Sample ID: 680-150889-1 Matrix: Solid Percent Solids: 76.5

| Method: 8260B - Volatile Org | ganic Compou | inds (GC/M | S) | MOL | Unit | - | Bronened | Analyses | DILE | 5 |
|------------------------------|--------------|------------|-----|------------|----------------|---------------------------------------|----------------|----------------|---------------------------------------|---|
| | Result | uuaimer | KL | | | <u>ע</u> | Prepared | Analyzed | DIIFac | |
| Acetone | 14 | J | 50 | 0.72 | ug/Kg | × × | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| Benzene | 0.73 | 0 | 5.0 | 0.73 | ug/Kg | ~ ~ | 04/11/16 09:15 | 04/11/10 10:00 | 1 | |
| Bromobenzene | 1.7 | U | 5.0 | 1.7 | ug/Kg | × | 04/11/18 09:15 | 04/11/18 18:08 | | |
| Bromocniorometnane | 3.3 | U | 5.0 | 3.3 | ug/Kg | × | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| Bromodichioromethane | 0.97 | 0 | 5.0 | 0.97 | ug/Kg | ~ ~ | 04/11/10 09.15 | 04/11/10 10:00 | 1 | |
| Biomonothene | 1.0 | 0 | 5.0 | 1.0 | ug/Kg | ····· | 04/11/10 09.15 | 04/11/10 10:00 | | |
| | 1.5 | 0 | 5.0 | 1.5 | ug/Kg | ж ж | 04/11/10 09.15 | 04/11/10 10:00 | 1 | |
| 2-Butahone (MEK) | 2.4 | 0 | 20 | 2.4 | ug/Kg | č. | 04/11/10 09:15 | 04/11/10 10:00 | 1 | |
| | 2.4 | | 5.0 | 2.4 | ug/Kg | · · · · · · | 04/11/18 09:15 | 04/11/10 10:00 | | |
| tort Butylbenzene | 2.1 | 0 | 5.0 | Z.1 | ug/Kg | ~ ~ | 04/11/10 09:15 | 04/11/10 10:00 | 1 | |
| Carbon disulfide | 1.0 | 0 | 5.0 | 1.0 | ug/Kg | å | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| Carbon totrachlorido | 1.1 | | 5.0 | 0.02 | ug/Kg | · · · · · · | 04/11/18 09:15 | 04/11/10 10:00 | | |
| Chlorobenzene | 0.03 | | 5.0 | 0.03 | ug/Kg | * | 04/11/18 00:15 | 04/11/18 18:00 | 1 | |
| Chloroethane | 0.90 | | 5.0 | 0.30 | ug/Ng | * | 04/11/10 03.13 | 04/11/10 10:00 | 1 | |
| Chloroform | 2.7 | U 11 | 5.0 | ∠./ 1 1 | ug/Ng | ·····* | 04/11/18 00:15 | 04/11/18 18:00 | 1 | |
| Chloromethane | 1.1 | | 5.0 | 1.1 | ug/Kg | с. | 04/11/18 00:15 | 04/11/18 18:08 | 1 | |
| 2-Chlorotoluene | 2.0 | | 5.0 | 2.0 | ug/Kg ug/Kg | ÷ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| 4 Chlorotoluene | 2.0 | | 5.0 | 2.0 | ug/Kg | ····· & | 04/11/18 09:15 | 04/11/18 18:08 | | |
| Dibromochloromethane | 1.7 | | 5.0 | 1.7 | ug/Kg ug/Kg | | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| 1.2-Dibromo-3-Chloropropane | 1.7 | | 10 | 1.7 | ug/Kg | | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| 1.2-Dibromoethane | 1.5 | | 50 | 1.7 | ug/Kg | | 04/11/18 09:15 | 04/11/18 18:08 | | |
| Dibromomethane | 1.5 | | 5.0 | 1.5 | ug/Kg | ÷ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| Dichlorodifluoromethane | 0.94 | 0 | 5.0 | 0.94 | ua/Ka | ¢. | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| 1 1-Dichloroethane | 11 | | 5.0 | 11 | ug/Kg | · · · · · · · · · · · · · · · · · · · | 04/11/18 09:15 | 04/11/18 18:08 | ····· | |
| 1.2-Dichloroethane | 1.1 | 0 | 5.0 | 1.1 | ua/Ka | ÷ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| cis-1 2-Dichloroethene | 1.1 | U U | 5.0 | 1.1 | ua/Ka | \$ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| trans-1 2-Dichloroethene | 0.63 | | 5.0 | 0.63 | ug/Kg | · · · · · · · · · · · · · · · · · · · | 04/11/18 09:15 | 04/11/18 18:08 | ····· | |
| 1 2-Dichloroethene Total | 0.63 | U U | 10 | 0.63 | ua/Ka | ¢ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| 1 1-Dichloroethene | 1.5 | U U | 50 | 1.5 | ua/Ka | \$ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| 1.2-Dichloropropage | 0.86 | | 5.0 | 0.86 | ua/Ka | · · · · · · · · · · · · · · · · · · · | 04/11/18 09:15 | 04/11/18 18:08 | · · · · · · · · · · · · · · · · · · · | |
| 1 3-Dichloropropane | 1.8 | U U | 5.0 | 1.8 | ua/Ka | \$ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| 2.2-Dichloropropane | 1.1 | ŭ | 5.0 | 1.1 | ua/Ka | \$ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| 1 1-Dichloropropene | 0.95 | - U | 5.0 | 0.95 | ua/Ka | • • • • • • • • • | 04/11/18 09:15 | 04/11/18 18:08 | | |
| cis-1.3-Dichloropropene | 0.83 | U | 5.0 | 0.83 | ua/Ka | ¢ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| trans-1.3-Dichloropropene | 0.87 | Ū | 5.0 | 0.87 | ua/Ka | ¢ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| Ethylbenzene | 1.3 | U | 5.0 | 1.3 | ug/Ka | **** | 04/11/18 09:15 | 04/11/18 18:08 | · · · · · · · · · · · · · · · · · · · | |
| 2-Hexanone | 3.3 | U | 25 | 3.3 | ug/Ka | ⇔ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| Isopropylbenzene | 1.9 | U | 5.0 | 1.9 | ug/Kg | ¢ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| p-Isopropyltoluene | 2.2 | U | 5.0 | 2.2 | ug/Ka | · · · · · · · · · · · · · · · · · · · | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| Methylene Chloride | 0.98 | U | 5.0 | 0.98 | ug/Kg | \$ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| - 4-Methyl-2-pentanone | 4.2 | U | 25 | 4.2 | ug/Ka | ¢ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| Methyl tert-butyl ether | 1.0 | U | 5.0 | 1.0 | ug/Kg | *** | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| N-Propylbenzene | 2.7 | U | 5.0 | 2.7 | ug/Kg | \$ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| Styrene | 0.93 | U | 5.0 | 0.93 | ug/Kg | ⇔ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| 1,1,1,2-Tetrachloroethane | 2.4 | U | 5.0 | 2.4 | ug/Kg | · · · · · · · · · · · · · · · · · · · | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| 1,1,2,2-Tetrachloroethane | 1.6 | U | 5.0 | 1.6 | ug/Kg | ¢ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| Tetrachloroethene | 1.9 | U | 5.0 | 1.9 | ug/Kg | ¢ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| Toluene | 0.84 | U | 5.0 | 0.84 | ug/Kg | \$ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |

TestAmerica Savannah

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Client: Georgia State University Project/Site: Monitoring Well Installation

Client Sample ID: SB04 Date Collected: 04/09/18 14:00 Date Received: 04/10/18 08:00

| Lab Sample ID: 680-150889-1 |
|-----------------------------|
| Lab Sample 1D. 000-100000-1 |
| Matrix: Solid |
| Percent Solids: 76.5 |
| |

TestAmerica Job ID: 680-150889-1

| Method: 8260B - Volatile O | rganic Compo | unds (GC/ | MS) (Continu | ied) | | | | | | |
|------------------------------|--------------|-----------|--------------|------|-------|----|----------------|----------------|---------|---|
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac | |
| 1,2,3-Trichlorobenzene | 1.6 | U | 5.0 | 1.6 | ug/Kg | | 04/11/18 09:15 | 04/11/18 18:08 | 1 | - |
| 1,1,1-Trichloroethane | 0.59 | U | 5.0 | 0.59 | ug/Kg | ⇔ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| 1,1,2-Trichloroethane | 1.3 | U | 5.0 | 1.3 | ug/Kg | \$ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| Trichloroethene | 1.3 | U | 5.0 | 1.3 | ug/Kg | ⇔ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| Trichlorofluoromethane | 1.2 | U | 5.0 | 1.2 | ug/Kg | ⇔ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| 1,2,4-Trimethylbenzene | 1.4 | U | 5.0 | 1.4 | ug/Kg | \$ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| 1,3,5-Trimethylbenzene | 1.7 | U | 5.0 | 1.7 | ug/Kg | ⇔ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| Vinyl acetate | 2.5 | U | 10 | 2.5 | ug/Kg | ⇔ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| Vinyl chloride | 1.5 | U | 5.0 | 1.5 | ug/Kg | ¢ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| o-Xylene | 1.1 | U | 5.0 | 1.1 | ug/Kg | ¢ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| m-Xylene & p-Xylene | 2.6 | U | 5.0 | 2.6 | ug/Kg | ⇔ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| Xylenes, Total | 1.1 | U | 10 | 1.1 | ug/Kg | ¢ | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac | |
| Toluene-d8 (Surr) | 100 | | 70 - 130 | | | | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| 1,2-Dichloroethane-d4 (Surr) | 96 | | 70 - 130 | | | | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| Dibromofluoromethane (Surr) | 95 | | 70 - 130 | | | | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |
| 4-Bromofluorobenzene (Surr) | 104 | | 70 - 130 | | | | 04/11/18 09:15 | 04/11/18 18:08 | 1 | |

| Method: 8260B - Volatile O | rganic Compo | unds (GC/ | MS) - TCLP | | | | | | |
|------------------------------|--------------|-----------|------------|--------|------|---|----------|----------------|---------|
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| Benzene | 0.0086 | U | 0.020 | 0.0086 | mg/L | | | 04/13/18 14:41 | 20 |
| 2-Butanone | 0.068 | U | 0.20 | 0.068 | mg/L | | | 04/13/18 14:41 | 20 |
| Carbon tetrachloride | 0.0066 | U | 0.020 | 0.0066 | mg/L | | | 04/13/18 14:41 | 20 |
| Chlorobenzene | 0.0052 | U | 0.020 | 0.0052 | mg/L | | | 04/13/18 14:41 | 20 |
| Chloroform | 0.010 | U | 0.020 | 0.010 | mg/L | | | 04/13/18 14:41 | 20 |
| 1,4-Dichlorobenzene | 0.0092 | U | 0.020 | 0.0092 | mg/L | | | 04/13/18 14:41 | 20 |
| 1,2-Dichloroethane | 0.010 | U | 0.020 | 0.010 | mg/L | | | 04/13/18 14:41 | 20 |
| 1,1-Dichloroethene | 0.0072 | U | 0.020 | 0.0072 | mg/L | | | 04/13/18 14:41 | 20 |
| Hexachlorobutadiene | 0.050 | U | 0.10 | 0.050 | mg/L | | | 04/13/18 14:41 | 20 |
| Tetrachloroethene | 0.015 | U | 0.020 | 0.015 | mg/L | | | 04/13/18 14:41 | 20 |
| Trichloroethene | 0.0096 | U | 0.020 | 0.0096 | mg/L | | | 04/13/18 14:41 | 20 |
| Vinyl chloride | 0.010 | U | 0.020 | 0.010 | mg/L | | | 04/13/18 14:41 | 20 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| Toluene-d8 (Surr) | 100 | | 80 - 120 | | | - | | 04/13/18 14:41 | 20 |
| 1,2-Dichloroethane-d4 (Surr) | 93 | | 73 - 131 | | | | | 04/13/18 14:41 | 20 |
| 4-Bromofluorobenzene (Surr) | 93 | | 80 - 120 | | | | | 04/13/18 14:41 | 20 |
| Dibromofluoromethane (Surr) | 99 | | 80 - 122 | | | | | 04/13/18 14:41 | 20 |

| e Organic Co | mpounds (| GC/MS) | | | | | | |
|--------------|--|---|---|---|---|--|--|---|
| Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| 2100 | U | 2100 | 2100 | ug/Kg | | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| 44 | U | 420 | 44 | ug/Kg | \Leftrightarrow | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| 37 | U | 420 | 37 | ug/Kg | ⇔ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| 44 | U | 420 | 44 | ug/Kg | \$ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| 56 | U | 420 | 56 | ug/Kg | ⇔ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| 1000 | U | 2100 | 1000 | ug/Kg | \$ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| 62 | U | 420 | 62 | ug/Kg | \$ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| 51 | U | 420 | 51 | ug/Kg | \$ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| | e Organic Co Result 2100 44 37 44 56 1000 62 51 | e Organic Compounds (Result Qualifier 2100 U 44 U 37 U 44 U 56 U 1000 U 62 U 51 U | Compounds (GC/MS) Result Qualifier RL 2100 U 2100 44 U 420 37 U 420 44 U 420 56 U 420 1000 U 2100 62 U 420 51 U 420 | Result Qualifier RL MDL 2100 U 2100 2100 44 U 420 44 37 U 420 37 44 U 420 44 56 U 420 56 1000 U 2100 1000 62 U 420 62 51 U 420 51 | Presult Qualifier MDL Unit Result Qualifier RL MDL Unit 2100 U 2100 2100 ug/Kg 44 U 420 37 ug/Kg 37 U 420 37 ug/Kg 44 U 420 34 ug/Kg 56 U 420 56 ug/Kg 1000 U 2100 1000 ug/Kg 62 U 420 62 ug/Kg 51 U 420 51 ug/Kg | Porganic Compounds (GC/MS) Result Qualifier RL MDL Unit D 2100 U 2100 2100 2100 ug/Kg % 44 U 420 44 ug/Kg % 37 U 420 37 ug/Kg % 44 U 420 44 ug/Kg % 56 U 420 56 ug/Kg % 1000 U 2100 1000 ug/Kg % 62 U 420 62 ug/Kg % 51 U 420 51 ug/Kg % | MDL Unit D Prepared 2100 U 2100 20/Kg 37 24 24 24 20/Kg 37 24/20 37 20/Kg 37 24/11/18 20/Kg 37 24/20 24 20/Kg 37 24/11/18 26/31 20/Kg 37 24/11/18 26/31 20/Kg 37 24/11/18 26/31 | MDL Unit D Prepared Analyzed 2100 U 2100 2100 200 200 04/11/18 08:30 04/15/18 21:02 44 U 420 44 ug/kg 04/11/18 08:30 04/15/18 21:02 37 U 420 37 ug/kg 04/11/18 08:30 04/15/18 21:02 44 U 420 34 ug/kg 04/11/18 08:30 04/15/18 21:02 56 U 420 56 ug/Kg 04/11/18 08:30 04/15/18 21:02 1000 U 2100 1000 ug/Kg 04/11/18 08:30 04/15/18 21:02 1000 U 2100 1000 ug/Kg 04/11/18 08:30 04/15/18 21:02 62 U 420 56 ug/Kg 04/11/18 08:30 04/15/18 21:02 61 U 420 62 ug/Kg 04/11/18 08:30 04/15/18 21:02 51 U 420 51 ug/Kg 04/11/18 08:30 04/15/18 21:02 |

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Client: Georgia State University Project/Site: Monitoring Well Installation

Client Sample ID: SB04

Date Collected: 04/09/18 14:00

TestAmerica Job ID: 680-150889-1

Lab Sample ID: 680-150889-1 Matrix: Solid

| ate Received: 04/10/18 08:00 | | | | | | | | Percent Solid | s: 76.5 |
|---|-------------------------|--------------------------------------|-------------------|-----------------|-----------------|---------------------------------------|----------------|----------------|---------------------------------------|
| Method: 8270D - Semivolatile Analyte | e Organic Con Result | n <mark>pounds</mark> (Qualifier | (GC/MS) (Co RL | ntinued) MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| 2-Chloronaphthalene | - <u> </u> | J | 420 | 44 | ug/Kg | | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| 2-Methylnaphthalene | 48 L | j | 420 | 48 | ug/Kg | · · · · · · · · · · · · · · · · · · · | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| 2-Methylphenol | 34 L | J | 420 | 34 | ua/Ka | \$ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| 2-Nitroaniline | 57 L | J | 2100 | 57 | ua/Ka | ¢ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| 2-Nitrophenol | 52 L | - J | 420 | 52 | ua/Ka | **** | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| 3 & 4 Methylphenol | 54 L | J | 420 | 54 | ua/Ka | \$ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| 3.3'-Dichlorobenzidine | 35 L | J | 830 | 35 | ua/Ka | ¢ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| 3-Nitroaniline | 58 L | - J | 2100 | 58 | ua/Ka | **** | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| 4.6-Dinitro-2-methylphenol | 210 L | J | 2100 | 210 | ua/Ka | \$ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| 4-Bromophenyl phenyl ether | 45 L | J | 420 | 45 | ua/Ka | ¢ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| 4-Chloro-3-methylphenol | 44 L | J | 420 | 44 | ua/Ka | · · · · · · · · · · · · · · · · · · · | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| 4-Chloroaniline | 66 L | J | 830 | 66 | ug/Ka | ¢ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| 4-Chlorophenyl phenyl ether | 56 L | J | 420 | 56 | ug/Kg | ⇔ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| 4-Nitroaniline | 62 L | J · · · · · · · · · · · | 2100 | 62 | ug/Kg | ÷ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| Acenaphthene | 52 L | J | 420 | 52 | ug/Kg | ¢ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| Acenaphthylene | 45 L | J | 420 | 45 | ug/Kg | ⇔ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| Acetophenone | 35 L | J · · · · · · · · · · · | 420 | 35 | ug/Kg | ÷ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| Anthracene | 32 L | J | 420 | 32 | ua/Ka | ¢ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| Benzolalanthracene | 40 . | - | 420 | 34 | ua/Ka | \$ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| Benzolalpyrene | 66 L | | 420 | 66 | ua/Ka | • • • • • • • • | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| Benzolb]fluoranthene | 48 L | - .J | 420 | 48 | ua/Ka | \$ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| Benzola h.ilpervlene | 28 L | J | 420 | 28 | ua/Ka | \$ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| Benzo[k]fluoranthene | 82 1 | | 420 | 82 | ua/Ka | *** | 04/11/18 08:30 | 04/15/18 21:02 | |
| Bis(2-chloroethoxy)methane | 49 1 | 1 | 420 | 49 | ua/Ka | \$ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| Bis(2-chloroethyl)ether | 57 1 | 1 | 420 | 57 | ua/Ka | \$ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| Bis(2-ethylhexyl) phthalate | 37 L | - J | 420 | 37 | ua/Ka | • • • • • • • • | 04/11/18 08:30 | 04/15/18 21:02 | · · · · · · · · · · · · · · · · · · · |
| Chrysene | 59 . | - | 420 | 27 | ua/Ka | \$ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| Dibenz(a h)anthracene | 49 L | J | 420 | 49 | ua/Ka | \$ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| Dibenzofuran | 42 L | - J | 420 | 42 | ua/Ka | • • • • • • • • | 04/11/18 08:30 | 04/15/18 21:02 | |
| Di-n-butyl phthalate | 38 L | - J | 420 | 38 | ua/Ka | \$ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| Diethyl phthalate | 47 L | - | 420 | 47 | ua/Ka | \$ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| Dimethyl phthalate | 43 1 | - J | 420 | 43 | ua/Ka | \$ | 04/11/18 08:30 | 04/15/18 21:02 | |
| Di-n-octvl phthalate | 37 L | J | 420 | 37 | ua/Ka | ¢ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| Fluoranthene | 140 | - | 420 | 40 | ua/Ka | ¢ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| Fluorene | 45 1 | - J | 420 | 45 | ua/Ka | \$ | 04/11/18 08:30 | 04/15/18 21:02 | |
| Hexachlorobenzene | 49 L | J | 420 | 49 | ua/Ka | ¢ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| Hexachlorobutadiene | 45 L | J | 420 | 45 | ua/Ka | ¢ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| Hexachlorocyclopentadiene | 52 1 | - J | 420 | .5 | ua/Ka | ÷ | 04/11/18 08:30 | 04/15/18 21:02 | |
| Hexachloroethane | 35 1 | - J | 420 | 35 | ua/Ka | ¢ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| ndeno[1.2.3-cd]pyrene | 35 L | - J | 420 | 35 | ua/Ka | ¢ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| sophorone | 42 1 | - J | 420 | 42 | ua/Ka | ÷ | 04/11/18 08:30 | 04/15/18 21:02 | |
| Naphthalene | 38 1 | - J | 420 | 38 | ua/Ka | ¢ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| Nitrobenzene | 33 1 | - J | 420 | 33 | ua/Ka | ¢ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| N-Nitrosodiphenylamine | 42 1 | -] | 420 | 42 | ua/Ka | ····· | 04/11/18 08:30 | 04/15/18 21:02 | |
| N-Nitrosodi-n-propylamine | 40 I | | 420 | 40 | ua/Ka | \$ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| Pentachlorophenol | 420 1 | .] | 2100 | 420 | ua/Ka | ¢ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |
| Phononthrono | 95 C | - | 420 | 34 | -9/19 110/Ka | | 04/11/18 08:30 | 04/15/18 21:02 | |
| A REAL PROPERTY OF A REAL PROPERTY. | 00 0 | · | 740 | 54 | ~9/1.9 | | 0.00.00 | 0 10 10 21.02 | |
| Phenol | 43 | J | 420 | 43 | ua/Ka | ☆ | 04/11/18 08:30 | 04/15/18 21:02 | 1 |

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| | | Client | Sample | Resul | ts | | | | | |
|---|-------------|-----------|-------------------|---------|----------|---------------------------------------|----------------|----------------|----------|-----|
| Client: Georgia State University Project/Site: Monitoring Well Insta | Illation | | | | | ٦ | estAmerica . | Job ID: 680-15 | 0889-1 | |
| Client Sample ID: SB04 | | | | | | La | b Sample | ID: 680-150 | 889-1 | |
| Date Collected: 04/09/18 14:00 | | | | | | | | Matrix | : Solid | |
| Date Received: 04/10/18 08:00 | | | | | | | | Percent Solid | ls: 76.5 | |
| Mathad: 2270D Samiyolatila | Organic Co | mnounde | | ntinued | ` | | | | | · • |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac | 5 |
| Butyl benzyl phthalate | 33 | U | 420 | 33 | ug/Kg | ☆ | 04/11/18 08:30 | 04/15/18 21:02 | 1 | |
| bis (2-chloroisopropyl) ether | 38 | U | 420 | 38 | ug/Kg | ¢ | 04/11/18 08:30 | 04/15/18 21:02 | 1 | |
| Carbazole | 38 | U | 420 | 38 | ug/Kg | \diamond | 04/11/18 08:30 | 04/15/18 21:02 | 1 | |
| 2,6-Dinitrotoluene | 53 | U | 420 | 53 | ug/Kg | ¢ | 04/11/18 08:30 | 04/15/18 21:02 | 1 | |
| 4-Nitrophenol | 420 | U | 2100 | 420 | ug/Kg | ☆ | 04/11/18 08:30 | 04/15/18 21:02 | 1 | |
| Atrazine | 29 | U | 420 | 29 | ug/Kg | ¢ | 04/11/18 08:30 | 04/15/18 21:02 | 1 | |
| Benzaldehyde | 73 | U | 420 | 73 | ug/Kg | ¢ | 04/11/18 08:30 | 04/15/18 21:02 | 1 | |
| Caprolactam | 83 | U | 420 | 83 | ug/Kg | \$ | 04/11/18 08:30 | 04/15/18 21:02 | 1 | |
| Surrogate | %Recoverv | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac | |
| 2.4.6-Tribromophenol (Surr) | 86 | | 45 - 129 | | | | 04/11/18 08:30 | 04/15/18 21:02 | 1 | |
| 2-Fluorobiphenyl (Surr) | 86 | | 41 - 116 | | | | 04/11/18 08:30 | 04/15/18 21:02 | 1 | |
| 2-Fluorophenol (Surr) | 83 | | 39 - 114 | | | | 04/11/18 08:30 | 04/15/18 21:02 | 1 | |
| Terphenyl-d14 (Surr) | 90 | | 46 - 126 | | | | 04/11/18 08:30 | 04/15/18 21:02 | 1 | |
| Phenol-d5 (Surr) | 81 | | 38 - 122 | | | | 04/11/18 08:30 | 04/15/18 21:02 | 1 | |
| Nitrobenzene-d5 (Surr) | 76 | | 37 - 115 | | | | 04/11/18 08:30 | 04/15/18 21:02 | 1 | |
| | | | | | | | | | | |
| Method: 8270D - Semivolatile | Organic Co | mpounds | (GC/MS) - TO | | Unit | Б | Prepared | Apolyzed | Dil Eas | |
| 1 4-Dicblorobenzene | 0.0026 | | 0.049 | 0.0026 | mal | | 01/12/18 15:10 | 01/17/18 01:31 | 1 | |
| Pyridine | 0.0020 | 0 | 0.045 | 0.0020 | mg/L | | 04/12/18 15:10 | 04/17/18 01:31 | 1 | |
| Hexachlorobenzene | 0.012 | U U | 0.049 | 0.012 | ma/l | | 04/12/18 15:10 | 04/17/18 01:31 | 1 | |
| 2 4-Dinitrotoluene | 0.0058 | ц. | 0.049 | 0.0058 | ma/l | | 04/12/18 15:10 | 04/17/18 01:31 | | |
| Hexachloroethane | 0.0037 | Ŭ | 0.049 | 0.0037 | ma/L | | 04/12/18 15:10 | 04/17/18 01:31 | 1 | |
| Hexachlorobutadiene | 0.0030 | U | 0.049 | 0.0030 | ma/L | | 04/12/18 15:10 | 04/17/18 01:31 | 1 | |
| Pentachlorophenol | 0.0097 | U | 0.24 | 0.0097 | ma/L | | 04/12/18 15:10 | 04/17/18 01:31 | 1 | |
| 2,4,6-Trichlorophenol | 0.0042 | U | 0.049 | 0.0042 | mg/L | | 04/12/18 15:10 | 04/17/18 01:31 | 1 | |
| 2,4,5-Trichlorophenol | 0.0058 | U | 0.049 | 0.0058 | mg/L | | 04/12/18 15:10 | 04/17/18 01:31 | 1 | |
| Nitrobenzene | 0.0036 | U | 0.049 | 0.0036 | mg/L | | 04/12/18 15:10 | 04/17/18 01:31 | 1 | |
| 2-Methylphenol | 0.0044 | U | 0.049 | 0.0044 | mg/L | | 04/12/18 15:10 | 04/17/18 01:31 | 1 | |
| 3 & 4 Methylphenol | 0.0063 | U | 0.049 | 0.0063 | mg/L | | 04/12/18 15:10 | 04/17/18 01:31 | 1 | |
| Current and the | 0/ D | 0 | 1 | | | | Owner and | A | 0// 5 | |
| 2.4.6. Tribromonhonol (Surr) | %Recovery | Quaimer | 21 141 | | | | Prepared | Analyzed | Dil Fac | |
| 2,4,6-Thbromoprienor (Sun) | 70 | | 31 - 141 | | | | 04/12/10 15.10 | 04/17/10 01.31 | 1 | |
| 2-Fluorophenol (Surr) | 65 | | 25 130 | | | | 04/12/18 15:10 | 04/17/18 01:31 | 1 | |
| Terohenyl-d14 (Surr) | 74 | | 10 143 | | | | 04/12/18 15:10 | 04/17/18 01:31 | | |
| PhenoLd5 (Surr) | 66 | | 25 130 | | | | 04/12/18 15:10 | 04/17/18 01:31 | 1 | |
| Nitrobenzene-d5 (Surr) | 71 | | 39 - 130 | | | | 04/12/18 15:10 | 04/17/18 01:31 | 1 | |
| Method: 6010C - Metals (ICP) | Posult | Qualifier | PI | МО | Unit | Р | Prepared | Applyzed | Dil Eac | |
| Areanic | 2 4 | I | 22 | 0.89 | ma/Ka | | 04/11/18 06:50 | 04/11/18 21·10 | 1 | |
| Barium | 4. I 130 | 5 | <u>ـــ</u> 1 1 | 0.05 | ma/Ka | ج | 04/11/18 06:50 | 04/11/18 21:10 | 1 | |
| Cadmium | 0.11 | U | 0.56 | 0.10 | ma/Ka | \$ | 04/11/18 06:50 | 04/11/18 21:10 | 1 | |
| Chromium | 22 | F1 | 11 | 0.23 | ma/Ka | · · · · · · · · · · · · · · · · · · · | 04/11/18 06:50 | 04/11/18 21:10 | | |
| Silver | 0 067 | U | 11 | 0.067 | ma/Ka | \$ | 04/11/18 06:50 | 04/11/18 21:10 | 1 | |
| Lead | 13 | | 1.1 | 0.38 | ma/Ka | \$ | 04/11/18 06:50 | 04/11/18 21:10 | 1 | |
| Selenium | 1.1 | U F1 | 2.8 | 1.1 | mg/Kg | ¢ | 04/11/18 06:50 | 04/11/18 21:10 | 1 | |

TestAmerica Savannah

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| | С | l | ie | er | ıt | S | a | m | p | le | R | es | ult | ts |
|--|---|---|----|----|----|---|---|---|---|----|---|----|-----|----|
|--|---|---|----|----|----|---|---|---|---|----|---|----|-----|----|

| | | Client | Sample | Resul | ts | | | | | |
|--|---------------|-----------|--------|--------|--------|-----------|----------------|-----------------------|-------------------|---|
| Client: Georgia State University Project/Site: Monitoring Well Installa | ation | | | | | Т | estAmerica . | lob ID: 680-15 | 50889-1 | |
| Client Sample ID: SB04 Date Collected: 04/09/18 14:00 | | | | | | La | ıb Sample | ID: 680-150 Matrix | 889-1 C: Solid | |
| Date Received: 04/10/18 08:00 | | | | | | | | Percent Sond | 15: 70.5 | |
| Method: 6010C - Metals (ICP) - T Analyte | CLP Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac | 5 |
| Arsenic | 0.20 | U F1 | 0.20 | 0.20 | mg/L | | 04/18/18 13:16 | 04/19/18 16:53 | 1 | |
| Barium | 1.0 | U | 1.0 | 1.0 | mg/L | | 04/18/18 13:16 | 04/19/18 16:53 | 1 | |
| Cadmium | 0.10 | U | 0.10 | 0.10 | mg/L | | 04/18/18 13:16 | 04/19/18 16:53 | 1 | |
| Chromium | 0.20 | U | 0.20 | 0.20 | mg/L | | 04/18/18 13:16 | 04/19/18 16:53 | 1 | |
| Lead | 0.20 | U | 0.20 | 0.20 | mg/L | | 04/18/18 13:16 | 04/19/18 16:53 | 1 | |
| Selenium | 0.50 | U | 0.50 | 0.50 | mg/L | | 04/18/18 13:16 | 04/19/18 16:53 | 1 | |
| Silver | 0.10 | U F1 F2 | 0.10 | 0.10 | mg/L | | 04/18/18 13:16 | 04/19/18 16:53 | 1 | |
| Method: 7470A - Mercury (CVAA |) - TCLP | | | | | | | | | |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac | |
| Mercury | 0.020 | U | 0.020 | 0.020 | mg/L | | 04/13/18 09:27 | 04/16/18 09:24 | 1 | |
| Method: 7471B - Mercury (CVAA | 3 | | | | | | | | | |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac | |
| Mercury | 0.0090 | U | 0.023 | 0.0090 | mg/Kg | <u>\$</u> | 04/10/18 15:11 | 04/12/18 17:59 | 1 | |
| General Chemistry | | | | | | | | | | |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac | |
| Ignitability | NB | | | | mm/sec | | | 04/12/18 07:57 | 1 | |
| Cyanide, Total | 0.20 | J | 0.65 | 0.17 | mg/Kg | ⇔ | 04/12/18 05:29 | 04/12/18 10:14 | 1 | |
| Sulfide | 75 | U | 75 | 75 | mg/Kg | ⇔ | 04/12/18 04:00 | 04/12/18 04:30 | 1 | |
| corrosivity by pH | 5.8 | HF | | | SU | | | 04/19/18 13:18 | 1 | |

TestAmerica Savannah

Client: Georgia State University Project/Site: Monitoring Well Installation

Client Sample ID: MW-01 Date Collected: 04/09/18 09:00 Date Received: 04/10/18 08:00

TestAmerica Job ID: 680-150889-1

Lab Sample ID: 680-150889-2 Matrix: Water

| lient Sample ID: MW-01 | Lab Sample ID: 680-150889-2 | | | | | | | | |
|------------------------------|-----------------------------|--------------|-----|------|------|---|----------|----------------|---------|
| ate Collected: 04/09/18 09:0 | Matrix: Water | | | | | | | | |
| ate Received: 04/10/18 08:00 | 0 | | | | | | | | |
| Mathadi 9260 R. Valatila Orr | anio Compo | unde (CCMIS) | | | | | | | |
| Analyte | Result | Qualifier | RI | MDI | Unit | D | Prenared | Analyzed | Dil Fac |
| 1 1 1 2-Tetrachloroethane | 0.37 | | 1.0 | 0.37 | | | Troparoa | 04/11/18 15:14 | 1 |
| 1 1 1-Trichloroethane | 0.37 | U U | 1.0 | 0.37 | ug/L | | | 04/11/18 15:14 | 1 |
| 1 1 2 2-Tetrachloroethane | 0.62 | U U | 1.0 | 0.62 | ua/l | | | 04/11/18 15:14 | . 1 |
| 1 1 2-Trichloroethane | 0.33 | Ū. | 1.0 | 0.33 | ua/l | | | 04/11/18 15:14 | |
| 1 1-Dichloroethane | 0.38 | U U | 1.0 | 0.38 | ug/L | | | 04/11/18 15:14 | . 1 |
| 1 1-Dichloroethene | 0.36 | U U | 1.0 | 0.36 | ua/l | | | 04/11/18 15:14 | . 1 |
| 1 1-Dichloropropene | 0.34 | Ū. | 1.0 | 0.34 | ua/l | | | 04/11/18 15:14 | |
| 1 2 3-Trichlorobenzene | 25 | U U | 5.0 | 2.5 | ug/L | | | 04/11/18 15:14 | . 1 |
| 1 2 4-Trimethylbenzene | 0.47 | U U | 1.0 | 0.47 | ua/l | | | 04/11/18 15:14 | . 1 |
| 1 2-Dibromo-3-Chloropropane | 11 | Ū. | 5.0 | 11 | ua/l | | | 04/11/18 15:14 | |
| 1 2-Dichloroethane | 0.50 | U U | 1.0 | 0.50 | ug/L | | | 04/11/18 15:14 | . 1 |
| 1.2-Dichloroethene. Total | 0.37 | - U | 2.0 | 0.37 | ua/L | | | 04/11/18 15:14 | 1 |
| 1.2-Dichloropropane | 0.67 | - U | 1.0 | 0.67 | ua/L | | | 04/11/18 15:14 | |
| 1.3.5-Trimethylbenzene | 0.31 | - U | 1.0 | 0.31 | ua/L | | | 04/11/18 15:14 | 1 |
| 1.3-Dichloropropane | 0.34 | - U | 1.0 | 0.34 | ua/L | | | 04/11/18 15:14 | 1 |
| 2.2-Dichloropropane | 0.37 | - U | 1.0 | 0.37 | ua/L | | | 04/11/18 15:14 | |
| 2-Chlorotoluene | 0.27 | U U | 1.0 | 0.27 | ua/l | | | 04/11/18 15:14 | 1 |
| 2-Hexanone | 2.0 | 0 | 10 | 2.0 | ug/L | | | 04/11/18 15:14 | 1 |
| | 0.45 | | 1.0 | 0.45 | ug/L | | | 04/11/18 15:14 | |
| | 7.0 | 0 | 10 | 7.0 | ug/L | | | 04/11/18 15:14 | 1 |
| Benzene | 0.43 | 1 | 10 | 0.43 | ug/L | | | 04/11/18 15:14 | 1 |
| Bromohenzene | 0.40 | | 1.0 | 0.45 | ug/L | | | 04/11/18 15:14 | |
| Bromochloromethane | 0.50 | 1 | 1.0 | 0.00 | ug/L | | | 04/11/18 15:14 | 1 |
| Bromoform | 0.43 | 1 | 1.0 | 0.10 | ug/L | | | 04/11/18 15:14 | 1 |
| Bromodichloromethane | 0.40 | | 1.0 | 0.40 | ug/L | | | 04/11/18 15:14 | |
| Bromomethane | 25 | 1 | 5.0 | 25 | ug/L | | | 04/11/18 15:14 | 1 |
| Carbon disulfide | 1.0 | 1 | 2.0 | 1.0 | ug/L | | | 04/11/18 15:14 | 1 |
| | 0.33 | | 1.0 | 0.33 | ug/L | | | 04/11/18 15:14 | |
| Chlorobenzene | 0.26 | U U | 1.0 | 0.00 | ug/L | | | 04/11/18 15:14 | 1 |
| Chloroethane | 2.5 | 0 | 5.0 | 25 | ug/L | | | 04/11/18 15:14 | 1 |
| Chloroform | 0.50 | | 1.0 | 0.50 | ug/L | | | 04/11/18 15:14 | |
| Chloromethane | 0.00 | - | 1.0 | 0.00 | ug/l | | | 04/11/18 15:14 | 1 |
| cis-1.2-Dichloroethene | 0.40 | u U | 1.0 | 0.41 | ua/L | | | 04/11/18 15:14 | 1 |
| cis-1 3-Dichloropropene | 0.40 | | 1.0 | 0.40 | ug/l | | | 04/11/18 15:14 | ····· 1 |
| Dibromochloromethane | 0.40 | - | 1.0 | 0.40 | ug/l | | | 04/11/18 15:14 | 1 |
| Dibromomethane | 0.32 | - U | 1.0 | 0.02 | ug/l | | | 04/11/18 15:14 | 1 |
| Dichlorodifluoromethane | 0.60 | | 1.0 | 0.55 | ug/l | | | 04/11/18 15:14 | |
| Thylbenzene | 0.00 | - | 1.0 | 0.33 | ug/l | | | 04/11/18 15:14 | 1 |
| sopronylbenzene | 0.35 | u U | 1.0 | 0.35 | ua/l | | | 04/11/18 15:14 | 1 |
| m-Xvlene & n-Xvlene | 0.35 | - <u>-</u> | 1.0 | 0.35 | ua/l | | | 04/11/18 15:14 | |
| Methyl tert-butyl ether | 0.30 | U U | 10 | 0.30 | ua/l | | | 04/11/18 15:14 | 1 |
| Methylene Chloride | 25 | - U | 5.0 | 25 | ua/L | | | 04/11/18 15:14 | 1 |
| 4-Methyl-2-pentanone | 2.5 | - U | 10 | 2.0 | ua/L | | | 04/11/18 15:14 | |
| 2-Butanone (MEK) | 3.4 | U U | 10 | 3.4 | ug/L | | | 04/11/18 15:14 | 1 |
| 1 2-Dibromoethane | 0.44 | U U | 10 | 0.44 | ug/L | | | 04/11/18 15:14 | 1 |
| n-Butylbenzene | 0.44 | | 1.0 | 0.44 | ug/L | | | 04/11/18 15:14 | |
| N-Pronybenzene | 0.47 | U U | 1.0 | 0.47 | ug/L | | | 04/11/18 15:14 | 1 |
| -Xvlene | 0.00 | U U | 1.0 | 0.00 | ug/L | | | 04/11/18 15:14 | 1 |
| n-Isonropyttoluene | 0.25 | | 1.0 | 0.25 | ug/L | | | 04/11/18 15:14 | |
| , isobiobairono | 0.40 | ~ | 1.0 | 0.40 | ag/L | | | 5-711710 13.14 | 1 |

TestAmerica Savannah

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Client: Georgia State University Project/Site: Monitoring Well Installation

Client Sample ID: MW-01 Date Collected: 04/09/18 09:00 Date Received: 04/10/18 08:00

TestAmerica Job ID: 680-150889-1

Lab Sample ID: 680-150889-2 Matrix: Water

| Viethod: 8260B - Volatile O Analyte | rganic Compo | unds (GC/I | WS) (Continu | Ied) | Unit | р | Prepared | Applyzed | Dil Eac |
|--|--------------|------------|--------------|------|------|---|----------|-------------------------|---------|
| sec-Butylbenzene | | | 1.0 | 0.42 | | | Flepaled | - <u>04/11/18 15:14</u> | 1 |
| Styrene | 0.72 | Ŭ | 1.0 | 0.72 | ug/L | | | 04/11/18 15:14 | 1 |
| ert-Butvlbenzene | 0.45 | Ū | 1.0 | 0.45 | ua/L | | | 04/11/18 15:14 | |
| Fetrachloroethene | 0.74 | U | 1.0 | 0.74 | ug/L | | | 04/11/18 15:14 | 1 |
| Foluene | 0.48 | U | 1.0 | 0.48 | ug/L | | | 04/11/18 15:14 | 1 |
| rans-1,2-Dichloroethene | 0.37 | U | 1.0 | 0.37 | ug/L | | | 04/11/18 15:14 | 1 |
| rans-1,3-Dichloropropene | 0.42 | U | 1.0 | 0.42 | ug/L | | | 04/11/18 15:14 | 1 |
| Frichloroethene | 0.48 | U | 1.0 | 0.48 | ug/L | | | 04/11/18 15:14 | 1 |
| Frichlorofluoromethane | 0.42 | U | 1.0 | 0.42 | ug/L | | | 04/11/18 15:14 | 1 |
| /inyl acetate | 0.81 | U | 2.0 | 0.81 | ug/L | | | 04/11/18 15:14 | 1 |
| /inyl chloride | 0.50 | U | 1.0 | 0.50 | ug/L | | | 04/11/18 15:14 | 1 |
| Kylenes, Total | 0.23 | U | 1.0 | 0.23 | ug/L | | | 04/11/18 15:14 | 1 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| Toluene-d8 (Surr) | 102 | | 80 - 120 | | | | | 04/11/18 15:14 | 1 |
| 1,2-Dichloroethane-d4 (Surr) | 89 | | 73 - 131 | | | | | 04/11/18 15:14 | 1 |
| Dibromofluoromethane (Surr) | 97 | | 80 - 122 | | | | | 04/11/18 15:14 | 1 |
| 4-Bromofluorobenzene (Surr) | 95 | | 80 - 120 | | | | | 04/11/18 15:14 | 1 |

| Method: 8270D - Semivolati | le Organic Co | ompounds (| GC/MS) | | | | | | |
|-------------------------------|---------------|----------------|--------|------|------|---|----------------|----------------|---------|
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| Benzaldehyde | 1.1 | U | 9.6 | 1.1 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Phenol | 0.80 | U | 9.6 | 0.80 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Bis(2-chloroethyl)ether | 1.1 | U | 9.6 | 1.1 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 2-Chlorophenol | 0.84 | U | 9.6 | 0.84 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 2-Methylphenol | 0.86 | U | 9.6 | 0.86 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| bis (2-chloroisopropyl) ether | 0.75 | U | 9.6 | 0.75 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Acetophenone | 0.55 | U | 9.6 | 0.55 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 3 & 4 Methylphenol | 1.3 | U | 9.6 | 1.3 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| N-Nitrosodi-n-propylamine | 0.69 | U | 9.6 | 0.69 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Hexachloroethane | 0.73 | U | 9.6 | 0.73 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Nitrobenzene | 0.70 | U | 9.6 | 0.70 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Isophorone | 0.87 | U | 9.6 | 0.87 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 2-Nitrophenol | 0.73 | U | 9.6 | 0.73 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 2,4-Dimethylphenol | 3.8 | U | 9.6 | 3.8 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Bis(2-chloroethoxy)methane | 0.90 | U | 9.6 | 0.90 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 2,4-Dichlorophenol | 1.1 | U | 9.6 | 1.1 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Naphthalene | 0.67 | U | 9.6 | 0.67 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 4-Chloroaniline | 2.1 | U | 19 | 2.1 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Hexachlorobutadiene | 0.60 | U | 9.6 | 0.60 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Caprolactam | 0.76 | U | 9.6 | 0.76 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 4-Chloro-3-methylphenol | 0.96 | U | 9.6 | 0.96 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 2-Methylnaphthalene | 0.75 | U | 9.6 | 0.75 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Hexachlorocyclopentadiene | 2.4 | U | 9.6 | 2.4 | ua/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 2.4.6-Trichlorophenol | 0.82 | U | 9.6 | 0.82 | ua/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 2.4.5-Trichlorophenol | 1.2 | - _U | 9.6 | 1.2 | ua/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 1.1'-Biphenvl | 0.56 | U | 9.6 | 0.56 | ua/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 2-Chloronaphthalene | 0.77 | U | 9.6 | 0.77 | ua/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 2-Nitroaniline | 1.3 | U | 48 | 1.3 | ua/L | | 04/12/18 15:10 | 04/16/18 00:03 | |
| Dimeth d phthalate | 0.95 | U | 9.6 | 0.95 | ua/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |

TestAmerica Savannah

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Client: Georgia State University Project/Site: Monitoring Well Installation

Client Sample ID: MW-01

TestAmerica Job ID: 680-150889-1

Lab Sample ID: 680-150889-2 Matrix: Water

| Method: 8270D - Semivola | tile Organic Co | mpounds | (GC/MS) (Co | ntinued |) | | | | |
|-----------------------------|-----------------|-----------|-------------|---------|------|---|----------------|----------------|---------|
| Analyte | Result | Qualifier | ŔĹ | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| 2,6-Dinitrotoluene | 1.1 | U | 9.6 | 1.1 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Acenaphthylene | 0.82 | U | 9.6 | 0.82 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 3-Nitroaniline | 4.8 | U | 48 | 4.8 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Acenaphthene | 0.73 | U | 9.6 | 0.73 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 2,4-Dinitrophenol | 9.6 | U | 48 | 9.6 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 1-Nitrophenol | 1.8 | U | 48 | 1.8 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Dibenzofuran | 0.76 | U | 9.6 | 0.76 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 2,4-Dinitrotoluene | 1.2 | U | 9.6 | 1.2 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Diethyl phthalate | 0.85 | U | 9.6 | 0.85 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Fluorene | 0.92 | U | 9.6 | 0.92 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 4-Chlorophenyl phenyl ether | 0.81 | U | 9.6 | 0.81 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 4-Nitroaniline | 4.8 | U | 48 | 4.8 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 1,6-Dinitro-2-methylphenol | 9.6 | U | 48 | 9.6 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| N-Nitrosodiphenylamine | 0.89 | U | 9.6 | 0.89 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| I-Bromophenyl phenyl ether | 0.74 | U | 9.6 | 0.74 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Hexachlorobenzene | 0.76 | U | 9.6 | 0.76 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Atrazine | 1.2 | U | 9.6 | 1.2 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Pentachlorophenol | 1.9 | U | 48 | 1.9 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Phenanthrene | 0.74 | U | 9.6 | 0.74 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Anthracene | 0.66 | U | 9.6 | 0.66 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Carbazole | 0.68 | U | 9.6 | 0.68 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Di-n-butyl phthalate | 0.80 | U | 9.6 | 0.80 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Fluoranthene | 0.71 | U | 9.6 | 0.71 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| ⊃yrene | 0.61 | U | 9.6 | 0.61 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Butyl benzyl phthalate | 1.2 | U | 9.6 | 1.2 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 3,3'-Dichlorobenzidine | 29 | U | 58 | 29 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Benzo[a]anthracene | 0.53 | U | 9.6 | 0.53 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Chrysene | 0.49 | U | 9.6 | 0.49 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Bis(2-ethylhexyl) phthalate | 1.5 | U | 9.6 | 1.5 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Di-n-octyl phthalate | 1.3 | U | 9.6 | 1.3 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Benzo[b]fluoranthene | 2.5 | U | 9.6 | 2.5 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Benzo[k]fluoranthene | 1.2 | U | 9.6 | 1.2 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Benzo[a]pyrene | 0.68 | U | 9.6 | 0.68 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| ndeno[1,2,3-cd]pyrene | 0.96 | U | 9.6 | 0.96 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Dibenz(a,h)anthracene | 0.96 | U | 9.6 | 0.96 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Benzo[g,h,i]perylene | 0.84 | U | 9.6 | 0.84 | ug/L | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| Nitrobenzene-d5 (Surr) | 79 | | 32 - 118 | | | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 2-Fluorobiphenyl (Surr) | 87 | | 32 - 113 | | | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Terphenyl-d14 (Surr) | 101 | | 10 - 126 | | | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Phenol-d5 (Surr) | 73 | | 27 - 110 | | | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 2-Fluorophenol (Surr) | 64 | | 26 - 109 | | | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| 2,4,6-Tribromophenol (Surr) | 105 | | 39 - 124 | | | | 04/12/18 15:10 | 04/16/18 00:03 | 1 |
| Method: 9056A - Anions, k | on Chromatogr | aphy | | | | | | | |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| Chloride | 23 | | 0.50 | 0.20 | mg/L | | | 04/12/18 20:38 | 1 |
| Sulfate | 120 | | 5.0 | 2.0 | mg/L | | | 04/12/18 20:51 | 5 |

TestAmerica Savannah

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Client: Georgia State University Project/Site: Monitoring Well Installation

Client Sample ID: MW-01 Date Collected: 04/09/18 09:00 Date Received: 04/10/18 08:00

TestAmerica Job ID: 680-150889-1

Lab Sample ID: 680-150889-2 Matrix: Water

| Date Received: 04/10/18 08:00 | | | | | | | | | |
|--|----------------------------------|--------------------------|------------------------------|-------|------|---|----------------|----------------|---------|
| - Method: 2340B-2011 - Total Hardn Analyte | i <mark>ess (as</mark> Result | CaCO3) by (Qualifier | calculation _{RL} | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| Hardness as calcium carbonate | 140 | | 3.3 | 3.3 | mg/L | | | 04/20/18 12:15 | 1 |
| Method: 6010C - Metals (ICP) | Result | Qualifier | RI | MDI | Unit | п | Prepared | Analyzed | Dil Fac |
| Aluminum | 90 | | 200 | 24 | | | 04/14/18 16:02 | 04/18/18 19:12 | 1 |
| Antimony | 53 | ŭ | 20 | 5.3 | ua/l | | 04/14/18 16:02 | 04/18/18 19:12 | 1 |
| Arsenic | 6.2 | Ŭ | 20 | 6.2 | ua/L | | 04/14/18 16:02 | 04/18/18 19:12 | 1 |
| Barium | 130 | | 10 | 1.7 | ua/L | | 04/14/18 16:02 | 04/18/18 19:12 | |
| Bervllium | 0.10 | U | 4.0 | 0.10 | ua/L | | 04/14/18 16:02 | 04/18/18 19:12 | 1 |
| Cadmium | 1.0 | U | 5.0 | 1.0 | ug/L | | 04/14/18 16:02 | 04/18/18 19:12 | 1 |
| Calcium | 25000 | | 500 | 25 | ug/L | | 04/14/18 16:02 | 04/18/18 19:12 | |
| Chromium | 1.6 | U | 10 | 1.6 | ug/L | | 04/14/18 16:02 | 04/18/18 19:12 | 1 |
| Cobalt | 3.9 | J | 10 | 1.0 | ug/L | | 04/14/18 16:02 | 04/18/18 19:12 | 1 |
| Copper | 1.8 | U | 20 | 1.8 | ug/L | | 04/14/18 16:02 | 04/18/18 19:12 | 1 |
| Iron | 28 | JB | 50 | 17 | ug/L | | 04/14/18 16:02 | 04/18/18 19:12 | 1 |
| Lead | 3.9 | U | 10 | 3.9 | ug/L | | 04/14/18 16:02 | 04/18/18 19:12 | 1 |
| Magnesium | 18000 | | 500 | 33 | ug/L | | 04/14/18 16:02 | 04/18/18 19:12 | 1 |
| Manganese | 320 | | 10 | 1.0 | ug/L | | 04/14/18 16:02 | 04/18/18 19:12 | 1 |
| Nickel | 2.1 | U | 40 | 2.1 | ug/L | | 04/14/18 16:02 | 04/18/18 19:12 | 1 |
| Potassium | 4500 | | 1000 | 17 | ug/L | | 04/14/18 16:02 | 04/18/18 19:12 | |
| Selenium | 9.9 | U | 20 | 9.9 | ug/L | | 04/14/18 16:02 | 04/18/18 19:12 | 1 |
| Silver | 0.60 | U | 10 | 0.60 | ug/L | | 04/14/18 16:02 | 04/18/18 19:12 | 1 |
| Sodium | 24000 | | 1000 | 480 | ug/L | | 04/14/18 16:02 | 04/18/18 19:12 | 1 |
| Thallium | 6.0 | U | 25 | 6.0 | ug/L | | 04/14/18 16:02 | 04/18/18 19:12 | 1 |
| Vanadium | 1.0 | U | 10 | 1.0 | ug/L | | 04/14/18 16:02 | 04/18/18 19:12 | 1 |
| Zinc | 7.0 | U | 20 | 7.0 | ug/L | | 04/14/18 16:02 | 04/18/18 19:12 | 1 |
| Method: 7470A - Mercury (CVAA) | | | | | | | | | |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| Mercury | 0.092 | J | 0.20 | 0.080 | ug/L | | 04/11/18 09:42 | 04/13/18 08:23 | 1 |
| General Chemistry | | | | | | | | | |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| Alkalinity | 12 | | 5.0 | 5.0 | mg/L | | | 04/10/18 18:09 | 1 |
| Bicarbonate Alkalinity as CaCO3 | 12 | | 5.0 | 5.0 | mg/L | | | 04/10/18 18:09 | 1 |
| Carbonate Alkalinity as CaCO3 | 5.0 | U | 5.0 | 5.0 | mg/L | | | 04/10/18 18:09 | 1 |
| Hydroxide Alkalinity | 5.0 | U | 5.0 | 5.0 | mg/L | | | 04/10/18 18:09 | 1 |
| Carbon Dioxide, Free | 28 | | 5.0 | 5.0 | mg/L | | | 04/10/18 18:09 | 1 |
| Phenolphthalein Alkalinity | 5.0 | U | 5.0 | 5.0 | mg/L | | | 04/10/18 18:09 | 1 |
| Bicarbonate ion as HCO3 | 15 | | 6.1 | 6.1 | mg/L | | | 04/10/18 18:09 | 1 |
| Total Dissolved Solids | 280 | | 10 | 10 | mg/L | | | 04/11/18 12:30 | 1 |

TestAmerica Savannah

Client: Georgia State University Project/Site: Monitoring Well Installation

Client Sample ID: MW-02 Date Collected: 04/09/18 09:55 Date Received: 04/10/18 08:00

TestAmerica Job ID: 680-150889-1

Lab Sample ID: 680-150889-3 Matrix: Water

| Client Sample ID: MW-02 | | | | | | | Lab Sample ID: 680-150889-3 | | | | | | |
|---|---------------|--------------|-----|------|------|---|-----------------------------|----------------|---------|--|--|--|--|
| ate Collected: 04/09/18 09:5 | 55 | | | | | | | Matrix | Water | | | | |
| ate Received: 04/10/18 08:0 | 00 | | | | | | | | | | | | |
| Mathada 0000 D. Malatila O. | | | | | | | | | | | | | |
| Method: 8260B - Volatile Or Analyte | rganic Compol | unds (GC/MS) | DI. | мы | Unit | р | Proporad | Applyzod | Dil Eao | | | | |
| 1 1 1 2 Tetrachloroethane | | | 1.0 | 0.37 | | | Frepareu | 04/11/18 18:32 | 1 | | | | |
| 1 1 1-Trichloroethane | 0.37 | 0 | 1.0 | 0.37 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| 1 1 2 2-Tetrachloroethane | 0.57 | | 1.0 | 0.57 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| 1 1 2 Trichloroethane | 0.02 | 11 | 1.0 | 0.02 | ug/L | | | 04/11/18 18:32 | ····· 4 | | | | |
| 1.1. Dichloroethane | 0.33 | 0 | 1.0 | 0.33 | ug/L | | | 04/11/18 18:32 | 4 | | | | |
| 1 1-Dichloroethene | 0.36 | 0 | 1.0 | 0.30 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| 1 1-Dichloropropene | 0.30 | 1 | 1.0 | 0.34 | ug/L | | | 04/11/18 18:32 | ····· | | | | |
| 1.2.3 Trichlorobenzene | 2.54 | | 5.0 | 2.54 | ug/L | | | 04/11/18 18:32 | 4 | | | | |
| 1.2.4-Trimethylbenzene | 0.47 | 0 | 1.0 | 0.47 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| 1.2 Dibromo 3 Chloropropono | 0.47 | 1 | 5.0 | 0.47 | ug/L | | | 04/11/10 10:32 | | | | | |
| 1.2 Dishleresthene | 1.1 | 0 | 1.0 | 0.50 | ug/L | | | 04/11/10 10.32 | 1 | | | | |
| 1.2 Dichloroethane Total | 0.50 | 0 | 2.0 | 0.50 | ug/L | | | 04/11/10 10.32 | 1 | | | | |
| 1.2-Dichloropropage | 0.37 | U | 2.0 | 0.37 | ug/L | | | 04/11/10 10.32 | ·····a | | | | |
| 1.2-Dicitio opioparte 1.3.5 Trimethylbenzono | 0.07 | 0 | 1.0 | 0.07 | ug/L | | | 04/11/10 10.32 | 1 | | | | |
| | 0.31 | 0 | 1.0 | 0.31 | ug/L | | | 04/11/10 10.32 | 1 | | | | |
| 2.2 Dichloropropane | 0.34 | 0 | 1.0 | 0.34 | ug/L | | | 04/11/10 10:32 | ····· 4 | | | | |
| 2,2-Dicitioropropane | 0.37 | 0 | 1.0 | 0.37 | ug/L | | | 04/11/10 10:32 | 1 | | | | |
| | 0.27 | U | 1.0 | 0.27 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| 2-Hexanone | 2.0 | 0 | 10 | 2.0 | ug/L | | | 04/11/18 18:32 | | | | | |
| 4-Chiorotoluene | 0.45 | U | 1.0 | 0.45 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| Acetone | 7.0 | U | 10 | 7.0 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| Benzene | 0.43 | U | 1.0 | 0.43 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| Bromobenzene | 0.50 | U | 1.0 | 0.50 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| Bromocniorometnane | 0.45 | 0 | 1.0 | 0.45 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| Bromotorm | 0.43 | U | 1.0 | 0.43 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| Bromodichloromethane | 0.44 | U | 1.0 | 0.44 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| Bromometnane | 2.5 | U | 5.0 | 2.5 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| Carbon disulfide | 1.0 | U | 2.0 | 1.0 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| Carbon tetrachloride | 0.33 | U | 1.0 | 0.33 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| Chlorobenzene | 0.26 | U | 1.0 | 0.26 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| Chloroethane | 2.5 | U | 5.0 | 2.5 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| Chloroform | 1.3 | | 1.0 | 0.50 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| Chloromethane | 0.40 | U | 1.0 | 0.40 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| cis-1,2-Dichloroethene | 0.41 | U | 1.0 | 0.41 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| cis-1,3-Dichloropropene | 0.40 | U | 1.0 | 0.40 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| Dibromochloromethane | 0.32 | U | 1.0 | 0.32 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| | 0.35 | U | 1.0 | 0.35 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| | 0.60 | U | 1.0 | 0.60 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| | 0.33 | U | 1.0 | 0.33 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| Isopropylbenzene | 0.35 | U | 1.0 | 0.35 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| m-Xylene & p-Xylene | 0.35 | U | 1.0 | 0.35 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| Methyl tert-butyl ether | 0.30 | U | 10 | 0.30 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| Methylene Chloride | 2.5 | U | 5.0 | 2.5 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| 4-Methyl-2-pentanone | 2.1 | U | 10 | 2.1 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| 2-Butanone (MEK) | 3.4 | U | 10 | 3.4 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| 1,2-Dibromoethane | 0.44 | U | 1.0 | 0.44 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| n-Butylbenzene | 0.47 | U | 1.0 | 0.47 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| N-Propylbenzene | 0.38 | U | 1.0 | 0.38 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| o-Xylene | 0.23 | U | 1.0 | 0.23 | ug/L | | | 04/11/18 18:32 | 1 | | | | |
| p-Isopropyltoluene | 0.48 | U | 1.0 | 0.48 | ug/L | | | 04/11/18 18:32 | 1 | | | | |

TestAmerica Savannah

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Client: Georgia State University Project/Site: Monitoring Well Installation

Client Sample ID: MW-02 Date Collected: 04/09/18 09:55 Date Received: 04/10/18 08:00

TestAmerica Job ID: 680-150889-1

Lab Sample ID: 680-150889-3 Matrix: Water

| Method: 8260B - Volatile Or | rganic Compo | unds (GC/ | MS) (Continu | ed) | | | | | | |
|------------------------------|--------------|-----------|--------------|------|------|---|----------|----------------|---------|---|
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac | 5 |
| sec-Butylbenzene | 0.42 | U | 1.0 | 0.42 | ug/L | | | 04/11/18 18:32 | 1 | |
| Styrene | 0.27 | U | 1.0 | 0.27 | ug/L | | | 04/11/18 18:32 | 1 | |
| tert-Butylbenzene | 0.45 | U | 1.0 | 0.45 | ug/L | | | 04/11/18 18:32 | 1 | |
| Tetrachloroethene | 6.0 | | 1.0 | 0.74 | ug/L | | | 04/11/18 18:32 | 1 | |
| Toluene | 0.48 | U | 1.0 | 0.48 | ug/L | | | 04/11/18 18:32 | 1 | |
| trans-1,2-Dichloroethene | 0.37 | U | 1.0 | 0.37 | ug/L | | | 04/11/18 18:32 | 1 | |
| trans-1,3-Dichloropropene | 0.42 | U | 1.0 | 0.42 | ug/L | | | 04/11/18 18:32 | 1 | |
| Trichloroethene | 0.48 | U | 1.0 | 0.48 | ug/L | | | 04/11/18 18:32 | 1 | |
| Trichlorofluoromethane | 0.42 | U | 1.0 | 0.42 | ug/L | | | 04/11/18 18:32 | 1 | |
| Vinyl acetate | 0.81 | U | 2.0 | 0.81 | ug/L | | | 04/11/18 18:32 | 1 | |
| Vinyl chloride | 0.50 | U | 1.0 | 0.50 | ug/L | | | 04/11/18 18:32 | 1 | |
| Xylenes, Total | 0.23 | U | 1.0 | 0.23 | ug/L | | | 04/11/18 18:32 | 1 | |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac | |
| Toluene-d8 (Surr) | 101 | | 80 - 120 | | | - | | 04/11/18 18:32 | 1 | |
| 1,2-Dichloroethane-d4 (Surr) | 88 | | 73 - 131 | | | | | 04/11/18 18:32 | 1 | |
| Dibromofluoromethane (Surr) | 97 | | 80 - 122 | | | | | 04/11/18 18:32 | 1 | |
| 4-Bromofluorobenzene (Surr) | 94 | | 80 - 120 | | | | | 04/11/18 18:32 | 1 | |

| Method: 8270D - Semivolati | le Organic Co | ompounds (| GC/MS) | | | | | | |
|-------------------------------|---------------|------------|--------|------|------|---|----------------|----------------|---------|
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| Benzaldehyde | 1.1 | U | 9.6 | 1.1 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Phenol | 0.80 | U | 9.6 | 0.80 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Bis(2-chloroethyl)ether | 1.1 | U | 9.6 | 1.1 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| 2-Chlorophenol | 0.83 | U | 9.6 | 0.83 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| 2-Methylphenol | 0.85 | U | 9.6 | 0.85 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| bis (2-chloroisopropyl) ether | 0.75 | U | 9.6 | 0.75 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Acetophenone | 0.55 | U | 9.6 | 0.55 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| 3 & 4 Methylphenol | 1.2 | U | 9.6 | 1.2 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| N-Nitrosodi-n-propylamine | 0.69 | U | 9.6 | 0.69 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Hexachloroethane | 0.73 | U | 9.6 | 0.73 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Nitrobenzene | 0.70 | U | 9.6 | 0.70 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Isophorone | 0.86 | U | 9.6 | 0.86 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| 2-Nitrophenol | 0.73 | U | 9.6 | 0.73 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| 2,4-Dimethylphenol | 3.8 | U | 9.6 | 3.8 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Bis(2-chloroethoxy)methane | 0.90 | U | 9.6 | 0.90 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| 2,4-Dichlorophenol | 1.1 | U | 9.6 | 1.1 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Naphthalene | 0.67 | U | 9.6 | 0.67 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| 4-Chloroaniline | 2.1 | U | 19 | 2.1 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Hexachlorobutadiene | 0.59 | U | 9.6 | 0.59 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Caprolactam | 0.76 | U | 9.6 | 0.76 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| 4-Chloro-3-methylphenol | 0.96 | U | 9.6 | 0.96 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| 2-Methylnaphthalene | 0.75 | U | 9.6 | 0.75 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Hexachlorocyclopentadiene | 2.4 | U | 9.6 | 2.4 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| 2,4,6-Trichlorophenol | 0.81 | U | 9.6 | 0.81 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| 2,4,5-Trichlorophenol | 1.1 | U | 9.6 | 1.1 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| 1,1'-Biphenyl | 0.56 | U | 9.6 | 0.56 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| 2-Chloronaphthalene | 0.77 | U | 9.6 | 0.77 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| 2-Nitroaniline | 1.2 | U | 48 | 1.2 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Dimethyl phthalate | 0.95 | U | 9.6 | 0.95 | ug/L | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |

TestAmerica Savannah

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Client: Georgia State University Project/Site: Monitoring Well Installation

Client Sample ID: MW-02

Sulfate

TestAmerica Job ID: 680-150889-1

Lab Sample ID: 680-150889-3 Matrix: Water

| Method: 8270D - Semivolati | le Organic Co | mpounds | (GC/MS) (Co | ntinued |) | | | |
|-----------------------------|---------------|-----------|-------------|---------|----------|----------------|----------------|---------|
| Analyte | Result | Qualifier | RL | MDL | Unit | D Prepared | Analyzed | Dil Fac |
| 2,6-Dinitrotoluene | 1.1 | U | 9.6 | 1.1 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Acenaphthylene | 0.81 | U | 9.6 | 0.81 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| 3-Nitroaniline | 4.8 | U | 48 | 4.8 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Acenaphthene | 0.73 | U | 9.6 | 0.73 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| 2,4-Dinitrophenol | 9.6 | U | 48 | 9.6 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| l-Nitrophenol | 1.8 | U | 48 | 1.8 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Dibenzofuran | 0.76 | U | 9.6 | 0.76 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| 2,4-Dinitrotoluene | 1.1 | U | 9.6 | 1.1 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Diethyl phthalate | 0.84 | U | 9.6 | 0.84 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Fluorene | 0.92 | U | 9.6 | 0.92 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| -Chlorophenyl phenyl ether | 0.80 | U | 9.6 | 0.80 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| l-Nitroaniline | 4.8 | U | 48 | 4.8 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| 1,6-Dinitro-2-methylphenol | 9.6 | U | 48 | 9.6 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| V-Nitrosodiphenylamine | 0.88 | U | 9.6 | 0.88 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| l-Bromophenyl phenyl ether | 0.74 | U | 9.6 | 0.74 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| lexachlorobenzene | 0.76 | U | 9.6 | 0.76 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Atrazine | 1.1 | U | 9.6 | 1.1 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Pentachlorophenol | 1.9 | U | 48 | 1.9 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| henanthrene | 0.74 | U | 9.6 | 0.74 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| nthracene | 0.66 | U | 9.6 | 0.66 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Carbazole | 0.68 | U | 9.6 | 0.68 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Di-n-butyl phthalate | 0.80 | U | 9.6 | 0.80 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| luoranthene | 0.71 | U | 9.6 | 0.71 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Pyrene | 0.60 | U | 9.6 | 0.60 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Butyl benzyl phthalate | 1.1 | U | 9.6 | 1.1 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| 3,3'-Dichlorobenzidine | 29 | U | 57 | 29 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Benzo[a]anthracene | 0.53 | U | 9.6 | 0.53 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Chrysene | 0.49 | U | 9.6 | 0.49 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Bis(2-ethylhexyl) phthalate | 1.5 | U | 9.6 | 1.5 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Di-n-octyl phthalate | 1.3 | U | 9.6 | 1.3 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Benzo[b]fluoranthene | 2.5 | U | 9.6 | 2.5 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Benzo[k]fluoranthene | 1.1 | U | 9.6 | 1.1 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Benzo[a]pyrene | 0.68 | U | 9.6 | 0.68 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| ndeno[1,2,3-cd]pyrene | 0.96 | U | 9.6 | 0.96 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Dibenz(a,h)anthracene | 0.96 | U | 9.6 | 0.96 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Benzo[g,h,i]perylene | 0.83 | U | 9.6 | 0.83 | ug/L | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Surrogate | %Recovery | Qualifier | Limits | | | Prepared | Analyzed | Dil Fac |
| Nitrobenzene-d5 (Surr) | 79 | | 32 - 118 | | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| -Fluorobiphenyl (Surr) | 78 | | 32 - 113 | | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| erphenyl-d14 (Surr) | 49 | | 10 - 126 | | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Phenol-d5 (Surr) | 68 | | 27 - 110 | | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| P-Fluorophenol (Surr) | 61 | | 26 - 109 | | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| 2,4,6-Tribromophenol (Surr) | 91 | | 39 - 124 | | | 04/12/18 15:10 | 04/16/18 00:27 | 1 |
| Method: 9056A - Anions, Ior | n Chromatogr | aphy | | | 11 14 | D. Denne i | August 1 | DUE |
| Analyte | Kesult | Qualifier | KL | | Unit | Prepared | Analyzed | |
| | | | 0.50 | | 11111111 | | | 1 |

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04/12/18 21:17

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5.0

160

2.0 mg/L

4/20/2018

5

Client: Georgia State University Project/Site: Monitoring Well Installation

Client Sample ID: MW-02 Date Collected: 04/09/18 09:55 Date Received: 04/10/18 08:00

TestAmerica Job ID: 680-150889-1

Lab Sample ID: 680-150889-3 Matrix: Water

| ate Received: 04/10/18 08:00 | | | | | | | | | |
|---|--------------------|------------------------|-------------------|-------|------|---|----------------|----------------|---------|
| Method: 2340B-2011 - Total Hard | ness (as Result | CaCO3) by Qualifier | calculation RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| Hardness as calcium carbonate | 170 | | 3.3 | 3.3 | mg/L | | | 04/20/18 12:15 | 1 |
| M-41 | | | | | | | | | |
| Method: 6010C - Metals (ICP) Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| Aluminum | 2700 | | 200 | 24 | ug/L | | 04/14/18 16:02 | 04/18/18 19:06 | 1 |
| Antimony | 5.3 | U | 20 | 5.3 | ug/L | | 04/14/18 16:02 | 04/18/18 19:06 | 1 |
| Arsenic | 6.2 | U | 20 | 6.2 | ug/L | | 04/14/18 16:02 | 04/18/18 19:06 | 1 |
| Barium | 79 | | 10 | 1.7 | ug/L | | 04/14/18 16:02 | 04/18/18 19:06 | 1 |
| Beryllium | 0.17 | J | 4.0 | 0.10 | ug/L | | 04/14/18 16:02 | 04/18/18 19:06 | 1 |
| Cadmium | 1.0 | U | 5.0 | 1.0 | ug/L | | 04/14/18 16:02 | 04/18/18 19:06 | 1 |
| Calcium | 35000 | | 500 | 25 | ug/L | | 04/14/18 16:02 | 04/18/18 19:06 | 1 |
| Chromium | 8.1 | J | 10 | 1.6 | ug/L | | 04/14/18 16:02 | 04/18/18 19:06 | 1 |
| Cobalt | 35 | | 10 | 1.0 | ug/L | | 04/14/18 16:02 | 04/18/18 19:06 | 1 |
| Copper | 9.7 | J | 20 | 1.8 | ug/L | | 04/14/18 16:02 | 04/18/18 19:06 | 1 |
| ron | 2400 | в | 50 | 17 | ug/L | | 04/14/18 16:02 | 04/18/18 19:06 | 1 |
| Lead | 3.9 | U | 10 | 3.9 | ug/L | | 04/14/18 16:02 | 04/18/18 19:06 | 1 |
| Magnesium | 20000 | | 500 | 33 | ug/L | | 04/14/18 16:02 | 04/18/18 19:06 | 1 |
| Manganese | 2900 | | 10 | 1.0 | ug/L | | 04/14/18 16:02 | 04/18/18 19:06 | 1 |
| Nickel | 4.1 | J | 40 | 2.1 | ug/L | | 04/14/18 16:02 | 04/18/18 19:06 | 1 |
| Potassium | 6400 | | 1000 | 17 | ug/L | | 04/14/18 16:02 | 04/18/18 19:06 | 1 |
| Selenium | 9.9 | U | 20 | 9.9 | ug/L | | 04/14/18 16:02 | 04/18/18 19:06 | 1 |
| Silver | 0.60 | U | 10 | 0.60 | ug/L | | 04/14/18 16:02 | 04/18/18 19:06 | 1 |
| Sodium | 27000 | | 1000 | 480 | ug/L | | 04/14/18 16:02 | 04/18/18 19:06 | 1 |
| Thallium | 6.0 | U | 25 | 6.0 | ug/L | | 04/14/18 16:02 | 04/18/18 19:06 | 1 |
| /anadium | 7.7 | J | 10 | 1.0 | ug/L | | 04/14/18 16:02 | 04/18/18 19:06 | 1 |
| Zinc | 11 | J | 20 | 7.0 | ug/L | | 04/14/18 16:02 | 04/18/18 19:06 | 1 |
| Method: 7470A - Mercury (CVAA |) | | | | | | | | |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| Mercury | 0.080 | U | 0.20 | 0.080 | ug/L | | 04/11/18 09:42 | 04/13/18 08:33 | 1 |
| General Chemistry | | | | | | | | | |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| Alkalinity | 21 | | 5.0 | 5.0 | mg/L | | | 04/10/18 18:15 | 1 |
| Bicarbonate Alkalinity as CaCO3 | 21 | | 5.0 | 5.0 | mg/L | | | 04/10/18 18:15 | 1 |
| Carbonate Alkalinity as CaCO3 | 5.0 | U | 5.0 | 5.0 | mg/L | | | 04/10/18 18:15 | 1 |
| Hydroxide Alkalinity | 5.0 | U | 5.0 | 5.0 | mg/L | | | 04/10/18 18:15 | 1 |
| Carbon Dioxide, Free | 25 | | 5.0 | 5.0 | mg/L | | | 04/10/18 18:15 | 1 |
| Phenolphthalein Alkalinity | 5.0 | U | 5.0 | 5.0 | mg/L | | | 04/10/18 18:15 | 1 |
| Bicarbonate ion as HCO3 | 25 | | 6.1 | 6.1 | mg/L | | | 04/10/18 18:15 | 1 |
| Total Dissolved Solids | 320 | | 10 | 10 | mg/L | | | 04/11/18 12:30 | 1 |

TestAmerica Savannah

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Client: Georgia State University Project/Site: Monitoring Well Installation

Client Sample ID: Trip Blank Date Collected: 04/09/18 00:00 Date Received: 04/10/18 08:00

TestAmerica Job ID: 680-150889-1

Lab Sample ID: 680-150889-4 Matrix: Water

| Client Sample ID: Trip Blank | | | | | | | Lab Sample ID: 680-150889-4 | | | | | |
|-------------------------------|-------------|--------------|-----|------|--------------|---------------|-----------------------------|----------------|---------|--|--|--|
| ate Collected: 04/09/18 00:00 | | | | | | Matrix: Water | | | | | | |
| ate Received: 04/10/18 08:00 | 0 | | | | | | | | | | | |
| Method: 8260B - Volatile Org | ganic Compo | unds (GC/MS) | ы | MDI | Unit | | Broporod | Apolyzad | Dil Eco | | | |
| 1 1 1 2 Totrachloroothana | | | 1.0 | 0.27 | | | Frepareu | 04/11/19 14:25 | DIFAC | | | |
| 1,1,1,1,2-1 etrachiol dethane | 0.37 | 0 | 1.0 | 0.37 | ug/L | | | 04/11/10 14.25 | 1 | | | |
| 1 1 2 2-Tetrachloroethane | 0.57 | 0 | 1.0 | 0.57 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| 1 1 2 Trichloroethane | 0.02 | 1 | 1.0 | 0.02 | ug/L | | | 04/11/18 14:25 | | | | |
| 1 1 Dichloroethane | 0.33 | 0 | 1.0 | 0.33 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| 1 1-Dichloroethene | 0.30 | 0 | 1.0 | 0.30 | ug/L ug/l | | | 04/11/18 14:25 | 1 | | | |
| 1 1-Dichloropropene | 0.34 | | 1.0 | 0.34 | ug/L | | | 04/11/18 14:25 | | | | |
| 1 2 3-Trichlorobenzene | 2.54 | 0 | 5.0 | 25 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| 1 2 4-Trimethylbenzene | 0.47 | U U | 1.0 | 0.47 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| 1 2-Dibromo-3-Chloropropane | 11 | | 5.0 | 11 | ug/L | | | 04/11/18 14:25 | | | | |
| 1 2-Dichloroethane | 0.50 | 1 | 1.0 | 0.50 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| 1.2-Dichloroethene Total | 0.37 | U | 2.0 | 0.37 | ua/L | | | 04/11/18 14:25 | 1 | | | |
| 1.2-Dichloropropane | 0.67 | Ū | 1.0 | 0.67 | ua/L | | | 04/11/18 14:25 | | | | |
| 1.3.5-Trimethylbenzene | 0.31 | - U | 1.0 | 0.31 | ua/L | | | 04/11/18 14:25 | 1 | | | |
| 1.3-Dichloropropane | 0.34 | U U | 1.0 | 0.34 | ua/L | | | 04/11/18 14:25 | 1 | | | |
| 2.2-Dichloropropane | 0.37 | - U | 1.0 | 0.37 | ua/L | | | 04/11/18 14:25 | | | | |
| 2-Chlorotoluene | 0.27 | - U | 1.0 | 0.27 | ua/L | | | 04/11/18 14:25 | 1 | | | |
| 2-Hexanone | 2.0 | U U | 10 | 2.0 | ug/L | | | 04/11/18 14:25 | . 1 | | | |
| 4-Chlorotoluene | 0.45 | ŭ | 1.0 | 0.45 | ug/L | | | 04/11/18 14:25 | | | | |
| Acetone | 7.0 | Ű | 10 | 7.0 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| Benzene | 0.43 | U | 1.0 | 0.43 | ug/L | | | 04/11/18 14:25 | . 1 | | | |
| Bromobenzene | 0.50 | ŭ | 1.0 | 0.50 | ug/L | | | 04/11/18 14:25 | | | | |
| Bromochloromethane | 0.45 | Ű | 1.0 | 0.45 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| Bromoform | 0.43 | u U | 1.0 | 0.43 | ua/L | | | 04/11/18 14:25 | 1 | | | |
| Bromodichloromethane | 0.44 | U | 1.0 | 0.44 | ua/L | | | 04/11/18 14:25 | | | | |
| Bromomethane | 2.5 | U | 5.0 | 2.5 | ua/L | | | 04/11/18 14:25 | 1 | | | |
| Carbon disulfide | 1.0 | U | 2.0 | 1.0 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| Carbon tetrachloride | 0.33 | U | 1.0 | 0.33 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| Chlorobenzene | 0.26 | U | 1.0 | 0.26 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| Chloroethane | 2.5 | U | 5.0 | 2.5 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| Chloroform | 0.50 | U | 1.0 | 0.50 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| Chloromethane | 0.40 | U | 1.0 | 0.40 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| cis-1,2-Dichloroethene | 0.41 | U | 1.0 | 0.41 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| cis-1,3-Dichloropropene | 0.40 | U | 1.0 | 0.40 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| Dibromochloromethane | 0.32 | U | 1.0 | 0.32 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| Dibromomethane | 0.35 | U | 1.0 | 0.35 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| Dichlorodifluoromethane | 0.60 | U | 1.0 | 0.60 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| Ethylbenzene | 0.33 | U | 1.0 | 0.33 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| Isopropylbenzene | 0.35 | U | 1.0 | 0.35 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| m-Xylene & p-Xylene | 0.35 | U | 1.0 | 0.35 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| Methyl tert-butyl ether | 0.30 | U | 10 | 0.30 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| Methylene Chloride | 2.5 | U | 5.0 | 2.5 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| 4-Methyl-2-pentanone | 2.1 | U | 10 | 2.1 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| 2-Butanone (MEK) | 3.4 | U | 10 | 3.4 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| 1,2-Dibromoethane | 0.44 | U | 1.0 | 0.44 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| n-Butylbenzene | 0.47 | U | 1.0 | 0.47 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| N-Propylbenzene | 0.38 | U | 1.0 | 0.38 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| o-Xylene | 0.23 | U | 1.0 | 0.23 | ug/L | | | 04/11/18 14:25 | 1 | | | |
| p-Isopropyltoluene | 0.48 | U | 1.0 | 0.48 | ug/L | | | 04/11/18 14:25 | 1 | | | |

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Client: Georgia State University Project/Site: Monitoring Well Installation

Client Sample ID: Trip Blank Date Collected: 04/09/18 00:00 Date Received: 04/10/18 08:00

TestAmerica Job ID: 680-150889-1

Lab Sample ID: 680-150889-4 Matrix: Water

| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac | 5 |
|------------------------------|-----------|-----------|----------|------|------|---|----------|----------------|---------|---|
| sec-Butylbenzene | 0.42 | U | 1.0 | 0.42 | ug/L | | | 04/11/18 14:25 | 1 | |
| Styrene | 0.27 | U | 1.0 | 0.27 | ug/L | | | 04/11/18 14:25 | 1 | |
| tert-Butylbenzene | 0.45 | U | 1.0 | 0.45 | ug/L | | | 04/11/18 14:25 | 1 | |
| Tetrachloroethene | 0.74 | U | 1.0 | 0.74 | ug/L | | | 04/11/18 14:25 | 1 | |
| Toluene | 0.48 | U | 1.0 | 0.48 | ug/L | | | 04/11/18 14:25 | 1 | |
| trans-1,2-Dichloroethene | 0.37 | U | 1.0 | 0.37 | ug/L | | | 04/11/18 14:25 | 1 | |
| trans-1,3-Dichloropropene | 0.42 | U | 1.0 | 0.42 | ug/L | | | 04/11/18 14:25 | 1 | |
| Trichloroethene | 0.48 | U | 1.0 | 0.48 | ug/L | | | 04/11/18 14:25 | 1 | |
| Trichlorofluoromethane | 0.42 | U | 1.0 | 0.42 | ug/L | | | 04/11/18 14:25 | 1 | |
| Vinyl acetate | 0.81 | U | 2.0 | 0.81 | ug/L | | | 04/11/18 14:25 | 1 | |
| Vinyl chloride | 0.50 | U | 1.0 | 0.50 | ug/L | | | 04/11/18 14:25 | 1 | |
| Xylenes, Total | 0.23 | U | 1.0 | 0.23 | ug/L | | | 04/11/18 14:25 | 1 | |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac | |
| Toluene-d8 (Surr) | 102 | | 80 - 120 | | | | | 04/11/18 14:25 | 1 | |
| 1,2-Dichloroethane-d4 (Surr) | 86 | | 73 - 131 | | | | | 04/11/18 14:25 | 1 | |
| Dibromofluoromethane (Surr) | 96 | | 80 - 122 | | | | | 04/11/18 14:25 | 1 | |
| 4-Bromofluorobenzene (Surr) | 96 | | 80 - 120 | | | | | 04/11/18 14:25 | 1 | |

TestAmerica Savannah

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Client: Georgia State University Project/Site: Monitoring Well Installation

Method: 8260B - Volatile Organic Compounds (GC/MS)

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

TestAmerica Job ID: 680-150889-1

| Lab Sample ID: LB 680-519459 |)/1-A | | | | | | Client Sam | ple ID: Method | Blank | |
|------------------------------|--------|-----------|-----|-----|------|---|------------|----------------|---------|---|
| Matrix: Water | | | | | | | | Prep Type: To | otal/NA | |
| Analysis Batch: 519398 | | | | | | | | | | |
| - | LB | LB | | | | | | | | |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac | C |
| 2-Chlorotoluene | 5.4 | U | 20 | 5.4 | ug/L | | | 04/11/18 15:49 | 20 | 0 |
| 4-Chlorotoluene | 9.0 | U | 20 | 9.0 | ug/L | | | 04/11/18 15:49 | 20 | |
| Acetone | 140 | U | 200 | 140 | ug/L | | | 04/11/18 15:49 | 20 | |
| 1,2-Dibromo-3-Chloropropane | 22 | U | 100 | 22 | ug/L | | | 04/11/18 15:49 | 20 | |
| Benzene | 8.6 | U | 20 | 8.6 | ug/L | | | 04/11/18 15:49 | 20 | |
| Bromobenzene | 10 | U | 20 | 10 | ug/L | | | 04/11/18 15:49 | 20 | |
| Bromochloromethane | 9.0 | U | 20 | 9.0 | ug/L | | | 04/11/18 15:49 | 20 | |
| Bromoform | 8.6 | U | 20 | 8.6 | ug/L | | | 04/11/18 15:49 | 20 | |
| 1,1-Dichloroethane | 7.6 | U | 20 | 7.6 | ug/L | | | 04/11/18 15:49 | 20 | |
| Bromodichloromethane | 8.8 | U | 20 | 8.8 | ug/L | | | 04/11/18 15:49 | 20 | |
| 1,2-Dichloroethane | 10 | U | 20 | 10 | ug/L | | | 04/11/18 15:49 | 20 | |
| Bromomethane | 50 | U | 100 | 50 | ug/L | | | 04/11/18 15:49 | 20 | |
| Carbon disulfide | 20 | U | 40 | 20 | ug/L | | | 04/11/18 15:49 | 20 | |
| Carbon tetrachloride | 6.6 | U | 20 | 6.6 | ug/L | | | 04/11/18 15:49 | 20 | |
| 1,2-Dichloroethene, Total | 7.4 | U | 40 | 7.4 | ug/L | | | 04/11/18 15:49 | 20 | |
| Chlorobenzene | 5.2 | U | 20 | 5.2 | ug/L | | | 04/11/18 15:49 | 20 | |
| 1,1-Dichloroethene | 7.2 | U | 20 | 7.2 | ug/L | | | 04/11/18 15:49 | 20 | |
| Chloroethane | 50 | U | 100 | 50 | ug/L | | | 04/11/18 15:49 | 20 | |
| 1,2-Dichloropropane | 13 | U | 20 | 13 | ug/L | | | 04/11/18 15:49 | 20 | |
| Chloroform | 10 | U | 20 | 10 | ug/L | | | 04/11/18 15:49 | 20 | |
| 1,3-Dichloropropane | 6.8 | U | 20 | 6.8 | ug/L | | | 04/11/18 15:49 | 20 | |
| Chloromethane | 8.0 | U | 20 | 8.0 | ug/L | | | 04/11/18 15:49 | 20 | |
| 2,2-Dichloropropane | 7.4 | U | 20 | 7.4 | ug/L | | | 04/11/18 15:49 | 20 | |
| cis-1,2-Dichloroethene | 8.2 | U | 20 | 8.2 | ug/L | | | 04/11/18 15:49 | 20 | |
| 1,1-Dichloropropene | 6.8 | U | 20 | 6.8 | ug/L | | | 04/11/18 15:49 | 20 | |
| cis-1,3-Dichloropropene | 8.0 | U | 20 | 8.0 | ug/L | | | 04/11/18 15:49 | 20 | |
| Dibromochloromethane | 6.4 | U | 20 | 6.4 | ug/L | | | 04/11/18 15:49 | 20 | |
| Dibromomethane | 7.0 | U | 20 | 7.0 | ug/L | | | 04/11/18 15:49 | 20 | |
| Dichlorodifluoromethane | 12 | U | 20 | 12 | ua/L | | | 04/11/18 15:49 | 20 | |
| 2-Hexanone | 40 | U | 200 | 40 | ug/L | | | 04/11/18 15:49 | 20 | |
| Ethylbenzene | 6.6 | U | 20 | 6.6 | ug/L | | | 04/11/18 15:49 | 20 | |
| Isopropylbenzene | 7.0 | U | 20 | 7.0 | ua/L | | | 04/11/18 15:49 | 20 | |
| Methylene Chloride | 50 | U | 100 | 50 | ug/L | | | 04/11/18 15:49 | 20 | |
| 4-Methyl-2-pentanone | 42 | U | 200 | 42 | ug/L | | | 04/11/18 15:49 | 20 | |
| Methyl tert-butyl ether | 6.0 | U | 200 | 6.0 | ug/L | | | 04/11/18 15:49 | 20 | |
| 2-Butanone (MEK) | 68 | U | 200 | 68 | ug/L | | | 04/11/18 15:49 | 20 | |
| 1,2-Dibromoethane | 8.8 | U | 20 | 8.8 | ug/L | | | 04/11/18 15:49 | 20 | |
| 1,1,1,2-Tetrachloroethane | 7.4 | U | 20 | 7.4 | ua/L | | | 04/11/18 15:49 | 20 | |
| n-Butylbenzene | 9.4 | U | 20 | 9.4 | ua/L | | | 04/11/18 15:49 | 20 | |
| 1,1,2,2-Tetrachloroethane | 12 | U | 20 | 12 | ug/L | | | 04/11/18 15:49 | 20 | |
| N-Propylbenzene | 7.6 | U | 20 | 7.6 | ug/L | | | 04/11/18 15:49 | 20 | |
| p-Isopropyltoluene | 9.6 | U | 20 | 9.6 | ug/L | | | 04/11/18 15:49 | 20 | |
| 1,2,3-Trichlorobenzene | 50 | U | 100 | 50 | ug/L | | | 04/11/18 15:49 | 20 | |
| sec-Butylbenzene | 8.4 | U | 20 | 8.4 | ug/L | | | 04/11/18 15:49 | 20 | |
| 1,1,1-Trichloroethane | 7.4 | U | 20 | 7.4 | ug/L | | | 04/11/18 15:49 | 20 | |
| Styrene | 5.4 | U | 20 | 5.4 | ug/L | | | 04/11/18 15:49 | 20 | |
| 1,1,2-Trichloroethane | 6.6 | U | 20 | 6.6 | ug/L | | | 04/11/18 15:49 | 20 | |
| tert-Butylbenzene | 9.0 | U | 20 | 9.0 | ug/L | | | 04/11/18 15:49 | 20 | |

TestAmerica Savannah

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| lient: Georgia State Universit roiect/Site: Monitoring Well Ir | y Istallation | QC S | Sample Ro | esults | ; | Т | estAmerica | Job ID: 680-15 | 0889-1 | | |
|---|--|------------------------|--|--|--|---|--|--|--|--|--|
| lethod: 8260B - Volatile | e Organic C | ompoun | ds (GC/MS |) (Cont | inued) | | | | | | |
| Lab Sample ID: LB 680-519 Matrix: Water | 459/1 - A | | | | , | (| Client Sample ID: Method Bla Prep Type: Total/I | | | | |
| Analysis Batch: 519398 | | | | | | | | | | | |
| - | LB | LB | | | | | | | | | |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac | | |
| etrachloroethene | 15 | U | 20 | 15 | ug/L | | | 04/11/18 15:49 | 20 | | |
| oluene | 9.6 | U | 20 | 9.6 | ug/L | | | 04/11/18 15:49 | 20 | | |
| ,2,4-Trimethylbenzene | 9.4 | U | 20 | 9.4 | ug/L | | | 04/11/18 15:49 | 20 | | |
| ans-1,2-Dichloroethene | 7.4 | U | 20 | 7.4 | ug/L | | | 04/11/18 15:49 | 20 | | |
| ,3,5-Trimethylbenzene | 6.2 | U | 20 | 6.2 | ug/L | | | 04/11/18 15:49 | 20 | | |
| ans-1,3-Dichloropropene | 8.4 | U | 20 | 8.4 | ug/L | | | 04/11/18 15:49 | 20 | | |
| richloroethene | 9.6 | U | 20 | 9.6 | ug/L | | | 04/11/18 15:49 | 20 | | |
| richlorofluoromethane | 8.4 | U | 20 | 8.4 | ug/L | | | 04/11/18 15:49 | 20 | | |
| ≻Xylene | 4.6 | U | 20 | 4.6 | ug/L | | | 04/11/18 15:49 | 20 | | |
| /inyl acetate | 16 | U | 40 | 16 | ug/L | | | 04/11/18 15:49 | 20 | | |
| n-Xylene & p-Xylene | 7.0 | U | 20 | 7.0 | ug/L | | | 04/11/18 15:49 | 20 | | |
| /inyl chloride | 10 | U | 20 | 10 | ug/L | | | 04/11/18 15:49 | 20 | | |
| vlenes, Total | 4.6 | U | 20 | 4.6 | ug/L | | | 04/11/18 15:49 | 20 | | |
| , | | | | | | | | | 20 | | |
| | LB | LB | | | | | _ | | | | |
| Surrogate | %Recovery | Qualifier | Limits | | | - | Prepared | Analyzed | Dil Fac | | |
| oluene-d8 (Surr) | 104 | | 80 - 120 | | | | | 04/11/18 15:49 | 20 | | |
| ,2-Dichloroethane-d4 (Surr) | 97 | | /3 - 131 | | | | | 04/11/18 15:49 | 20 | | |
| Subromotiuoromethane (Surr) | 98 | | 80 - 122 | | | | | 04/11/18 15:49 | 20 | | |
| -Bromofluorobenzene (Surr) | 111 | | 80 - 120 | | | | | 04/11/18 15:49 | 20 | | |
| Lab Sample ID: MB 680-519 Matrix: Water | 398/9 | | | | | (| Client Sam | Die ID: Method | Blank | | |
| Analysis Batch: 510302 | | | | | | | | Tiep Type. It | anna | | |
| analysis Baton, 515550 | MB | МВ | | | | | | | | | |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac | | |
| -Chlorotoluene | 0.27 | U | 1.0 | 0.27 | ug/L | | • - | 04/11/18 15:04 | 1 | | |
| | | | | | - | | | | | | |
| -Chlorotoluene | 0.45 | U | 1.0 | 0.45 | ug/L | | | 04/11/18 15:04 | 1 | | |
| -Chlorotoluene Acetone | 0.45 7.0 | U U | 1.0 10 | 0.45 7.0 | ug/L ug/L | | | 04/11/18 15:04 04/11/18 15:04 | 1 | | |
| l-Chlorotoluene Acetone .2-Dibromo-3-Chloropropane | 0.45 7.0 1 1 | U U U | 1.0 10 5.0 | 0.45 7.0 1 1 | ug/L ug/L ug/L | | | 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 | 1 | | |
| -Chlorotoluene ketone ,2-Dibromo-3-Chloropropane lenzene | 0.45 7.0 1.1 0.43 | U U U U | 1.0 10 5.0 1.0 | 0.45 7.0 1.1 0.43 | ug/L ug/L ug/L ug/L | | | 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 | 1 1 1 1 | | |
| -Chlorotoluene xcetone ,2-Dibromo-3-Chloropropane Jenzene kromohenzene | 0.45 7.0 1.1 0.43 0.50 | U U U U II | 1.0 10 5.0 1.0 1.0 | 0.45 7.0 1.1 0.43 0.50 | ug/L ug/L ug/L ug/L | | | 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 | 1 1 1 1 1 | | |
| -Chlorotoluene ccetone ,2-Dibromo-3-Chloropropane ienzene irromochloromethane | 0.45 7.0 1.1 0.43 0.50 | U U U U U | 1.0 10 5.0 1.0 1.0 | 0.45 7.0 1.1 0.43 0.50 | ug/L ug/L ug/L ug/L ug/L | | | 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 | 1 1 1 1 1 | | |
| -Chlorotoluene xcetone ,2-Dibromo-3-Chloropropane kenzene kromobenzene kromochloromethane kromotom | 0.45 7.0 1.1 0.43 0.50 0.45 0.45 | | 1.0 10 5.0 1.0 1.0 1.0 | 0.45 7.0 1.1 0.43 0.50 0.45 0.43 | ug/L ug/L ug/L ug/L ug/L ug/L | | | 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 | 1 1 1 1 1 1 1 | | |
| -Chlorotoluene xcetone ,2-Dibromo-3-Chloropropane lenzene kromobenzene bromochloromethane kromoform 1-Dichloroothane | 0.45 7.0 1.1 0.43 0.50 0.45 0.45 0.43 | | 1.0 10 5.0 1.0 1.0 1.0 1.0 | 0.45 7.0 1.1 0.43 0.50 0.45 0.43 0.38 | ug/L ug/L ug/L ug/L ug/L ug/L ug/L | | | 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 | 1 1 1 1 1 1 1 | | |
| Chlorotoluene xcetone ,2-Dibromo-3-Chloropropane enzene kromobenzene kromochloromethane eromochloromethane itomochloroethane | 0.45 7.0 1.1 0.43 0.50 0.45 0.43 0.38 | | 1.0 10 5.0 1.0 1.0 1.0 1.0 1.0 | 0.45 7.0 1.1 0.43 0.50 0.45 0.43 0.38 | ug/L ug/L ug/L ug/L ug/L ug/L ug/L | | | 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 | 1 1 1 1 1 1 1 1 1 | | |
| L-Chlorotoluene Acetone ,2-Dibromo-3-Chloropropane Benzene Bromobenzene Bromochloromethane Bromoform ,1-Dichloroethane Bromodichloromethane | 0.45 7.0 1.1 0.43 0.50 0.45 0.43 0.38 0.44 | | 1.0 10 5.0 1.0 1.0 1.0 1.0 1.0 1.0 | 0.45 7.0 1.1 0.43 0.50 0.45 0.43 0.38 0.44 | ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L | | | 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 | 1 1 1 1 1 1 1 1 1 | | |
| A-Chlorotoluene Acetone 1,2-Dibromo-3-Chloropropane Benzene Bromobenzene Bromochloromethane Bromoform ,1-Dichloroethane Rromodichloromethane ,2-Dichloroethane | 0.45 7.0 1.1 0.43 0.50 0.45 0.43 0.38 0.44 0.50 | | 1.0 10 5.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 | 0.45 7.0 1.1 0.43 0.50 0.45 0.43 0.38 0.44 0.50 | ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L | | | 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 | 1 1 1 1 1 1 1 1 1 | | |
| 4-Chlorotoluene Acetone 1,2-Dibromo-3-Chloropropane Banzene Bromobenzene Bromoform 1,1-Dichloroethane Bromodichloroethane -,2-Dichloroethane Bromomethane | 0.45 7.0 1.1 0.43 0.50 0.45 0.43 0.38 0.44 0.50 2.5 | | 1.0 10 5.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 5.0 | 0.45 7.0 1.1 0.43 0.50 0.45 0.43 0.38 0.44 0.50 2.5 | ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L | | | 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 04/11/18 15:04 | 1 1 1 1 1 1 1 1 1 1 1 1 1 | | |
| 4-Chlorotoluene Acetone 1,2-Dibromo-3-Chloropropane Banzene Bromobenzene Bromoform 1,1-Dichloroethane Bromodichloroethane 1,2-Dichloroethane Bromodichloroethane Bromomethane Darbon disulfide | 0.45 7.0 1.1 0.43 0.50 0.45 0.43 0.38 0.44 0.50 2.5 1.0 | | 1.0 10 5.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 5.0 2.0 | 0.45 7.0 1.1 0.43 0.50 0.45 0.43 0.43 0.44 0.50 2.5 1.0 | ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L | | | 04/11/18 15:04 04/11/18 15:04 | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | | |

0.37 ug/L

0.26 ug/L

0.36 ug/L

2.5 ug/L

0.67 ug/L

0.50 ug/L

0.34 ug/L

0.40 ug/L

0.37 ug/L

2.0

1.0

1.0

5.0

1.0

1.0

1.0

1.0

1.0

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04/11/18 15:04

04/11/18 15:04

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4/20/2018

0.37 U

0.26 U

0.36 U

2.5 U

0.67 U

0.50 U

0.34 U

0.40 U

0.37 U

1,2-Dichloroethene, Total

Chlorobenzene

Chloroethane

Chloroform

1,1-Dichloroethene

1,2-Dichloropropane

1,3-Dichloropropane

2,2-Dichloropropane

Chloromethane

| lient: Georgia State University roject/Site: Monitoring Well Installa | ation | QC S | Sample Re | esults | 5 | Τe | estAmerica | Job ID: 680-15 | 50889-1 |
|---|------------|-----------|------------|---------|---------|----|------------|---------------------------------|--------------------|
| lethod: 8260B - Volatile Or | ganic C | ompoun | ds (GC/MS) |) (Cont | tinued) | 1 | | | |
| Lab Sample ID: MB 680-519398/9 Matrix: Water Analysis Batch: 519398 | 9 | | | | | C | Client Sam | ple ID: Methoo Prep Type: To | d Blank otal/NA |
| | MB | MB | | | | _ | | | |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| | 0.41 | U | 1.0 | 0.41 | ug/L | | | 04/11/18 15:04 | 1 |
| , I-Dichloropropene | 0.34 | 0 | 1.0 | 0.34 | ug/L | | | 04/11/10 10:04 | 1 |
| | 0.40 | | 1.0 | 0.40 | ug/L | | | 04/11/10 15:04 | 1 |
| ibionochioromethane | 0.32 | 0 | 1.0 | 0.32 | ug/L | | | 04/11/18 15:04 | ۲ ۲ |
| ichlorodifluoromether a | 0.35 | 0 | 1.0 | 0.35 | ug/L | | | 04/11/10 10:04 | 1 |
| Hevenone | 0.00 | | 1.0 | 0.00 | ug/L | | | 04/11/10 10.04 | 1 |
| n Ichanolle | 2.0 | U 11 | 10 | 2.0 | ug/L | | | 04/11/10 10:04 | ····· |
| | 0.33 | 0 | 1.0 | 0.33 | ug/L | | | 04/11/10 10:04 | 1 |
| opropymenzene latbulana Chlarida | 0.35 | 0 | 1.0 | 0.35 | ug/L | | | 04/11/18 15:04 | 1 |
| Methyl 2 pentanone | ∠.⊃ 2.4 | U 11 | 0.0 | 2.2 | ug/L | | | 04/11/10 10.04 | ····· |
| | 2.1 | | 10 | 2.1 | ug/L | | | 04/11/10 13:04 | 1 |
| Rutanone (MEK) | 0.30 | | 10 | 0.30 | ug/L | | | 04/11/10 10:04 | 1 |
| | 0.4 | | 10 | 0.44 | ug/L | | | 04/11/10 15:04 | |
| | 0.44 | 0 | 1.0 | 0.44 | ug/L | | | 04/11/10 15:04 | 1 |
| | 0.37 | 0 | 1.0 | 0.37 | ug/L | | | 04/11/10 15:04 | 1 |
| A 2 2 Tetrachlangethang | 0.47 | 0 | 1.0 | 0.47 | ug/L | | | 04/11/10 15.04 | ····· |
| | 0.62 | 0 | 1.0 | 0.62 | ug/L | | | 04/11/10 15:04 | 1 |
| Propyidenzene | 0.38 | U | 1.0 | 0.38 | ug/L | | | 04/11/16 15:04 | 1 |
| | 0.48 | U | 1.0 | 0.48 | ug/L | | | 04/11/18 15:04 | |
| 2,3-Trichlorobenzene | 2.5 | 0 | 5.0 | 2.5 | ug/L | | | 04/11/18 15:04 | 1 |
| | 0.42 | 0 | 1.0 | 0.42 | ug/L | | | 04/11/18 15:04 | 1 |
| 1,1-1 richloroethane | 0.37 | U | 1.0 | 0.37 | ug/L | | | 04/11/18 15:04 | |
| tyrene | 0.27 | U | 1.0 | 0.27 | ug/L | | | 04/11/18 15:04 | 1 |
| 1,2-Trichloroethane | 0.33 | 0 | 1.0 | 0.33 | ug/L | | | 04/11/18 15:04 | 1 |
| rt-Butylbenzene | 0.45 | U | 1.0 | 0.45 | ug/L | | | 04/11/18 15:04 | 1 |
| etrachloroethene | 0.74 | U | 1.0 | 0.74 | ug/L | | | 04/11/18 15:04 | 1 |
| oluene | 0.48 | 0 | 1.0 | 0.48 | ug/L | | | 04/11/18 15:04 | 1 |
| ,2,4- I rimethylbenzene | 0.47 | U | 1.0 | 0.47 | ug/L | | | 04/11/18 15:04 | 1 |
| ans-1,2-Dichloroethene | 0.37 | U | 1.0 | 0.37 | ug/L | | | 04/11/18 15:04 | 1 |
| 3,5- I rimethylbenzene | 0.31 | U | 1.0 | 0.31 | ug/L | | | 04/11/18 15:04 | 1 |
| ans-1,3-Dichloropropene | 0.42 | U | 1.0 | 0.42 | ug/L | | | 04/11/18 15:04 | 1 |
| richloroethene | 0.48 | U | 1.0 | 0.48 | ug/L | | | 04/11/18 15:04 | 1 |
| richlorofluoromethane | 0.42 | U | 1.0 | 0.42 | ug/L | | | 04/11/18 15:04 | 1 |
| -Xylene | 0.23 | U | 1.0 | 0.23 | ug/L | | | 04/11/18 15:04 | 1 |
| inyl acetate | 0.81 | U | 2.0 | 0.81 | ug/L | | | 04/11/18 15:04 | 1 |
| -Xylene & p-Xylene | 0.35 | U | 1.0 | 0.35 | ug/L | | | 04/11/18 15:04 | 1 |
| inyl chloride | 0.50 | U | 1.0 | 0.50 | ug/L | | | 04/11/18 15:04 | 1 |
| ylenes, Total | 0.23 | U | 1.0 | 0.23 | ug/L | | | 04/11/18 15:04 | 1 |
| | МВ | MB | | | | | | | |
| urrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| oluene-d8 (Surr) | 105 | | 80 - 120 | | | - | | 04/11/18 15:04 | 1 |
| 2-Dichloroethane-d4 (Surr) | 95 | | 73 - 131 | | | | | 04/11/18 15:04 | 1 |
| ibromofluoromethane (Surr) | 99 | | 80 - 122 | | | | | 04/11/18 15:04 | 1 |
| -Bromofluorobenzene (Surr) | 111 | | 80 - 120 | | | | | 04/11/18 15:04 | 1 |

mole Result 00 84

TestAmerica Savannah

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Client: Georgia State University Project/Site: Monitoring Well Installation

TestAmerica Job ID: 680-150889-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

| roject/Site: Monitoring Well Installation | | | | | | | |
|--|-------------|--------------|-----------|------|---------------|---|---|
| lethod: 8260B - Volatile Organic Co | mpounds (GC | :/MS) (C | ontinue | ed) | | | |
| Lab Sample ID: LCS 680-519398/4 Matrix: Water | | | | Clie | ent Sample ID | : Lab Control Sample Prep Type: Total/NA | 4 |
| Analysis Batch: 519398 | | | | | | | |
| | Spike | LCS | LCS | | | %Rec. | |
| Analyte | Added | Result | Qualifier | Unit | D %Rec | Limits | 6 |
| 2-Chlorotoluene | 50.0 | 49.4 | | ug/L | 99 | 80 - 120 | |
| 1-Chlorotoluene | 50.0 | 52.7 | | ug/L | 105 | 80 - 120 | |
| Acetone | 250 | 197 | | ug/L | 79 | 68 - 132 | |
| ,2-Dibromo-3-Chloropropane | 50.0 | 47.4 | | ug/L | 95 | 74 - 120 | |
| Benzene | 50.0 | 50.6 | | ug/L | 101 | 80 - 120 | |
| Bromobenzene | 50.0 | 48.9 | | ug/L | 98 | 71 - 124 | |
| Bromochloromethane | 50.0 | 48.3 | | ug/L | 97 | 80-120 | |
| Bromoform | 50.0 | 51.5 | | ug/L | 103 | 52-122 | |
| ,1-Dichloroethane | 50.0 | 46.9 | | ug/L | 94 | 80-120 | |
| Bromodichloromethane | 50.0 | 52.0 | | ug/L | 104 | 80-120 | |
| ,2-Dichloroethane | 50.0 | 51.6 | | ug/L | 103 | 72-128 | |
| Bromomethane | 50.0 | 50.1 | | ug/L | 100 | 43 - 146 | |
| Carbon disulfide | 50.0 | 44.3 | | ug/L | 89 | 77 - 129 | |
| Carbon tetrachloride | 50.0 | 51.0 | | ug/L | 102 | 67 - 125 | |
| ,2-Dichloroethene, Total | 100 | 97.2 | | ug/L | 97 | 80 - 120 | |
| Chlorobenzene | 50.0 | 49.4 | | ug/L | 99 | 80 - 120 | |
| ,1-Dichloroethene | 50.0 | 46.9 | | ug/L | 94 | 80 - 120 | |
| Chloroethane | 50.0 | 46.4 | | ug/L | 93 | 48 - 145 | |
| ,2-Dichloropropane | 50.0 | 49.6 | | ug/L | 99 | 80 - 120 | |
| Chloroform | 50.0 | 49.5 | | ug/L | 99 | 80 - 120 | |
| ,3-Dichloropropane | 50.0 | 52.4 | | ug/L | 105 | 80 - 120 | |
| Chloromethane | 50.0 | 43.9 | | ug/L | 88 | 76 - 149 | |
| 2,2-Dichloropropane | 50.0 | 51.8 | | ug/L | 104 | 80 - 135 | |
| sis-1,2-Dichloroethene | 50.0 | 49.6 | | ug/L | 99 | 80 - 120 | |
| I,1-Dichloropropene | 50.0 | 47.4 | | ug/L | 95 | 80 - 120 | |
| sis-1,3-Dichloropropene | 50.0 | 51.7 | | ug/L | 103 | 80 - 129 | |
| Dibromochloromethane | 50.0 | 56.4 | | ug/L | 113 | 68 - 120 | |
| Dibromomethane | 50.0 | 49.4 | | ug/L | 99 | 80 - 120 | |
| Dichlorodifluoromethane | 50.0 | 46.5 | | ug/L | 93 | 70 - 137 | |
| 2-Hexanone | 250 | 253 | | ug/L | 101 | 80 - 131 | |
| Ethylbenzene | 50.0 | 50.7 | | ua/L | 101 | 80 - 120 | |
| sopropylbenzene | 50.0 | 52.1 | | ua/L | 104 | 79 - 126 | |
| /lethvlene Chloride | 50.0 | 44.7 | | ua/L | 89 | 80 - 120 | |
| -Methyl-2-pentanone | 250 | 246 | | ua/L | 98 | 80 - 134 | |
| Aethyl tert-hutyl ether | 50.0 | 47.0 | | ua/l | 94 | 80 - 122 | |
| P-Butanone (MEK) | 250 | 237 | | ua/l | 95 | 79-125 | |
| 2-Dibromoethane | 50.0 | 52.9 | | ug/L | 106 | 75-126 | |
| 1.1.2-Tetrachloroethane | 50.0 | 50.7 | | ug/L | 101 | 73 124 | |
| | 50.0 | 58.0 | | ug/L | 116 | 75 132 | |
| 1.2.2.Tetrachloroethane | 50.0 | 46.6 | | ug/L | 93 | 76 126 | |
| | 50.0 | -5.0 19 1 | | ua/l | 90 | 80_125 | |
| sopropyltoluene | 50.0 | 55 G | | ug/L | 111 | 80 120 | |
| 2.3. Trichlorobenzene | 50.0 | JJ.0 55.2 | | ug/L | 111 848 | 70 125 | |
| | 50.0 | 50.5 50 E | | ug/L | 105 | 80 120 | |
| | 50.0 | J2.5 | | ug/L | 105 | 80 120 | |
| | 0.00 | 49.1 | | ug/L | 98 | 00-120 | |
| | 50.0 | 51./ | | ug/L | 103 | ou - 120 | |
| ,1,2- I fichloroethane | 50.0 | 53.0 | | ug/L | 106 | 80-120 | |
| ert-Butvipenzene | 50.0 | 51.0 | | ua/L | 102 | 80-120 | |

TestAmerica Savannah

Client: Georgia State University Project/Site: Monitoring Well Installation

TestAmerica Job ID: 680-150889-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

| Lab Sample ID: LCS 680-519398/4 Matrix: Water | | | | Clie | nt Sample II | : Lab Control Sample Prep Type: Total/NA |
|--|---------|--------|-----------|------|--------------|---|
| Analysis Batch: 519398 | Spilles | 1.08 | 1.08 | | | W Baa |
| Analyte | Added | Result | Oualifiar | Unit | D % Rec | % Rec. |
| Tetrachloroethene | | 53.0 | auanner | | <u>106</u> | 71-123 |
| Toluene | 50.0 | 53.4 | | ug/L | 107 | 80 - 120 |
| 1.2.4-Trimethylbenzene | 50.0 | 51.6 | | ua/L | 103 | 80-120 |
| trans-1,2-Dichloroethene | 50.0 | 47.6 | | ug/L | 95 | 80 - 120 |
| 1,3,5-Trimethylbenzene | 50.0 | 53.2 | | ug/L | 106 | 80 - 120 |
| trans-1,3-Dichloropropene | 50.0 | 55.6 | | ug/L | 111 | 80 - 128 |
| Trichloroethene | 50.0 | 48.7 | | ug/L | 97 | 80 - 120 |
| Trichlorofluoromethane | 50.0 | 50.3 | | ug/L | 101 | 58 - 127 |
| o-Xylene | 50.0 | 51.8 | | ug/L | 104 | 80 - 120 |
| Vinyl acetate | 100 | 99.5 | | ug/L | 100 | 74 - 156 |
| m-Xylene & p-Xylene | 50.0 | 51.7 | | ug/L | 103 | 80 - 120 |
| Vinyl chloride | 50.0 | 46.5 | | ug/L | 93 | 80 - 129 |
| Xylenes, Total | 100 | 104 | | ug/L | 104 | 80_120 |

| | LCS | LCS | |
|------------------------------|-----------|-----------|----------|
| Surrogate | %Recovery | Qualifier | Limits |
| Toluene-d8 (Surr) | 91 | | 80 - 120 |
| 1,2-Dichloroethane-d4 (Surr) | 100 | | 73 - 131 |
| Dibromofluoromethane (Surr) | 99 | | 80 - 122 |
| 4-Bromofluorobenzene (Surr) | 106 | | 80 - 120 |

Lab Sample ID: LCSD 680-51939 Matrix: Water Analysis Batch: 519398

Analyte

2-Chlorotoluene

| 8/5 | | | C | Client Sa | ample | ID: Lat | Control S Prep Typ | Sample be: Tot | e Dup al/NA |
|-----|-------|--------|-----------|-----------|-------|---------|-----------------------|-------------------|----------------|
| | Spike | LCSD | LCSD | | | | %Rec. | | RPD |
| | Added | Result | Qualifier | Unit | D | %Rec | Limits | RPD | Limit |
| | 50.0 | 48.6 | | ug/L | | 97 | 80-120 | 1 | 20 |
| | 50.0 | 51.8 | | ug/L | | 104 | 80-120 | 2 | 20 |
| | 250 | 194 | | ug/L | | 77 | 68-132 | 2 | 30 |

| 4-Chlorotoluene | 50.0 | 51.8 | ug/L | 104 | 80-120 | 2 | 20 |
|-----------------------------|------|------|------|-----|----------|----|----|
| Acetone | 250 | 194 | ug/L | 77 | 68-132 | 2 | 30 |
| 1,2-Dibromo-3-Chloropropane | 50.0 | 47.1 | ug/L | 94 | 74 - 120 | 1 | 20 |
| Benzene | 50.0 | 47.4 | ug/L | 95 | 80-120 | 7 | 20 |
| Bromobenzene | 50.0 | 47.5 | ug/L | 95 | 71 - 124 | 3 | 20 |
| Bromochloromethane | 50.0 | 49.2 | ug/L | 98 | 80-120 | 2 | 20 |
| Bromoform | 50.0 | 47.1 | ug/L | 94 | 52-122 | 9 | 20 |
| 1,1-Dichloroethane | 50.0 | 52.4 | ug/L | 105 | 80-120 | 11 | 20 |
| Bromodichloromethane | 50.0 | 50.4 | ug/L | 101 | 80 - 120 | 3 | 20 |
| 1,2-Dichloroethane | 50.0 | 46.9 | ug/L | 94 | 72-128 | 10 | 50 |
| Bromomethane | 50.0 | 49.8 | ug/L | 100 | 43-146 | 1 | 20 |
| Carbon disulfide | 50.0 | 47.8 | ug/L | 96 | 77 - 129 | 8 | 20 |
| Carbon tetrachloride | 50.0 | 52.8 | ug/L | 106 | 67 - 125 | 4 | 20 |
| 1,2-Dichloroethene, Total | 100 | 106 | ug/L | 106 | 80-120 | 9 | 20 |
| Chlorobenzene | 50.0 | 49.9 | ug/L | 100 | 80 - 120 | 1 | 20 |
| 1,1-Dichloroethene | 50.0 | 47.8 | ug/L | 96 | 80-120 | 2 | 20 |
| Chloroethane | 50.0 | 46.2 | ug/L | 92 | 48-145 | 0 | 20 |
| 1,2-Dichloropropane | 50.0 | 47.4 | ug/L | 95 | 80 - 120 | 5 | 20 |
| Chloroform | 50.0 | 51.0 | ug/L | 102 | 80-120 | 3 | 20 |
| 1,3-Dichloropropane | 50.0 | 50.8 | ug/L | 102 | 80-120 | 3 | 20 |
| Chloromethane | 50.0 | 41.4 | ug/L | 83 | 76-149 | 6 | 30 |
| 2,2-Dichloropropane | 50.0 | 54.5 | ug/L | 109 | 80-135 | 5 | 20 |

TestAmerica Savannah

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4/20/2018

Client: Georgia State University Project/Site: Monitoring Well Installation

TestAmerica Job ID: 680-150889-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

| 1001. 0200D - 0010 | ine organi | c oompe | | | onuna | cu) | | | | | |
|---|------------|-----------|----------|--------|-----------|-----------|-------|---------|-----------------------|-------------------|----------------|
| Lab Sample ID: LCSD 68 Matrix: Water | 0-519398/5 | | | | C | Client Sa | ample | ID: Lat | Control S Prep Typ | Sample be: Tot | e Dup al/NA |
| Analysis Batch: 519398 | | | | | | | | | | | |
| | | | Spike | LCSD | LCSD | | | | %Rec. | | RPD |
| Analyte | | | Added | Result | Qualifier | Unit | D | %Rec | Limits | RPD | Limit |
| is-1,2-Dichloroethene | | | 50.0 | 53.1 | | ug/L | | 106 | 80-120 | 7 | 20 |
| ,1-Dichloropropene | | | 50.0 | 46.2 | | ug/L | | 92 | 80 - 120 | 2 | 20 |
| s-1,3-Dichloropropene | | | 50.0 | 48.9 | | ug/L | | 98 | 80-129 | 5 | 20 |
| bromochloromethane | | | 50.0 | 53.8 | | ug/L | | 108 | 68-120 | 5 | 20 |
| bromomethane | | | 50.0 | 49.7 | | ug/L | | 99 | 80-120 | 0 | 20 |
| ichlorodifluoromethane | | | 50.0 | 48.3 | | ug/L | | 97 | 70-137 | 4 | 40 |
| Hexanone | | | 250 | 235 | | ug/L | | 94 | 80_131 | 7 | 20 |
| hylbenzene | | | 50.0 | 51.0 | | ug/L | | 102 | 80-120 | 1 | 20 |
| opropylbenzene | | | 50.0 | 47.4 | | ug/L | | 95 | 79-126 | 9 | 20 |
| lethylene Chloride | | | 50.0 | 47.6 | | ug/L | | 95 | 80-120 | 6 | 20 |
| Methyl-2-pentanone | | | 250 | 197 | * | ug/L | | 79 | 80-134 | 22 | 20 |
| ethyl tert-butyl ether | | | 50.0 | 51.3 | | ug/L | | 103 | 80-122 | 9 | 20 |
| Butanone (MEK) | | | 250 | 237 | | ug/L | | 95 | 79-125 | 0 | 20 |
| 2-Dibromoethane | | | 50.0 | 50.3 | | ug/L | | 101 | 75-126 | 5 | 20 |
| 1.1.2-Tetrachloroethane | | | 50.0 | 50.5 | | ua/L | | 101 | 73-124 | 0 | 20 |
| Butvlbenzene | | | 50.0 | 51.1 | | ua/L | | 102 | 75-132 | 13 | 20 |
| 1.2.2-Tetrachloroethane | | | 50.0 | 47.1 | | ua/L | | 94 | 76-126 | 1 | 20 |
| Propylbenzene | | | 50.0 | 51.9 | | ug/l | | 104 | 80 - 125 | 5 | 20 |
| sopropyltoluene | | | 50.0 | 52.9 | | ua/l | | 106 | 80-120 | 5 | 20 |
| 2 3-Trichlorobenzene | | | 50.0 | 52.8 | | ug/l | | 106 | 70-125 | 5 | 20 |
| c-Butylbenzene | | | 50.0 | 54.6 | | ug/L | | 109 | 80 120 | 4 | 20 |
| 1 1-Trichloroethane | | | 50.0 | 52.6 | | ug/L | | 105 | 80 120 | 7 | 20 |
| vrene | | | 50.0 | 49.2 | | ug/L | | 98 | 80 126 | 5 | 20 |
| 1 2-Trichloroethane | | | 50.0 | 51.7 | | ug/L | | 103 | 80 120 | 2 | 20 |
| | | | 50.0 | 50.2 | | ug/L | | 100 | 80 120 | 2 | 20 |
| | | | 50.0 | 50.2 | | ug/L | | 100 | 71 122 | 4 | 20 |
| | | | 50.0 | 51.2 | | ug/L | | 103 | 80 120 | 1 | 20 |
| Juciic 2.4. Trimethylbenzene | | | 50.0 | 51.5 | | ug/L | | 105 | 00-120 | 4 | 20 |
| 2,4- minetnyidenzene | | | 50.0 | 52.b | | ug/L | | 105 | 00-120 | 2 | 20 |
| ans-1,2-Dichloroethene | | | 50.0 | 52.7 | | ug/L | | 105 | 00-120 | 10 | 20 |
| 3,5- i rimetnyidenzene | | | 50.0 | 51.8 | | ug/L | | 104 | 80-120 | 3 | 20 |
| ans-1,5-Dicnioropropene | | | 50.0 | 54.4 | | ug/L | | 109 | 80-128 | 2 | 30 |
| icnioroetnene | | | 50.0 | 49.1 | | ug/L | | 98 | 80-120 | 1 | 20 |
| icniorofiuoromethane | | | 50.0 | 48.7 | | ug/L | | 97 | 58-127 | 3 | 20 |
| Xylene | | | 50.0 | 50.3 | | ug/L | | 101 | 80-120 | 3 | 30 |
| nyl acetate | | | 100 | 109 | | ug/L | | 109 | 74-156 | 9 | 20 |
| -Xylene & p-Xylene | | | 50.0 | 50.5 | | ug/L | | 101 | 80-120 | 2 | 20 |
| nyl chloride | | | 50.0 | 44.2 | | ug/L | | 88 | 80-129 | 5 | 20 |
| ylenes, Total | | | 100 | 101 | | ug/L | | 101 | 80 - 120 | 3 | 20 |
| | LCSD | LCSD | | | | | | | | | |
| urrogate | %Recovery | Qualifier | Limits | | | | | | | | |
| vluene-d8 (Surr) | 94 | | 80 - 120 | | | | | | | | |
| 2-Dichloroethane-d4 (Surr) | 89 | | 73 - 131 | | | | | | | | |
| ibromofluoromethane (Surr) | 103 | | 80 - 122 | | | | | | | | |

4-Bromofluorobenzene (Surr)

97

TestAmerica Savannah

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80 - 120

Client: Georgia State University Project/Site: Monitoring Well Installation

TestAmerica Job ID: 680-150889-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

| | | | - | , | | | | |
|---|------------------|-----|------|------------|---|-------------|-----------------------------|--------------------|
| ab Sample ID: MB 680-51953 Aatrix: Water | 36/9 | - | | | | Client Samp | e ID: Metho Prep Type: T | d Blank otal/NA |
| alvsis Batch: 519536 | | | | | | | | |
| | MB MB | | | | | | | |
| nalyte | Result Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| -Chlorotoluene | 0.27 U | 1.0 | 0.27 | ug/L | | | 04/11/18 12:22 | 1 |
| -Chlorotoluene | 0.45 U | 1.0 | 0.45 | ug/L | | | 04/11/18 12:22 | 1 |
| cetone | 7.0 U | 10 | 7.0 | ug/L | | | 04/11/18 12:22 | 1 |
| 2-Dibromo-3-Chloropropane | 1.1 U | 5.0 | 1.1 | ug/L | | | 04/11/18 12:22 | 1 |
| enzene | 0.43 U | 1.0 | 0.43 | ug/L | | | 04/11/18 12:22 | 1 |
| romobenzene | 0.50 U | 1.0 | 0.50 | ug/L | | | 04/11/18 12:22 | 1 |
| romochloromethane | 0.45 U | 1.0 | 0.45 | ug/L | | | 04/11/18 12:22 | 1 |
| romoform | 0.43 U | 1.0 | 0.43 | ug/L | | | 04/11/18 12:22 | 1 |
| 1-Dichloroethane | 0.38 U | 1.0 | 0.38 | ug/L | | | 04/11/18 12:22 | 1 |
| romodichloromethane | 0.44 U | 1.0 | 0.44 | ug/L | | | 04/11/18 12:22 | 1 |
| 2-Dichloroethane | 0.50 U | 1.0 | 0.50 | ua/L | | | 04/11/18 12:22 | 1 |
| romomethane | 2.5 U | 5.0 | 2.5 | ua/L | | | 04/11/18 12:22 | 1 |
| arbon disulfide | 1.0 U | 2.0 | 1.0 | ua/L | | | 04/11/18 12:22 | 1 |
| arbon tetrachloride | 0.33 U | 1.0 | 0.33 | ua/L | | | 04/11/18 12:22 | 1 |
| 2-Dichloroethene Total | 0.37 11 | 2.0 | 0.00 | ug/L | | | 04/11/18 12:22 | 1 |
| lorobenzene | 0.26 11 | 1.0 | 0.26 | ug/L | | | 04/11/18 12:22 | ····· |
| 1-Dichloroethene | 0.20 0 | 1.0 | 0.20 | ug/L | | | 04/11/18 12:22 | 1 |
| | 25 11 | 5.0 | 2.50 | ug/L | | | 04/11/18 12:22 | 4 |
| 2 Dichloropropage | 2.5 0 | 1.0 | 2.5 | ug/L | | | 04/11/10 12:22 | |
| | 0.57 0 | 1.0 | 0.07 | ug/L | | | 04/11/10 12:22 | 1 |
| 2 Dieblesensenene | 0.30 0 | 1.0 | 0.00 | ug/L | | | 04/11/10 12:22 | 1 |
| | 0.34 0 | 1.0 | 0.34 | ug/L | | | 04/11/10 12.22 | |
| | 0.40 0 | 1.0 | 0.40 | ug/L | | | 04/11/10 12.22 | 1 |
| | 0.37 0 | 1.0 | 0.37 | ug/L | | | 04/11/10 12.22 | 1 |
| | 0.41 0 | 1.0 | 0.41 | ug/L | | | 04/11/10 12.22 | ·····. |
| | 0.34 0 | 1.0 | 0.34 | ug/L | | | 04/11/10 12.22 | |
| s-1,3-Dichloropropene | 0.40 U | 1.0 | 0.40 | ug/L | | | 04/11/18 12:22 | 1 |
| bromochloromethane | 0.32 U | 1.0 | 0.32 | ug/L | | | 04/11/18 12:22 | 1 |
| bromomethane | 0.35 U | 1.0 | 0.35 | ug/L | | | 04/11/18 12:22 | 1 |
| chlorodifluoromethane | 0.60 U | 1.0 | 0.60 | ug/L | | | 04/11/18 12:22 | 1 |
| Hexanone | 2.0 U | 10 | 2.0 | ug/L | | | 04/11/18 12:22 | 1 |
| hylbenzene | 0.33 U | 1.0 | 0.33 | ug/L | | | 04/11/18 12:22 | 1 |
| opropylbenzene | 0.35 U | 1.0 | 0.35 | ug/L | | | 04/11/18 12:22 | 1 |
| ethylene Chloride | 2.5 U | 5.0 | 2.5 | ug/L | | | 04/11/18 12:22 | 1 |
| Methyl-2-pentanone | 2.1 U | 10 | 2.1 | ug/L | | | 04/11/18 12:22 | 1 |
| ethyl tert-butyl ether | 0.30 U | 10 | 0.30 | ug/L | | | 04/11/18 12:22 | 1 |
| Butanone (MEK) | 3.4 U | 10 | 3.4 | ug/L | | | 04/11/18 12:22 | 1 |
| 2-Dibromoethane | 0.44 U | 1.0 | 0.44 | ug/L | | | 04/11/18 12:22 | 1 |
| 1,1,2-Tetrachloroethane | 0.37 U | 1.0 | 0.37 | ug/L | | | 04/11/18 12:22 | 1 |
| Butylbenzene | 0.47 U | 1.0 | 0.47 | ug/L | | | 04/11/18 12:22 | 1 |
| 1,2,2-Tetrachloroethane | 0.62 U | 1.0 | 0.62 | ug/L | | | 04/11/18 12:22 | 1 |
| Propylbenzene | 0.38 U | 1.0 | 0.38 | ug/L | | | 04/11/18 12:22 | 1 |
| Isopropyltoluene | 0.48 U | 1.0 | 0.48 | ug/L | | | 04/11/18 12:22 | 1 |
| 2,3-Trichlorobenzene | 2.5 U | 5.0 | 2.5 | ug/L | | | 04/11/18 12:22 | 1 |
| c-Butylbenzene | 0.42 U | 1.0 | 0.42 | ug/L | | | 04/11/18 12:22 | 1 |
| 1,1-Trichloroethane | 0.37 U | 1.0 | 0.37 | ug/L | | | 04/11/18 12:22 | 1 |
| yrene | 0.27 U | 1.0 | 0.27 | - ug/L | | | 04/11/18 12:22 | 1 |
| 1.2-Trichloroethane | 0.33 U | 1.0 | 0.33 | ua/L | | | 04/11/18 12:22 | 1 |
| | | | 2.50 | - <u>-</u> | | | | |

TestAmerica Savannah

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| ient: Georgia State University | | QC S | Sample | Resul | ts | | TestAmeri | ca .lob ID: 680-14 | 50889-1 |
|--|-----------------------|-----------|--|--|--------------------|--|---|---|--|
| pject/Site: Monitoring Well Installati | on | | | | | | 1000 (men | | 10000 |
| ethod: 8260B - Volatile Orga | anic C | ompoun | ds (GC/N | 1 <mark>S) (C</mark> o | ontinu | ed) | | | |
| ab Sample ID: MB 680-519536/9 | | | | | | | Client Sa | mple ID: Method | d Blank |
| Aatrix: Water | | | | | | | | Prep Type: To | otal/NA |
| Analysis Batch: 519536 | | | | | | | | | |
| | MB | MB | | | | | | | |
| nalyte | Result | Qualifier | RL | M | DL Unit | | D Prepare | d Analyzed | Dil Fac |
| etrachloroethene | 0.74 | U | 1.0 | 0. | /4 ug/L | | | 04/11/18 12:22 | 1 |
| Oluene | 0.48 | U | 1.0 | 0. | 48 ug/L | | | 04/11/18 12:22 | 1 |
| ,2,4-1 rimeinyidenzene | 0.47 | U | 1.0 | 0. | 47 ug/L | | | 04/11/18 12:22 | 1 |
| ans-1,2-Dichloroethene | 0.37 | U | 1.0 | 0. | .37 ug/L | | | 04/11/18 12:22 | 1 |
| ,3,5-1 rimetnyibenzene | 0.31 | U | 1.0 | 0. | .31 ug/L | | | 04/11/18 12:22 | 1 |
| ans-1,3-Dictrioroproperte | 0.42 | | 1.0 | 0. | 42 ug/L | | | 04/11/10 12.22 | |
| | 0.48 | U | 1.0 | 0. | 48 ug/L | | | 04/11/18 12:22 | 1 |
| noniorometnane | 0.42 | U | 1.0 | 0. | .4∠ ug/L | | | 04/11/18 12:22 | 1 |
| ⊢∧yiene | 0.23 | 0 | 1.0 | 0. | ∠3 ug/L | | | 04/11/18 12:22 | 1 |
| | 0.81 | 0 | 2.0 | 0. | ວເ ug/L ຈຣ// | | | 04/11/18 12:22 | 1 |
| n-Aylene & p-Aylene | 0.35 | 0 | 1.0 | 0. | .ວວ ug/L =0 ມສ″ | | | 04/11/18 12:22 | 1 |
| nnyi chionae Manaa Tatal | 0.50 | 0 | 1.0 | 0. | 50 ug/L | | | 04/11/18 12:22 | 1 |
| yienes, Tolai | 0.23 | U | 1.0 | 0. | .∠ວ ug/L | | | 04/11/18/12:22 | 1 |
| | MB | MB | | | | | | | |
| Currogate %F | Recovery | Qualifier | Limits | | | | Prepare | d Analyzed | Dil Fac |
| | | | | | | | | 04/41/48 12:22 | 1 |
| oluene-d8 (Surr) | 103 | | 80 - 120 | | | | | 04/11/10 12.22 | ' |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) | 103 83 | | 80 - 120 73 - 131 | | | | | 04/11/18 12:22 | 1 |
| Foluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) Dibromofluoromethane (Surr) I-Bromofluorobenzene (Surr) _ab Sample ID: LCS 680-519536/5 | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 | | | Cli | ent Sample | 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 | 1 1 1 Sample |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) bibromofluoromethane (Surr) -Bromofluorobenzene (Surr) Lab Sample ID: LCS 680-519536/5 flatrix: Water Nathreis Bataby 510526 | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 | | | Cli | ent Sample | 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 D: Lab Control 3 Prep Type: To | 1 1 1 Sample otal/NA |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) Nibromofluoromethane (Surr) -Bromofluorobenzene (Surr) Lab Sample ID: LCS 680-519536/5 Aatrix: Water Analysis Batch: 519536 | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 Spike | LCS I | _CS | Cli | ent Sample | 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 D: Lab Control S Prep Type: To %Rec. | 1 1 Sample otal/NA |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) bibromofluoromethane (Surr) -Bromofluorobenzene (Surr) Lab Sample ID: LCS 680-519536/5 Matrix: Water Analysis Batch: 519536 Analyte | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 Spike | LCS L Result (| _CS Qualifier | Clic | ent Sample D %Rec | 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 D: Lab Control S Prep Type: To %Rec. Limits | 1 1 1 Sample otal/NA |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) bibromofluoromethane (Surr) -Bromofluorobenzene (Surr) Lab Sample ID: LCS 680-519536/5 Atrix: Water Analysis Batch: 519536 analyte -Chlorotoluene | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 Spike Added 50.0 | LCS L Result C 51.5 | -CS ⊋ualifier | Clie Unit | ent Sample D_ %Rec 103 | 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 D: Lab Control S Prep Type: To %Rec. Limits 80-120 | 3 Sample otal/NA |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) Dibromofluoromethane (Surr) -Bromofluorobenzene (Surr) Lab Sample ID: LCS 680-519536/5 Matrix: Water Analysis Batch: 519536 -Chlorotoluene -Chlorotoluene | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 Spike Added 50.0 50.0 | LCS L Result (51.5 51.9 | _CS Qualifier | Clia Unit ug/L ug/L | ent Sample D <u>%Rec</u> 103 | 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 D: Lab Control S Prep Type: To %Rec. Limits 80-120 80-120 | 1 1 1 Sample otal/NA |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) Dibromofluoromethane (Surr) -Bromofluorobenzene (Surr) .ab Sample ID: LCS 680-519536/5 Aatrix: Water Analysis Batch: 519536 -Chlorotoluene -Chlorotoluene cotone | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 Spike Added 50.0 250 | LCS L Result (51.5 51.9 248 | -CS Qualifier | Clin ug/L ug/L ug/L | ent Sample D <u>%Rec</u> 104 99 | 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 D: Lab Control S Prep Type: To % Rec. Limits 80-120 80-120 68-132 | 1 1 1 Sample otal/NA |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) bibromofluoromethane (Surr) -Bromofluorobenzene (Surr) .ab Sample ID: LCS 680-519536/5 Aatrix: Water Analysis Batch: 519536 -Chlorotoluene -Chlorotoluene vectone ,2-Dibromo-3-Chloropropane | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 Spike Added 50.0 250 50.0 | LCS L Result (51.5 51.9 248 56.3 | _CS Qualifier | Clit ug/L ug/L ug/L ug/L | ent Sample <u> </u> | 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 D: Lab Control S Prep Type: To % Rec. Limits 80-120 80-120 68-132 74-120 | 1 1 Sample otal/NA |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) bloromofluoromethane (Surr) -Bromofluorobenzene (Surr) .ab Sample ID: LCS 680-519536/5 Aatrix: Water Analysis Batch: 519536 -Chlorotoluene -Chlorotoluene veetone ,2-Dibromo-3-Chloropropane benzene | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 Spike Added 50.0 250 50.0 250 50.0 50.0 | LCS L Result C 51.5 51.9 248 56.3 50.7 | _CS Qualifier | Cliu ug/L ug/L ug/L ug/L ug/L | ent Sample <u>D</u> %Rec 103 104 95 113 101 | 04/11/18 12:22 04/11/18 12:22 04/11/ | 1 1 Sample otal/NA |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) bibromofluoromethane (Surr) -Bromofluorobenzene (Surr) ab Sample ID: LCS 680-519536/5 Aatrix: Water Analysis Batch: 519536 analyte -Chlorotoluene cetone ,2-Dibromo-3-Chloropropane lenzene romobenzene | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 Spike Added 50.0 50.0 50.0 50.0 50.0 50.0 50.0 | LCS L Result C 51.5 51.9 248 56.3 50.7 54.1 | -CS Qualifier | Clic ug/L ug/L ug/L ug/L ug/L | D %Rec 0 %Rec 103 104 95 113 101 101 105 | 04/11/18 12:22 04/11/18 12:22 04/18 12:22 04/11/18 | Sample otal/NA |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) bibromofluorobenzene (Surr) -Bromofluorobenzene (Surr) -Bromofluorobenzene (Surr) -Ab Sample ID: LCS 680-519536/5 Aatrix: Water -Analysis Batch: 519536 -Chlorotoluene - | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 Spike Added 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 | LCS L Result (51.5 51.9 248 56.3 50.7 54.1 51.3 | -CS Qualifier | Clic ug/L ug/L ug/L ug/L ug/L ug/L | D %Rec 103 104 95 113 101 106 103 | 04/11/18 12:22 04/11/18 12:22 04/11/ | Sample otal/NA |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) bibromofluoromethane (Surr) -Bromofluorobenzene (Surr) -Bromofluorobenzene (Surr) Lab Sample ID: LCS 680-519536/5 Matrix: Water Analysis Batch: 519536 unalyte -Chlorotoluene -Chloroto | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 Spike Added 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 | LCS L Result (51.5 51.9 248 56.3 50.7 54.1 51.3 54.4 | _CS ⊋ualifier | Cliu ug/L ug/L ug/L ug/L ug/L ug/L ug/L | D %Rec 103 104 95 113 104 105 105 105 105 105 | 04/11/18 12:22 04/11/18 12:22 04/11/ | 1 1 1 Sample otal/NA |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) Dibromofluoromethane (Surr) -Bromofluorobenzene (Surr) Lab Sample ID: LCS 680-519536/5 Aatrix: Water Analysis Batch: 519536 unalyte -Chlorotoluene -Chloroto | 103 83 94 94 | , | 80 - 120 73 - 131 80 - 122 80 - 120 Spike Added 50.0 | LCS L Result C 51.5 51.9 248 56.3 50.7 54.1 51.3 51.4 49.4 | -CS Qualifier | Cliu ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/ | D % Rec 1003 1004 101 1004 101 1004 1002 1005 1003 1004 1004 905 1005 1005 1006 1005 1005 905 | 04/11/18 12:22 04/11/18 12:22 04/12 12 04/11/18 12:22 04/11/18 12: | 1 1 1 Sample otal/NA |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) Dibromofluoromethane (Surr) -Bromofluorobenzene (Surr) Lab Sample ID: LCS 680-519536/5 Matrix: Water Analysis Batch: 519536 Valyte -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorobenzene Bromochloromethane Bromochloromethane Bromochloromethane Bromochloromethane Bromochloromethane Bromochloromethane Bromochloromethane Bromochloromethane | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 Spike Added 50.0 | LCS L Result C 51.5 51.9 248 56.3 50.7 54.1 51.3 54.4 49.4 51.0 | -CS Qualifier | Cliu ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/ | D %Rec 0 %Rec 103 104 95 113 104 105 103 105 102 102 102 102 102 103 104 105 104 105 105 105 105 105 105 105 105 | 04/11/18 12:22 04/11/18 12:22 05 - 120 05 - 120 | Sample otal/NA |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) Dibromofluoromethane (Surr) -Bromofluorobenzene (Surr) -Bromofluorobenzene (Surr) Lab Sample ID: LCS 680-519536/5 Matrix: Water Analysis Batch: 519536 -Chlorotoluene -Chlorotoluene coetone ,2-Dibromo-3-Chloropropane Benzene Bromochloromethane Bromochloromethane Bromodichloromethane J-Dichloroethane Bromodichloromethane -Chlorotoluene | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 Spike Added 50.0 | LCS L Result G 51.5 51.9 248 56.3 50.7 54.1 51.3 54.4 49.4 51.0 47.2 | _CS Qualifier | Cliu ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/ | D % Rec 100 100 104 96 112 101 104 96 102 102 103 104 104 96 105 102 106 102 107 96 102 94 | 04/11/18 12:22 04/11/18 12:22 05 - 120 05 - 1 | 1 1 1 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) bibromofluoromethane (Surr) -Bromofluorobenzene (Surr) -Bromofluorobenzene (Surr) .ab Sample ID: LCS 680-519536/5 Aatrix: Water Analysis Batch: 519536 -Chlorotoluene -Chlorotoluene -Chlorotoluene vectone .2-Dibromo-3-Chloropropane Benzene Bromodenzene Bromodenzene Bromodichloromethane promodichloromethane stromodichloromethane stromodichloromethane stromodichloromethane stromodichloromethane stromodichloromethane | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 Spike Added 50.0 | LCS L Result C 51.5 51.9 248 56.3 50.7 54.1 51.3 54.4 49.4 51.0 49.4 51.0 49.4 51.3 54.4 49.4 51.3 54.4 49.4 51.5 51 | _CS Ωualifier | Cliv ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L | D % Rec 102 102 103 104 104 95 113 101 106 103 105 95 102 94 | 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 D: Lab Control S Prep Type: To % Rec. Limits 80-120 68-132 74-120 80-120 68-132 74-120 80-120 52-122 80-120 52-128 43-146 | Sample otal/NA |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) bibromofluoromethane (Surr) -Bromofluorobenzene (Surr) -Bromofluorobenzene (Surr) .ab Sample ID: LCS 680-519536/5 Aatrix: Water Analysis Batch: 519536 Malyte -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorototuene -Chlorotuene -Chlorototuene -Chlorotuene -Chlorotuene -Chlorot | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 Spike Added 50.0 | LCS L Result C 51.5 51.9 248 56.3 50.7 54.1 51.3 54.4 49.4 51.0 47.2 41.8 46.9 | _CS Qualifier | Clia ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L | D %Rec 102 104 95 113 104 95 113 104 105 105 95 102 94 84 84 94 | 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 0 % Rec. Limits 80-120 80-120 80-120 80-120 90-121 80-120 | 1 1 1 5ample otal/NA |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) bloromofluoromethane (Surr) -Bromofluorobenzene (Surr) -Bromofluorobenzene (Surr) .ab Sample ID: LCS 680-519536/5 Aatrix: Water Analysis Batch: 519536 Malyte -Chlorotoluene -C | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 Spike Added 50.0 | LCS L Result C 51.5 51.9 248 56.3 50.7 54.1 51.3 54.4 49.4 51.0 47.2 41.8 46.9 50.7 | _CS Qualifier | Clia ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L | D %Rec 102 104 99 113 104 99 113 100 102 99 102 94 84 94 101 | 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 0 % Rec. Limits 80-120 80-120 80-120 80-120 80-120 80-120 80-120 80-120 80-120 80-120 80-120 72-128 43-146 77-129 67-125 | 1 1 1 5ample otal/NA |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) bibromofluoromethane (Surr) -Bromofluorobenzene (Surr) -Bromofluorobenzene (Surr) -Ab Sample ID: LCS 680-519536/5 Matrix: Water Analysis Batch: 519536 -Analyte -Chlorotoluene -Chlorot | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 Spike Added 50.0 | LCS L Result 0 51.5 51.9 248 56.3 50.7 54.1 51.3 54.4 49.4 51.0 47.2 41.8 46.9 50.7 101 | _CS Qualifier | Clia ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L | D % Rec 103 104 99 113 101 106 102 94 94 94 101 101 | 04/11/18 12:22 04/11/18 12:25 04/11/18 12:25 04/11/ | 1 1 1 Sample otal/NA |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) Dibromofiluoromethane (Surr) -Bromofiluorobenzene (Surr) -Bromofiluorobenzene (Surr) Lab Sample ID: LCS 680-519536/5 Matrix: Water Analysis Batch: 519536 unalyte -Chlorotoluene -Chloroto | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 Spike Added 50.0 | LCS L Result C 51.5 51.9 248 56.3 50.7 54.1 51.3 54.4 49.4 51.0 47.2 41.8 46.9 50.7 101 53.0 | _CS Qualifier | Cliv ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L | D % Rec 103 104 95 113 101 106 102 95 102 94 94 101 101 101 | 04/11/18 12:22 04/11/18 12:22 04/12 12 04/11/18 12:22 04/11/18 12: | 1 1 1 Sample otal/NA |
| oluene-d8 (Surr) ,2-Dichlaroethane-d4 (Surr) Dibromofluoromethane (Surr) -Bromofluorobenzene (Surr) -Bromofluorobenzene (Surr) Lab Sample ID: LCS 680-519536/5 Matrix: Water Analysis Batch: 519536 -Chlorotoluene -Chlorothane tromodichloromethane tromodichloromethane -2-Dichloroethane tromodichloromethane -2-Dichloroethene -2-Dichloroethene, Total Chlorobenzene -1-Dichloroethene | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 Spike Added 50.0 | LCS L Result C 51.5 51.9 248 56.3 50.7 54.1 51.3 54.4 49.4 51.0 47.2 41.8 46.9 50.7 101 53.0 50.3 | -CS Ωualifier | Cliu ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/ | D %Rec 103 104 95 113 104 105 105 105 95 102 94 84 94 101 101 106 101 101 106 | 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 05 12:22 05 12:0 0 68 - 132 74 - 120 68 - 120 74 - 120 74 - 120 52 - 122 80 - 120 80 - 120 72 - 128 43 - 146 77 - 129 67 - 125 80 - 120 80 - 120 | 1 1 1 Sample otal/NA |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr))bioromofiluoromethane (Surr) -Bromofiluorobenzene (Surr) -Bromofiluorobenzene (Surr) -Ab Sample ID: LCS 680-519536/5 Aatrix: Water Analysis Batch: 519536 -Analysis Batch: 519536 -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorotoluene -Chlorothane tromodichloromethane tromodichloromethane -2-Dichloroethane tromodichloromethane -2-Dichloroethane -2-Dichloroethene, Total chlorobenzene ,1-Dichloroethene -1-Dichloroethene | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 Spike Added 50.0 | LCS L Result C 51.5 56.3 56.3 56.3 54.1 51.3 54.1 51.3 54.4 49.4 51.0 47.2 41.8 46.9 50.7 101 50.3 49.1 | -CS Qualifier | Clie ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L | D % Rec 100 100 101 104 102 112 101 100 102 94 84 94 101 101 1001 101 101 101 102 94 84 94 101 101 1001 101 1002 94 | 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 05:20 05:22 05:20 05: | i 1 1 Sample otal/NA |
| oluene-d8 (Surr) p2-Dichloroethane-d4 (Surr) bibromofluorobenzene (Surr) -Bromofluorobenzene (Surr) -Bromofluorobenzene (Surr) -Ab Sample ID: LCS 680-519536/5 fatrix: Water Analysis Batch: 519536 -Chlorotoluene -Chlorotethane -Z-Dichloroethene, Total -Chlorotethene -Chloropenpane | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 Spike Added 50.0 | LCS L Result G 51.5 51.9 248 56.3 50.7 54.1 51.3 54.4 49.4 51.0 47.2 41.8 46.9 50.7 101 53.0 50.7 101 53.0 50.3 49.1 51.5 50.7 101 51.5 50.7 101 50.7 101 50.7 101 50.7 101 101 101 101 101 101 101 10 | -CS Qualifier | Clie ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L | D % Rec 100 100 101 100 102 101 103 104 102 102 103 105 104 96 105 102 106 102 94 84 94 101 106 101 106 101 106 101 106 101 | 04/11/18 12:22 04/11/18 12:22 05/04/04 06/04/04 06/04 0000000000 | 1 1 3 Sample otal/NA |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) ibromofluorobenzene (Surr) -Bromofluorobenzene (Surr) -Bromofluorobenzene (Surr) -Ab Sample ID: LCS 680-519536/5 flatrix: Water | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 120 Spike Added 50.0 | LCS L Result C 51.9 248 56.3 50.7 54.1 51.3 54.4 49.4 51.0 47.2 41.8 46.9 50.7 101 53.0 50.3 49.1 101 53.0 50.3 49.1 51.5 10 10 10 10 10 10 10 10 10 10 | _CS Ωualifier | Clia ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L | D %Rec 102 104 95 112 104 95 102 105 102 94 84 94 101 106 101 106 102 95 102 94 104 105 102 95 102 105 105 105 105 105 105 105 105 | 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 0 07 Rec. Limits 80-120 80-120 80-120 80-120 80-120 80-120 80-120 80-120 80-120 80-120 80-120 80-120 80-120 80-120 80-120 80-120 80-120 | 1 1 1 Sample otal/NA |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) bibromofluorobenzene (Surr) -Bromofluorobenzene (Surr) -Bromofluorobenzene (Surr) -Ab Sample ID: LCS 680-519536/5 Matrix: Water Analysis Batch: 519536 -Altrix: Water -Chlorotoluene -Chlorotoluene -Chlorotoluene cetone .2-Dibromo-3-Chloropropane enzene romochloromethane romodenzene romodichloromethane ,2-Dichloroethane romodichloromethane arbon disulfide arbon tetrachloride ,2-Dichloroethene, Total hlorobenzene ,1-Dichloroethene hloroethane .2-Dichloroethene hloroethane .2-Dichloropropane hloroform .3-Dichloropropane | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 122 80 - 120 Spike Added 50.0 50 | LCS L Result C 51.5 51.9 248 56.3 50.7 54.1 51.3 54.4 49.4 51.0 47.2 41.8 46.9 50.7 101 53.0 50.3 49.1 51.1 49.3 51.2 | -CS Qualifier | Clia ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L | D %Rec 103 104 99 113 104 99 102 103 105 94 84 94 84 101 101 106 101 96 102 94 84 101 106 107 94 84 94 84 94 94 84 94 94 94 94 94 94 94 94 94 94 94 94 94 | 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 04/11/18 12:22 05 05 05 05 05 05 05 05 05 05 05 05 05 | 1 1 1 5 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 |
| oluene-d8 (Surr) ,2-Dichloroethane-d4 (Surr) bibromofiluorobenzene (Surr) -Bromofiluorobenzene (Surr) -Bromofiluorobenzene (Surr) -ab Sample ID: LCS 680-519536/5 fatrix: Water Inalysis Batch: 519536 -Chlorotoluene -Chlorotoluene cetone ,2-Dibromo-3-Chloropropane enzene romochloromethane romochloromethane romodichloromethane romodichloromethane romomethane arbon disulfide arbon disulfide arbon tetrachloride ,2-Dichloroethene, Total hlorobenzene 1-Dichloroethene hloroethane 2-Dichloropropane hloroform 3-Dichloropropane hloroform | 103 83 94 94 | | 80 - 120 73 - 131 80 - 122 80 - 122 80 - 120 Spike Added 50.0 50 | LCS L Result C 51.5 51.9 248 56.3 50.7 54.1 51.3 54.4 49.4 51.0 47.2 41.8 46.9 50.7 101 53.0 50.3 49.1 51.1 49.3 51.2 44.8 | -CS Qualifier | Clia ug/L ug/L ug/L ug/L ug/L ug/L ug/L ug/L | D % Rec 103 104 99 113 101 102 102 94 101 100 102 94 101 101 100 101 101 101 102 94 94 101 101 100 102 94 101 100 102 95 102 96 102 96 102 96 102 96 102 96 102 96 102 96 | 04/11/18 12:22 04/11/18 12:22 04/12 12 04/11/18 12:22 04/11/18 12: | 1 1 1 Sample otal/NA |

2,2-Dichloropropane

TestAmerica Savannah

Client: Georgia State University Project/Site: Monitoring Well Installation

4-Bromofluorobenzene (Surr)

99

TestAmerica Job ID: 680-150889-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

| iethod: 8260B - Vola | ine Organi | c Compo | unas (GC | (C | ontinu | ea) | | | |
|--|------------|-----------|-------------|--------------|-----------|------|---------|--------|---|
| Lab Sample ID: LCS 680- Matrix: Water | 519536/5 | | | | | Clie | nt Samp | ole ID | Lab Control Sample Prep Type: Total/NA |
| Analysis Batch: 519536 | | | | | | | | | |
| | | | Spike | LCS | LCS | | | | %Rec. |
| Analyte | | | Added | Result | Qualifier | Unit | D% | Rec | Limits |
| cis-1,2-Dichloroethene | | | 50.0 | 50.8 | | ug/L | | 102 | 80 - 120 |
| ,1-Dichloropropene | | | 50.0 | 49.0 | | ug/L | | 98 | 80 - 120 |
| is-1,3-Dichloropropene | | | 50.0 | 53.4 | | ug/L | | 107 | 80 - 129 |
| bibromochloromethane | | | 50.0 | 53.3 | | ug/L | | 107 | 68 - 120 |
| Dibromomethane | | | 50.0 | 50.8 | | ug/L | | 102 | 80-120 |
| Dichlorodifluoromethane | | | 50.0 | 41.7 | | ug/L | | 83 | 70-137 |
| -Hexanone | | | 250 | 260 | | ug/L | | 104 | 80-131 |
| thylbenzene | | | 50.0 | 52.2 | | ug/L | | 104 | 80 - 120 |
| sopropylbenzene | | | 50.0 | 52.9 | | ug/L | | 106 | 79-126 |
| lethylene Chloride | | | 50.0 | 52.6 | | ug/L | | 105 | 80 - 120 |
| -Methyl-2-pentanone | | | 250 | 258 | | ug/L | | 103 | 80-134 |
| lethyl tert-butyl ether | | | 50.0 | 50.4 | | ug/L | | 101 | 80 - 122 |
| -Butanone (MEK) | | | 250 | 277 | | ug/L | | 111 | 79-125 |
| ,2-Dibromoethane | | | 50.0 | 51.3 | | ug/L | | 103 | 75-126 |
| 1,1,2-Tetrachloroethane | | | 50.0 | 54.3 | | ug/L | | 109 | 73-124 |
| Butylbenzene | | | 50.0 | 51.5 | | ug/L | | 103 | 75-132 |
| 1,2,2-Tetrachloroethane | | | 50.0 | 53.8 | | ug/L | | 108 | 76-126 |
| -Propylbenzene | | | 50.0 | 52.3 | | ug/L | | 105 | 80 - 125 |
| Isopropyltoluene | | | 50.0 | 52.2 | | ug/L | | 104 | 80 - 120 |
| 2,3-Trichlorobenzene | | | 50.0 | 53.2 | | ug/L | | 106 | 70-125 |
| ec-Butylbenzene | | | 50.0 | 53.2 | | ug/L | | 106 | 80 - 120 |
| 1,1-Trichloroethane | | | 50.0 | 49.2 | | ug/L | | 98 | 80 - 120 |
| tvrene | | | 50.0 | 54.1 | | ua/L | | 108 | 80 - 126 |
| 1.2-Trichloroethane | | | 50.0 | 51.2 | | ua/L | | 102 | 80 - 120 |
| rt-Butvlbenzene | | | 50.0 | 53.8 | | ua/L | | 108 | 80 - 120 |
| etrachloroethene | | | 50.0 | 52.5 | | ug/l | | 105 | 71-123 |
| oluene | | | 50.0 | 51.9 | | ua/L | | 104 | 80 - 120 |
| 2.4-Trimethylbenzene | | | 50.0 | 52.8 | | ua/l | | 106 | 80-120 |
| ans-1 2-Dichloroethene | | | 50.0 | 49.9 | | ua/l | | 100 | 80-120 |
| 3.5-Trimethylhenzene | | | 50.0 | 53.1 | | ug/L | | 106 | 80-120 |
| ans-1 3-Dichloronronene | | | 50.0 | 52.7 | | ug/L | | 104 | 80 - 128 |
| richloroethene | | | 50.0 | 52.2 | | ug/L | | 105 | 80 120 |
| richlorofluoromethane | | | 50.0 | JZ.J 15 1 | | ug/L | | 91 | 58 127 |
| -Yvlene | | | 50.0 | 4J.4 50.4 | | ug/L | | 104 | 80 120 |
| inul acetate | | | 100 | JZ. I 100 | | ug/L | | 104 | 74 156 |
| Videne & n. Videne | | | 100 EQ.Q | 109 | | ug/L | | 109 | 14-100 90 100 |
| i-Ayiene & p-Ayiene | | | 50.0 | 52.4 | | ug/L | | 100 | 00-120 |
| | | | 0.00 | 46.2 | | ug/L | | 92 | 00-129 |
| yienes, l'otai | | | 100 | 105 | | ug/L | | 105 | 80-120 |
| | LCS | LCS | | | | | | | |
| urrogate | %Recovery | Qualifier | Limits | | | | | | |
| oluene-d8 (Surr) | 104 | | 80 - 120 | | | | | | |
| ,2-Dichloroethane-d4 (Surr) | 93 | | 73 - 131 | | | | | | |
|)ibromofluoromethane (Surr) | 103 | | 80 - 122 | | | | | | |

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80 - 120

Client: Georgia State University Project/Site: Monitoring Well Installation

TestAmerica Job ID: 680-150889-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

| ab Sample ID: LCSD 680-519536/6 fatrix: Water | | | C | Client Sa | ample | ID: Lab | Control | Sample be: Tota | Dup al/NA |
|--|-------|--------------|-----------|-----------|-------|----------|----------|--------------------|--------------|
| nalysis Batch: 519536 | | | | | | | | | |
| | Spike | LCSD | LCSD | | | | %Rec. | | RPD |
| nalyte | Added | Result | Qualifier | Unit | D | %Rec | Limits | RPD | Limit |
| -Chlorotoluene | 50.0 | 46.4 | | ug/L | | 93 | 80-120 | 10 | 20 |
| -Chlorotoluene | 50.0 | 46.6 | | ug/L | | 93 | 80-120 | 11 | 20 |
| cetone | 250 | 220 | | ug/L | | 88 | 68-132 | 12 | 30 |
| 2-Dibromo-3-Chloropropane | 50.0 | 48.5 | | ug/L | | 97 | 74 - 120 | 15 | 20 |
| enzene | 50.0 | 45.7 | | ug/L | | 91 | 80-120 | 10 | 20 |
| romobenzene | 50.0 | 48.2 | | ug/L | | 96 | 71-124 | 12 | 20 |
| romochloromethane | 50.0 | 46.9 | | ug/L | | 94 | 80-120 | 9 | 20 |
| romoform | 50.0 | 48.2 | | ug/L | | 96 | 52-122 | 12 | 20 |
| 1-Dichloroethane | 50.0 | 45.0 | | ug/L | | 90 | 80-120 | 9 | 20 |
| romodichloromethane | 50.0 | 46.3 | | ug/L | | 93 | 80 - 120 | 10 | 20 |
| 2-Dichloroethane | 50.0 | 42.7 | | ug/L | | 85 | 72-128 | 10 | 50 |
| romomethane | 50.0 | 40.8 | | ug/L | | 82 | 43 - 146 | 2 | 20 |
| arbon disulfide | 50.0 | 41.8 | | ug/L | | 84 | 77 - 129 | 11 | 20 |
| arbon tetrachloride | 50.0 | 44.0 | | ua/L | | 88 | 67 - 125 | 14 | 20 |
| 2-Dichloroethene. Total | 100 | 90.4 | | ua/L | | 90 | 80-120 | 11 | 20 |
| nlorobenzene | 50.0 | 48.1 | | ua/L | | 96 | 80-120 | 10 | 20 |
| 1-Dichloroethene | 50.0 | 44 1 | | ua/l | | 88 | 80_120 | 13 | 20 |
| bloroethane | 50.0 | 44.8 | | ua/l | | 90 | 48-145 | 9 | 20 |
| 2-Dichloronronane | 50.0 | 46.3 | | ug/L | | 93 | 80_120 | 10 | 20 |
| bloroform | 50.0 | 44.8 | | ug/L | | 90 | 80 120 | 10 | 20 |
| 3-Dichloropropage | 50.0 | 44.0 16.7 | | ug/L | | 02 02 | 80 120 | a | 20 |
| loromethane | 50.0 | 40.7 30.9 | | ug/L | | 80 | 76 149 | 12 | 20 |
| 2-Dichloropropape | 50.0 | JJ.0 16 1 | | ug/L | | 00 | 80 125 | 12 | 20 |
| = 12-Dichloroethene | 50.0 | 40.4 | | ug/L | | 93 | 80 120 | 11 | 20 |
| | 50.0 | 40.0 | | ug/L | | 91 97 | 80 120 | 11 | 20 |
| | 50.0 | 40.4 | | ug/L | | 07 | 90 120 | 12 | 20 |
| bromochloromethane | 50.0 | 40.1 | | ug/L | | 90 | 68 120 | 10 | 20 |
| bromomethane | 0.00 | 40.2 | | ug/L | | 90 | 80 120 | 10 | 20 |
| oromomethane | 50.0 | 40.0 | | ug/L | | 30 | 70 427 | 3 | 20 |
| | DU.U | 30.2 | | ug/L | | 70 | 10-13/ | 17 | 40 |
| | 200 | 221 | | ug/L | | 91 | 00-131 | 13 | 20 |
| nyipenzene | 0.00 | 46.0 | | ug/L | | 92 | 00-120 | 12 | 20 |
| opropyidenzene | 50.0 | 46.9 | | ug/L | | 94 | /9-126 | 12 | 20 |
| eurylene Chloride | 50.0 | 47.9 | | ug/L | | 96 | 80-120 | 9 | 20 |
| | 250 | 226 | | ug/L | | 91 | 80-134 | 13 | 20 |
| etnyi tert-butyi ether | 50.0 | 45.3 | | ug/L | | 91 | 80-122 | 11 | 20 |
| Butanone (MEK) | 250 | 245 | | ug/L | | 98 | /9-125 | 12 | 20 |
| 2-Dibromoethane | 50.0 | 46.3 | | ug/L | | 93 | 75-126 | 10 | 20 |
| 1,1,2- i etrachioroethane | 50.0 | 48.7 | | ug/L | | 97 | /3-124 | 11 | 20 |
| Butylbenzene | 50.0 | 45.5 | | ug/L | | 91 | 75-132 | 12 | 20 |
| 1,2,2-Tetrachloroethane | 50.0 | 47.3 | | ug/L | | 95 | 76-126 | 13 | 20 |
| Propylbenzene | 50.0 | 46.4 | | ug/L | | 93 | 80-125 | 12 | 20 |
| Isopropyltoluene | 50.0 | 45.7 | | ug/L | | 91 | 80 - 120 | 13 | 20 |
| 2,3-Trichlorobenzene | 50.0 | 49.8 | | ug/L | | 100 | 70-125 | 7 | 20 |
| c-Butylbenzene | 50.0 | 46.3 | | ug/L | | 93 | 80 - 120 | 14 | 20 |
| 1,1-Trichloroethane | 50.0 | 42.8 | | ug/L | | 86 | 80 - 120 | 14 | 20 |
| yrene | 50.0 | 48.7 | | ug/L | | 97 | 80-126 | 10 | 20 |
| 1,2-Trichloroethane | 50.0 | 46.5 | | ug/L | | 93 | 80 - 120 | 9 | 20 |
| rt Butulhanzona | 50.0 | 16.5 | | | | 0.2 | 90 120 | 14 | 20 |

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Client: Georgia State University Project/Site: Monitoring Well Installation TestAmerica Job ID: 680-150889-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

| Lab Sample ID: LCSD 680-519536/6 Matrix: Water | | | C | Client Sa | ample | ID: Lab | Control | Sample | e Dup al/NA | |
|---|-------|--------|-----------|-----------|-------|---------|----------|--------|----------------|---|
| Analysis Batch: 519536 | | | | | | | | | | 5 |
| • • • • | Spike | LCSD | LCSD | | _ | | % Rec. | | RPD | |
| Analyte | Added | Result | Qualifier | Unit | D | % Rec | Limits | RPD | Limit | 0 |
| Tetrachloroethene | 50.0 | 47.2 | | ug/L | | 94 | 71 - 123 | 11 | 20 | 6 |
| Toluene | 50.0 | 46.8 | | ug/L | | 94 | 80 - 120 | 10 | 20 | |
| 1,2,4-Trimethylbenzene | 50.0 | 47.1 | | ug/L | | 94 | 80-120 | 11 | 20 | |
| trans-1,2-Dichloroethene | 50.0 | 45.1 | | ug/L | | 90 | 80 - 120 | 10 | 20 | |
| 1,3,5-Trimethylbenzene | 50.0 | 47.2 | | ug/L | | 94 | 80-120 | 12 | 20 | |
| trans-1,3-Dichloropropene | 50.0 | 47.5 | | ug/L | | 95 | 80-128 | 9 | 30 | |
| Trichloroethene | 50.0 | 47.3 | | ug/L | | 95 | 80-120 | 10 | 20 | |
| Trichlorofluoromethane | 50.0 | 39.5 | | ug/L | | 79 | 58-127 | 14 | 20 | |
| o-Xylene | 50.0 | 46.3 | | ug/L | | 93 | 80-120 | 12 | 30 | |
| Vinyl acetate | 100 | 102 | | ug/L | | 102 | 74 - 156 | 7 | 20 | |
| m-Xylene & p-Xylene | 50.0 | 47.3 | | ug/L | | 95 | 80-120 | 10 | 20 | |
| Vinyl chloride | 50.0 | 40.2 | | ug/L | | 80 | 80 - 129 | 14 | 20 | |
| Xylenes, Total | 100 | 93.6 | | ug/L | | 94 | 80-120 | 11 | 20 | |

| | LUGD | LUSD | |
|------------------------------|-----------|-----------|----------|
| Surrogate | %Recovery | Qualifier | Limits |
| Toluene-d8 (Surr) | 92 | | 80 - 120 |
| 1,2-Dichloroethane-d4 (Surr) | 84 | | 73 - 131 |
| Dibromofluoromethane (Surr) | 94 | | 80 - 122 |
| 4-Bromofluorobenzene (Surr) | 90 | | 80 - 120 |

Lab Sample ID: MB 680-519580/11 Matrix: Solid Analy

2,2-Dichloropropane

Chloromethane

| Analysis Batch: 519580 | | | | | | | | |
|-----------------------------|--------|-----------|-----|------|-------|---|----------|----------------|
| | MB | MB | | | | | | |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed |
| 2-Chlorotoluene | 2.0 | U | 5.0 | 2.0 | ug/Kg | | | 04/11/18 14:56 |
| 4-Chlorotoluene | 1.7 | U | 5.0 | 1.7 | ug/Kg | | | 04/11/18 14:56 |
| Acetone | 11 | U | 50 | 11 | ug/Kg | | | 04/11/18 14:56 |
| 1,2-Dibromo-3-Chloropropane | 4.4 | U | 10 | 4.4 | ug/Kg | | | 04/11/18 14:56 |
| Benzene | 0.73 | U | 5.0 | 0.73 | ug/Kg | | | 04/11/18 14:56 |
| Bromobenzene | 1.7 | U | 5.0 | 1.7 | ug/Kg | | | 04/11/18 14:56 |
| Bromochloromethane | 3.3 | U | 5.0 | 3.3 | ug/Kg | | | 04/11/18 14:56 |
| Bromoform | 1.5 | U | 5.0 | 1.5 | ug/Kg | | | 04/11/18 14:56 |
| 1,1-Dichloroethane | 1.1 | U | 5.0 | 1.1 | ug/Kg | | | 04/11/18 14:56 |
| Bromodichloromethane | 0.97 | U | 5.0 | 0.97 | ug/Kg | | | 04/11/18 14:56 |
| 1,2-Dichloroethane | 1.1 | U | 5.0 | 1.1 | ug/Kg | | | 04/11/18 14:56 |
| Bromomethane | 1.5 | U | 5.0 | 1.5 | ug/Kg | | | 04/11/18 14:56 |
| Carbon disulfide | 1.1 | U | 5.0 | 1.1 | ug/Kg | | | 04/11/18 14:56 |
| Carbon tetrachloride | 0.83 | U | 5.0 | 0.83 | ug/Kg | | | 04/11/18 14:56 |
| 1,2-Dichloroethene, Total | 0.63 | U | 10 | 0.63 | ug/Kg | | | 04/11/18 14:56 |
| Chlorobenzene | 0.96 | U | 5.0 | 0.96 | ug/Kg | | | 04/11/18 14:56 |
| 1,1-Dichloroethene | 1.5 | U | 5.0 | 1.5 | ug/Kg | | | 04/11/18 14:56 |
| Chloroethane | 2.7 | U | 5.0 | 2.7 | ug/Kg | | | 04/11/18 14:56 |
| 1,2-Dichloropropane | 0.86 | U | 5.0 | 0.86 | ug/Kg | | | 04/11/18 14:56 |
| Chloroform | 1.1 | U | 5.0 | 1.1 | ug/Kg | | | 04/11/18 14:56 |
| 1,3-Dichloropropane | 1.8 | U | 5.0 | 1.8 | ug/Kg | | | 04/11/18 14:56 |

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

Dil Fac

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04/11/18 14:56

04/11/18 14:56

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5.0

5.0

1.0 ug/Kg

1.1 ug/Kg

1.0 U

1.1 U

| ent: Georgia State University | | QC S | Sample Re | esults | ; | TestAmerica | | 0880-1 |
|---|------------|-----------|------------|-------------|----------------|-------------|----------------|-------------------|
| oject/Site: Monitoring Well Installatio | on | | | | | restAmened | 300 ID. 000-10 | 0000-1 |
| ethod: 8260B - Volatile Orga | nic C | ompoun | ds (GC/MS) |) (Cont | inued) | | | |
| ab Sample ID: MB 680-519580/11 | | | | | | Client Sam | ple ID: Method | l Blank |
| latrix: Solid | | | | | | | Prep Type: To | otal/NA |
| halysis Batch: 519580 | MB | MB | | | | | | |
| nalvte | Result | Qualifier | RI | MDI | Unit | D Prenared | Analyzed | Dil Fac |
| s-1.2-Dichloroethene | 1.4 | U | 5.0 | 1.4 | ua/Ka | | 04/11/18 14:56 | 1 |
| 1-Dichloropropene | 0.95 | U | 5.0 | 0.95 | ua/Ka | | 04/11/18 14:56 | |
| s-1.3-Dichloropropene | 0.83 | U | 5.0 | 0.83 | ua/Ka | | 04/11/18 14:56 | 1 |
| ibromochloromethane | 1.7 | Ū | 5.0 | 1.7 | ua/Ka | | 04/11/18 14:56 | 1 |
| bromomethane | 1.7 | Ū | 5.0 | 1.7 | ua/Ka | | 04/11/18 14:56 | · · · · · · · 1 |
| ichlorodifluoromethane | 0.94 | U | 5.0 | 0.94 | ua/Ka | | 04/11/18 14:56 | 1 |
| Hexanone | 3.3 | U | 25 | 3.3 | ua/Ka | | 04/11/18 14:56 | 1 |
| hvlbenzene | 1.3 | U | 5.0 | 1.3 | ua/Ka | | 04/11/18 14:56 | · · · · · · · 1 |
| opropylbenzene | 1.9 | U | 5.0 | 1.9 | ua/Ka | | 04/11/18 14:56 | 1 |
| ethylene Chloride | 0.98 | Ū | 5.0 | 0.98 | ua/Ka | | 04/11/18 14:56 | 1 |
| Methyl-2-pentanone | 4.2 | U | 25 | 4.2 | ua/Ka | | 04/11/18 14:56 | |
| ethyl tert-butyl ether | 1.0 | u. | 5.0 | 1.0 | ua/Ka | | 04/11/18 14:56 | . 1 |
| Butanone (MEK) | 24 | Ű. | 25 | 24 | ua/Ka | | 04/11/18 14:56 | 1 |
| 2-Dibromoethane | 1.5 | | 5.0 | 1.5 | ua/Ka | | 04/11/18 14:56 | · · · · · · · · 1 |
| 1 1 2-Tetrachloroethane | 24 | U | 5.0 | 24 | ua/Ka | | 04/11/18 14:56 | 1 |
| Butylhenzene | 24 | Ű. | 5.0 | 24 | ua/Ka | | 04/11/18 14:56 | 1 |
| 1.2.2-Tetrachloroethane | 1.6 | ŭ | 5.0 | 16 | ua/Ka | | 04/11/18 14:56 | |
| Providenzene | 27 | U U | 5.0 | 27 | ua/Ka | | 04/11/18 14:56 | 1 |
| sopropyltoluene | 2.7 | U U | 5.0 | 2.7 | ua/Ka | | 04/11/18 14:56 | 1 |
| 2 3-Trichlorobenzene | 1.6 | | 5.0 | 1.6 | ug/Kg | | 04/11/18 14:56 | |
| c-Butylbenzene | 2.1 | 0 | 5.0 | 2.1 | ug/Kg | | 04/11/18 14:56 | 1 |
| 1 1-Trichloroethane | 0.59 | U U | 5.0 | 0.59 | ua/Ka | | 04/11/18 14:56 | 1 |
| vrene | 0.00 | | 5.0 | 0.00 | ug/Kg | | 04/11/18 14:56 | ····· 1 |
| 1 2-Trichloroethane | 0.55 | 0 | 5.0 | 13 | ug/Kg ug/Kg | | 04/11/18 14:56 | 1 |
| | 1.0 | 0 | 5.0 | 1.0 | ug/Kg | | 04/11/18 14:56 | 1 |
| trachloroethene | 1.0 | | 5.0 | 1.0 | ug/Kg | | 04/11/18 14:56 | |
| | 0.84 | 0 | 5.0 | 0.84 | ug/Kg ug/Kg | | 04/11/18 14:56 | 1 |
| 2 4-Trimethylbenzene | 0.04 | | 5.0 | 1.04 | ug/Kg | | 04/11/18 14:56 | 1 |
| ans_1_2-Dichloroethene | 0.63 | Ŭ. | 5.0 | 0.63 | ug/Kg | | 04/11/18 14:56 | ····· 4 |
| 3.5 Trimethylbenzene | 0.03 | | 5.0 | 0.03 | ug/Kg | | 04/11/18 14:50 | 1 |
| ans-1 3-Dichloropropene | 0.87 | 0 | 5.0 | 0.87 | ug/Ng ug/Kg | | 04/11/10 14.30 | 1 |
| ichloroethene | 0.07 | U 11 | 5.0 | 1.07 | ug/ry | | 04/11/18 14:56 | ····· 4 |
| ichlorofluoromethane | 1.0 | | 5.0 | 1.0 | ug/Kg | | 04/11/10 14.50 | ן א |
| Yvlene | 1.2 | 0 | 5.0 | 1.2 | ug/Kg | | 04/11/18 14:30 | 1 |
| nyl acetate | 1.1 | 1 | 10 | 1.1 2.5 | ug/Kg | | 04/11/18 14:50 | ····· 4 |
| Videne & n. Videne | 2.0 | 0 | 10 | 2.0 | ug/Ka | | 04/11/10 14.30 | 1 |
| | ∠.b 1 ⊑ | 0 | 5.0 | ∠.b 1 ⊑ | ug/Kg | | 04/11/10 14.30 | 1 |
| lenes Total | 6.1 A A | U 11 | 3.0 | G.T N.N. | ug/ry | | 04/11/10 14:50 | ····· , |
| Vicines, I Utal | 1.1 | 0 | 10 | 1.1 | uying | | 04/11/10 14.00 | 1 |
| | MB | MB | | | | | | |
| irrogate %R | ecovery | Qualifier | Limits | | | Prepared | Analyzed | Dil Fac |
| oluene-d8 (Surr) | 94 | | 70 - 130 | | | | 04/11/18 14:56 | 1 |
| 2-Dichloroethane-d4 (Surr) | 96 | | 70 - 130 | | | | 04/11/18 14:56 | 1 |
| ibromofluoromethane (Surr) | 99 | | 70 - 130 | | | | 04/11/18 14:56 | 1 |

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Client: Georgia State University Project/Site: Monitoring Well Installation

TestAmerica Job ID: 680-150889-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

| ab Sample ID: LCS 680-519580/4 | | | | Clier | nt Sample ID | : Lab Control Sample |
|--|-------|-------------|-----------|-------|--------------|----------------------|
| Aatrix: Solid | | | | | | Prep Type: Total/NA |
| Analysis Batch: 519580 | | | | | | |
| | Spike | LCS | LCS | | | %Rec. |
| Analyte | Added | Result | Qualifier | Unit | D %Rec | Limits |
| -Chlorotoluene | 50.0 | 47.8 | | ug/Kg | 96 | 70-130 |
| -Chlorotoluene | 50.0 | 47.4 | | ug/Kg | 95 | 70-130 |
| cetone | 250 | 223 | | ug/Kg | 89 | 40 - 160 |
| 2-Dibromo-3-Chloropropane | 50.0 | 48.7 | | ug/Kg | 97 | 40 - 160 |
| enzene | 50.0 | 47.7 | | ug/Kg | 95 | 70-130 |
| romobenzene | 50.0 | 48.9 | | ug/Kg | 98 | 70-130 |
| romochloromethane | 50.0 | 46.7 | | ug/Kg | 93 | 70-130 |
| romotorm | 50.0 | 49.1 | | ug/Kg | 98 | 70-130 |
| 1-Dichloroethane | 50.0 | 47.3 | | ug/Kg | 95 | 70-130 |
| | 50.0 | 46.5 | | ug/Kg | 93 | 70-130 |
| 2-Dicnioroethane | 50.0 | 46.7 | | ug/Kg | 93 | /0-130 |
| omometnane | 50.0 | 43.8 | | ug/Kg | 88 | 40 - 160 |
| | 50.0 | 44.0 | | ug/Kg | 88 | 40-160 |
| arbon tetrachloride | 50.0 | 46.6 | | ug/Kg | 93 | 70-130 |
| 2-Dichloroethene, lotal | 100 | 92.6 | | ug/Kg | 93 | 70-130 |
| | 50.0 | 47.7 | | ug/Kg | 95 | 70-130 |
| | 50.0 | 42.6 | | ug/Kg | 85 | /0-130 |
| noroethane | 50.0 | 44.2 | | ug/Kg | 88 | 40-160 |
| 2-Dichloropropane | 50.0 | 47.9 | | ug/Kg | 96 | 70-130 |
| | 50.0 | 40.0 | | ug/Kg | 91 | 70-130 |
| 3-Dicnioropropane | 50.0 | 49.2 | | ug/Kg | 98 | 70-130 |
| noromethane | 50.0 | 50.4 | | ug/Kg | 101 | 40-160 |
| 2-Dichloropropane | 50.0 | 46.4 | | ug/Kg | 93 | 70-130 |
| | 50.0 | 48.2 | | ug/Kg | 96 | 70-130 |
| | 50.0 | 47.0 | | ug/Kg | 94 | 70-130 |
| | 50.0 | 46.2 | | ug/Kg | 92 | 70-130 |
| | 50.0 | 48.3 | | ug/Kg | 97 | 70-130 |
| | 50.0 | 47.4 | | ug/Kg | 95 | 70-130 |
| Chlorodinuoromethane | 50.0 | 00.1 | | ug/Kg | 106 | 40 - 160 |
| Hexanone | 200 | 263 | | ug/Kg | 105 | 40-160 |
| nyibenzene | 50.0 | 40.4 | | ug/Kg | 97 | 70-130 |
| opropyroenzene othylong Chlorida | 50.0 | 47.3 | | ug/Kg | 95 | 70-130 |
| Mathyl 2 paptopapa | 30.0 | 43.4 | | ug/Kg | 106 | 10-100 |
| atbut tart but d atbar | 200 | 200 | | ug/Kg | 108 | 40-100 |
| euryr tert-butyr etner Butonono (MEK) | 50.0 | 46.0 | | ug/Kg | 92 | 10-150 |
| Dutanone (MEN) 2 Dibromoethane | 200 | 230 40 4 | | ug/Kg | 94 | 40-100 |
| | 50.0 | 49.4 | | ug/Kg | 99 | 70 130 |
| | 50.0 | 40.9 | | ug/Kg | 98 | 70-130 |
| | 50.0 | 40.7 | | ug/Kg | 93 | 70-130 |
| | 50.0 | 40./ | | ug/Kg | 93 | 70 130 |
| | 50.0 | 47.4 | | ug/Kg | 95 | 70-130 |
| | 50.0 | 47.4 | | ug/Kg | 95 | 70-130 |
| | 50.0 | 48.7 | | ug/Kg | 97 | 70-130 |
| | 50.0 | 47.7 | | ug/Kg | 95 | 70-130 |
| 1,1-Irichloroethane | 50.0 | 46.3 | | ug/Kg | 93 | /0-130 |
| yrene | 50.0 | 50.8 | | ug/Kg | 102 | 70-130 |
| I,2-Trichloroethane | 50.0 | 47.3 | | ug/Kg | 95 | 70 - 130 |
| rt-Butvlbenzene | 50.0 | 48.1 | | ua/Ka | 96 | 70-130 |

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Client: Georgia State University Project/Site: Monitoring Well Installation TestAmerica Job ID: 680-150889-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

| Lab Sample ID: LCS 680-519580/4 Matrix: Solid | | | | Clier | nt Sa | mple ID | : Lab Control Sample Prep Type: Total/NA | |
|--|-------|--------|-----------|-------|-------|---------|---|---|
| Analysis Batch: 519580 | 0 | 1.00 | | | | | 04 B | |
| | Spike | LCS | LCS | | | | %Rec. | |
| Analyte | Added | Result | Qualifier | Unit | D | %Rec | Limits | |
| Tetrachloroethene | 50.0 | 48.7 | | ug/Kg | | 97 | 70-130 | 6 |
| Toluene | 50.0 | 49.3 | | ug/Kg | | 99 | 70-130 | |
| 1,2,4-Trimethylbenzene | 50.0 | 49.2 | | ug/Kg | | 98 | 70-130 | |
| trans-1,2-Dichloroethene | 50.0 | 44.4 | | ug/Kg | | 89 | 70 - 130 | |
| 1,3,5-Trimethylbenzene | 50.0 | 48.6 | | ug/Kg | | 97 | 70 - 130 | |
| trans-1,3-Dichloropropene | 50.0 | 48.6 | | ug/Kg | | 97 | 70-130 | |
| Trichloroethene | 50.0 | 47.7 | | ug/Kg | | 95 | 70 - 130 | |
| Trichlorofluoromethane | 50.0 | 40.7 | | ug/Kg | | 81 | 40 - 160 | |
| o-Xylene | 50.0 | 47.3 | | ug/Kg | | 95 | 70 - 130 | |
| Vinyl acetate | 100 | 99.8 | | ug/Kg | | 100 | 70 - 130 | |
| m-Xylene & p-Xylene | 50.0 | 47.8 | | ug/Kg | | 96 | 70 - 130 | |
| Vinyl chloride | 50.0 | 50.3 | | ug/Kg | | 101 | 70 - 130 | |
| Xylenes, Total | 100 | 95.1 | | ug/Kg | | 95 | 70-130 | |

| | LUS | LUS | |
|------------------------------|-----------|-----------|----------|
| Surrogate | %Recovery | Qualifier | Limits |
| Toluene-d8 (Surr) | 95 | | 70 - 130 |
| 1,2-Dichloroethane-d4 (Surr) | 90 | | 70 - 130 |
| Dibromofluoromethane (Surr) | 93 | | 70 - 130 |
| 4-Bromofluorobenzene (Surr) | 93 | | 70 - 130 |

Lab Sample ID: LCSD 680-519580/5 Matrix: Solid Analysis Batch: 519580

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

Spike LCSD LCSD %Rec. RPD Added Result Qualifier Unit RPD Analyte D %Rec Limits Limit 50.0 45.6 70-130 5 2-Chlorotoluene ug/Kg 91 20 4-Chlorotoluene 50.0 45.9 ug/Kg 92 70-130 3 20 250 225 ug/Kg 40 - 160 20 Acetone 90 1 1,2-Dibromo-3-Chloropropane 50.0 47.4 ug/Kg 95 40 - 160 3 20 50.0 46.3 93 70-130 20 Benzene ug/Kg 3 50.0 46.4 93 70-130 20 Bromobenzene ug/Kg 5 Bromochloromethane 50.0 45.5 ug/Kg 91 70-130 3 20 50.0 47.8 96 70-130 20 Bromoform ug/Kg 3 1,1-Dichloroethane 50.0 46.2 ug/Kg 92 70-130 2 20 Bromodichloromethane 50.0 44.6 ug/Kg 89 70-130 20 4 50.0 46.0 92 70-130 1,2-Dichloroethane ug/Kg 2 20 Bromomethane 50.0 43.5 87 40-160 20 ug/Kg 1 Carbon disulfide 50.0 427 ug/Kg 85 40 - 160 3 20 Carbon tetrachloride 50.0 45.7 ug/Kg 91 70 - 130 2 20 1,2-Dichloroethene, Total 100 89.3 89 70-130 20 ug/Kg 4 Chlorobenzene 50.0 45.7 ug/Kg 91 70-130 4 20 70-130 1,1-Dichloroethene 50.0 41.9 ug/Kg 84 2 20 40-160 Chloroethane 50.0 45.2 ug/Kg 90 2 20 1,2-Dichloropropane 50.0 46.5 ug/Kg 93 70-130 3 20 50.0 44.1 70-130 Chloroform ug/Kg 88 3 20 1,3-Dichloropropane 50.0 47.9 ug/Kg 96 70-130 3 20 50.0 97 40 - 160 3 20 Chloromethane 48.7 ug/Kg 50.0 70-130 2,2-Dichloropropane 45.0 ug/Kg 90 3 20

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Client: Georgia State University Project/Site: Monitoring Well Installation

TestAmerica Job ID: 680-150889-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

| ab Sample ID: I CSD 690 | 510520/5 | | | | - | light So | mple ID |). Lab | Control | Sample | Due |
|----------------------------|-----------|-----------|----------|--------------|-----------|----------|----------|----------|----------|---------|-------|
| ab Sample ID. LCSD 660 | -519580/5 | | | | | ment Sa | Inple ID | . Lap | Pren Tyr | Sample | al/MA |
| Analysis Batch: 519580 | | | | | | | | | тер тур | Je. 100 | |
| analysis Baten. 515500 | | | Snike | LCSD | LCSD | | | | %Rec | | RPD |
| nalvte | | | Added | Result | Qualifier | Unit | D % | Rec | Limits | RPD | Limit |
| is-1 2-Dichloroethene | · | | 50.0 | 46.1 | | μα/Κα | | 92 | 70_130 | 5 | 20 |
| 1-Dichloropropene | | | 50.0 | 45.5 | | ua/Ka | | 91 | 70 - 130 | 3 | 20 |
| s-1.3-Dichloropropene | | | 50.0 | 44.3 | | ua/Ka | | 89 | 70-130 | 4 | 20 |
| bromochloromethane | | | 50.0 | 47.3 | | ua/Ka | | 95 | 70-130 | 2 | 20 |
| bromomethane | | | 50.0 | 46.4 | | ua/Ka | | 93 | 70-130 | 2 | 20 |
| ichlorodifluoromethane | | | 50.0 | 53.2 | | ua/Ka | | 106 | 40 - 160 | 0 | 20 |
| Hexanone | | | 250 | 258 | | ua/Ka | | 103 | 40 - 160 | 2 | 20 |
| hylbenzene | | | 50.0 | 46.8 | | ug/Kg | | 94 | 70-130 | 3 | 20 |
| propylbenzene | | | 50.0 | 46.1 | | ua/Ka | | 92 | 70-130 | - 3 | 20 |
| ethylene Chloride | | | 50.0 | 41.8 | | ug/Ka | | 84 | 70-130 | 4 | 20 |
| Methyl-2-pentanone | | | 250 | 260 | | ug/Ka | | 104 | 40 - 160 | 2 | 20 |
| ethyl tert-butyl ether | | | 50.0 | 44.3 | | ua/Ka | | 89 | 70-130 | 4 | 20 |
| Butanone (MEK) | | | 250 | 239 | | ug/Ka | | 95 | 40 - 160 | 1 | 20 |
| 2-Dibromoethane | | | 50.0 | 47.8 | | ua/Ka | | 96 | 70-130 | 3 | 20 |
| 1 1 2-Tetrachloroethane | | | 50.0 | 46.3 | | ua/Ka | | 93 | 70-130 | 6 | 20 |
| Butylbenzene | | | 50.0 | 44.7 | | ua/Ka | | 89 | 70-130 | 4 | 20 |
| 1.2.2-Tetrachloroethane | | | 50.0 | 45.9 | | ua/Ka | | 92 | 70, 130 | 2 | 20 |
| Propylbenzene | | | 50.0 | 45.8 | | ua/Ka | | 92 | 70-130 | - 3 | 20 |
| Isopropyltoluene | | | 50.0 | 45.1 | | ua/Ka | | 90 | 70-130 | 5 | 20 |
| 2.3-Trichlorobenzene | | | 50.0 | 45.6 | | ua/Ka | | 91 | 70 - 130 | 7 | 20 |
| c-Butylbenzene | | | 50.0 | 45.8 | | ua/Ka | | 92 | 70-130 | 4 | 20 |
| 1 1-Trichloroethane | | | 50.0 | 44.6 | | иа/Ка | | 89 | 70-130 | 4 | 20 |
| vrene | | | 50.0 | 48.5 | | ug/Kg | | 97 | 70-130 | 5 | 20 |
| 1 2-Trichloroethane | | | 50.0 | 46.2 | | ug/Kg | | 92 | 70-130 | 2 | 20 |
| rt-Butylbenzene | | | 50.0 | 46.5 | | иа/Ка | | 93 | 70-130 | - 3 | 20 |
| etrachloroethene | | | 50.0 | 46.5 | | ug/Kg | | 93 | 70 130 | 5 | 20 |
| bluene | | | 50.0 | 48.2 | | ua/Ka | | 96 | 70_130 | 2 | 20 |
| 2 4-Trimethylbenzene | | | 50.0 | 47.1 | | ua/Ka | | 94 | 70_130 | 4 | 20 |
| ans-1 2-Dichloroethene | | | 50.0 | 42.2 | | ua/Ka | | 87 | 70 130 | | 20 |
| 3.5-Trimethylbenzene | | | 50.0 | 45.5 | | ua/Ka | | 93 | 70-130 | 4 | 20 |
| ans-1.3-Dichloropropene | | | 50.0 | 40.0 | | ug/Kg | | 94 | 70_130 | 7 2 | 20 |
| ichloroethene | | | 50.0 | 46.7 | | ug/Kg | | 93 | 70 130 | | 20 |
| ichlorofluoromethane | | | 50.0 | 11.7 | | ug/Kg | | 88 | 40_160 | ∠ 8 | 20 |
| Xviene | | | 50.0 | 44.2 | | ug/Kg | | 91 | 70_130 | 4 | 20 |
| nyl acetate | | | 100 | 40.7 Q2 2 | | ug/Kg | | 93 | 70 130 | 7 | 20 |
| Vilene & n-Xulene | | | 50.0 | 33.3 15 0 | | ug/Kg | | ິວວ | 70 120 | r A | 20 |
| | | | 50.0 | 40.9 18 F | | ug/Kg | | 92 97 | 70 130 | ч л | 20 |
| ilenes Total | | | 100 | 40.J 01 C | | ug/Kg | | ຊາ | 70 130 | | 20 |
| Acres, I Utal | | | 100 | 51.0 | | uy/ny | | 32 | 10-150 | 4 | 20 |
| | LCSD | LCSD | | | | | | | | | |
| urrogate | %Recovery | Qualifier | Limits | | | | | | | | |
| oluene-d8 (Surr) | 91 | | 70 - 130 | | | | | | | | |
| 2-Dichloroethane-d4 (Surr) | 87 | | 70 - 130 | | | | | | | | |
| ibromofluoromethane (Surr) | 90 | | 70 - 130 | | | | | | | | |
| Bromofluorobenzene (Surr) | 88 | | 70 130 | | | | | | | | |

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| | | QC | Sample | Resı | ults | | | | | | | |
|--|------------------|-----------|-----------|---------|------|--------|------|-------|---------|----------------------------------|-------------------|---|
| Client: Georgia State Universit Project/Site: Monitoring Well Ir | y Istallation | | | | | | | Test | America | Job ID: 680-15 | 50889-1 | |
| Method: 8260B - Volatile | e Organic C | ompou | nds (GC/N | /IS) (C | ont | inue | ed) | | | | | |
| Lab Sample ID: MB 680-519 | 861/9 | | | , (| | | , | Clie | ent Sam | ple ID: Methor | Blank | |
| Matrix: Solid | | | | | | | | | | Prep Type: To | otal/NA | |
| Analysis Batch: 519861 | | | | | | | | | | | | |
| - | MB | МВ | | | | | | | | | | |
| Analyte | Result | Qualifier | RL | 1 | MDL | Unit | | D P | repared | Analyzed | Dil Fac | |
| 1,4-Dichlorobenzene | 0.00046 | U | 0.0010 | 0.00 | 0046 | mg/L | | | | 04/13/18 11:51 | 1 | 4 |
| Hexachlorobutadiene | 0.0025 | U | 0.0050 | 0.0 | 0025 | mg/L | | | | 04/13/18 11:51 | 1 | |
| Benzene | 0.00043 | U | 0.0010 | 0.00 | 0043 | mg/L | | | | 04/13/18 11:51 | 1 | |
| 1,2-Dichloroethane | 0.00050 | U | 0.0010 | 0.00 | 0050 | mg/L | | | | 04/13/18 11:51 | 1 | |
| Carbon tetrachloride | 0.00033 | U | 0.0010 | 0.00 | 0033 | mg/L | | | | 04/13/18 11:51 | 1 | |
| Chlorobenzene | 0.00026 | U | 0.0010 | 0.00 | 0026 | mg/L | | | | 04/13/18 11:51 | 1 | |
| 1,1-Dichloroethene | 0.00036 | U | 0.0010 | 0.00 | 0036 | mg/L | | | | 04/13/18 11:51 | 1 | |
| Chloroform | 0.00050 | U | 0.0010 | 0.00 | 0050 | mg/L | | | | 04/13/18 11:51 | 1 | |
| 2-Butanone | 0.0034 | U | 0.010 | 0.0 | 0034 | mg/L | | | | 04/13/18 11:51 | 1 | |
| Tetrachloroethene | 0.00075 | U | 0.0010 | 0.00 | 0075 | mg/L | | | | 04/13/18 11:51 | 1 | |
| Trichloroethene | 0.00048 | U | 0.0010 | 0.00 | 0048 | mg/L | | | | 04/13/18 11:51 | 1 | |
| Vinyl chloride | 0.00050 | U | 0.0010 | 0.00 | 0050 | mg/L | | | | 04/13/18 11:51 | 1 | |
| | MB | МВ | | | | | | | | | | |
| Surrogate | %Recovery | Qualifier | Limits | | | | | F | repared | Analyzed | Dil Fac | |
| Toluene-d8 (Surr) | 102 | | 80 - 120 | | | | | | | 04/13/18 11:51 | 1 | |
| 1,2-Dichloroethane-d4 (Surr) | 86 | | 73 - 131 | | | | | | | 04/13/18 11:51 | 1 | |
| Dibromofluoromethane (Surr) | 95 | | 80 - 122 | | | | | | | 04/13/18 11:51 | 1 | |
| 4-Bromofluorobenzene (Surr) | 99 | | 80 - 120 | | | | | | | 04/13/18 11:51 | 1 | |
| Lab Sample ID: LCS 680-51 Matrix: Solid Analysis Batch: 519861 | 9861/4 | | | | | | Clie | nt Sa | mple ID | : Lab Control S Prep Type: To | Sample otal/NA | |
| Analysis Daten, 513001 | | | Spike | LCS | LCS | ; | | | | % Rec. | | |
| Analyte | | | Added | Result | Qua | lifier | Unit | D | %Rec | Limits | | |
| 1,4-Dichlorobenzene | | | 0.0500 | 0.0486 | | | mg/L | | 97 | 80 - 120 | | |
| Hexachlorobutadiene | | | 0.0500 | 0.0515 | | | mg/L | | 103 | 71 - 131 | | |
| Benzene | | | 0.0500 | 0.0496 | | | mg/L | | 99 | 80 - 120 | | |
| 1,2-Dichloroethane | | | 0.0500 | 0.0461 | | | mg/L | | 92 | 72-128 | | |
| Carbon tetrachloride | | | 0.0500 | 0.0504 | | | mg/L | | 101 | 67 - 125 | | |
| Chlorobenzene | | | 0.0500 | 0.0511 | | | mg/L | | 102 | 80-120 | | |

| Delizelle | 0.0500 | 0.0496 | mg/L | 99 | 00-120 |
|----------------------|--------|--------|------|-----|----------|
| 1,2-Dichloroethane | 0.0500 | 0.0461 | mg/L | 92 | 72-128 |
| Carbon tetrachloride | 0.0500 | 0.0504 | mg/L | 101 | 67 - 125 |
| Chlorobenzene | 0.0500 | 0.0511 | mg/L | 102 | 80-120 |
| 1,1-Dichloroethene | 0.0500 | 0.0509 | mg/L | 102 | 80-120 |
| Chloroform | 0.0500 | 0.0483 | mg/L | 97 | 80-120 |
| 2-Butanone | 0.250 | 0.259 | mg/L | 104 | 79-125 |
| Tetrachloroethene | 0.0500 | 0.0513 | mg/L | 103 | 71 - 123 |
| Trichloroethene | 0.0500 | 0.0514 | mg/L | 103 | 80-120 |
| Vinyl chloride | 0.0500 | 0.0507 | mg/L | 101 | 80-129 |
| | | | | | |

| | LCS | LCS | |
|------------------------------|-----------|-----------|----------|
| Surrogate | %Recovery | Qualifier | Limits |
| Toluene-d8 (Surr) | 99 | | 80 - 120 |
| 1,2-Dichloroethane-d4 (Surr) | 92 | | 73 - 131 |
| Dibromofluoromethane (Surr) | 101 | | 80 - 122 |
| 4-Bromofluorobenzene (Surr) | 96 | | 80 - 120 |

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Client: Georgia State University Project/Site: Monitoring Well Installation

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

104

99

| Lab Sample ID: LCSD 68 Matrix: Solid | 0-519861/5 | | | | C | Client Sa | ample | ID: Lab | Control | Sample be: Tot | e Dup al/NA | |
|---|------------|-----------|----------|--------|-----------|-----------|-------|---------|----------|-------------------|----------------|---|
| Analysis Batch: 519861 | | | | | | | | | | | | |
| | | | Spike | LCSD | LCSD | | | | %Rec. | | RPD | |
| Analyte | | | Added | Result | Qualifier | Unit | D | %Rec | Limits | RPD | Limit | 6 |
| 1,4-Dichlorobenzene | | | 0.0500 | 0.0508 | | mg/L | | 102 | 80 - 120 | 4 | 20 | 0 |
| Hexachlorobutadiene | | | 0.0500 | 0.0536 | | mg/L | | 107 | 71 - 131 | 4 | 20 | |
| Benzene | | | 0.0500 | 0.0504 | | mg/L | | 101 | 80-120 | 2 | 20 | |
| 1,2-Dichloroethane | | | 0.0500 | 0.0477 | | mg/L | | 95 | 72-128 | 3 | 50 | |
| Carbon tetrachloride | | | 0.0500 | 0.0507 | | mg/L | | 101 | 67 - 125 | 1 | 20 | |
| Chlorobenzene | | | 0.0500 | 0.0522 | | mg/L | | 104 | 80-120 | 2 | 20 | |
| 1,1-Dichloroethene | | | 0.0500 | 0.0504 | | mg/L | | 101 | 80-120 | 1 | 20 | |
| Chloroform | | | 0.0500 | 0.0485 | | mg/L | | 97 | 80-120 | 0 | 20 | |
| 2-Butanone | | | 0.250 | 0.274 | | mg/L | | 110 | 79-125 | 6 | 20 | |
| Tetrachloroethene | | | 0.0500 | 0.0514 | | mg/L | | 103 | 71 - 123 | 0 | 20 | |
| Trichloroethene | | | 0.0500 | 0.0520 | | mg/L | | 104 | 80-120 | 1 | 20 | |
| Vinyl chloride | | | 0.0500 | 0.0500 | | mg/L | | 100 | 80 - 129 | 1 | 20 | |
| | LCSD | LCSD | | | | | | | | | | |
| Surrogate | %Recovery | Qualifier | Limits | | | | | | | | | |
| Toluene-d8 (Surr) | 100 | | 80 - 120 | | | | | | | | | |
| 1,2-Dichloroethane-d4 (Surr) | 94 | | 73 - 131 | | | | | | | | | |

80 - 122

80 - 120

Lab Sample ID: LB 680-519599/1-A Matrix: Solid Analysis Batch: 519861

Dibromofluoromethane (Surr) 4-Bromofluorobenzene (Surr)

Client Sample ID: Method Blank Prep Type: TCLP

| | IB | I B | | | | | | | |
|------------------------------|-----------|-----------|----------|--------|------|---|----------|----------------|---------|
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| 1,4-Dichlorobenzene | 0.0092 | U | 0.020 | 0.0092 | mg/L | | | 04/13/18 14:17 | 20 |
| Hexachlorobutadiene | 0.050 | U | 0.10 | 0.050 | mg/L | | | 04/13/18 14:17 | 20 |
| Benzene | 0.0086 | U | 0.020 | 0.0086 | mg/L | | | 04/13/18 14:17 | 20 |
| 1,2-Dichloroethane | 0.010 | U | 0.020 | 0.010 | mg/L | | | 04/13/18 14:17 | 20 |
| Carbon tetrachloride | 0.0066 | U | 0.020 | 0.0066 | mg/L | | | 04/13/18 14:17 | 20 |
| Chlorobenzene | 0.0052 | U | 0.020 | 0.0052 | mg/L | | | 04/13/18 14:17 | 20 |
| 1,1-Dichloroethene | 0.0072 | U | 0.020 | 0.0072 | mg/L | | | 04/13/18 14:17 | 20 |
| Chloroform | 0.010 | U | 0.020 | 0.010 | mg/L | | | 04/13/18 14:17 | 20 |
| 2-Butanone | 0.068 | U | 0.20 | 0.068 | mg/L | | | 04/13/18 14:17 | 20 |
| Tetrachloroethene | 0.015 | U | 0.020 | 0.015 | mg/L | | | 04/13/18 14:17 | 20 |
| Trichloroethene | 0.0096 | U | 0.020 | 0.0096 | mg/L | | | 04/13/18 14:17 | 20 |
| Vinyl chloride | 0.010 | U | 0.020 | 0.010 | mg/L | | | 04/13/18 14:17 | 20 |
| | LB | LB | | | | | | | |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| Toluene-d8 (Surr) | 101 | | 80 - 120 | | | - | | 04/13/18 14:17 | 20 |
| 1,2-Dichloroethane-d4 (Surr) | 94 | | 73 - 131 | | | | | 04/13/18 14:17 | 20 |
| Dibromofluoromethane (Surr) | 101 | | 80 - 122 | | | | | 04/13/18 14:17 | 20 |
| 4-Bromofluorobenzene (Surr) | 94 | | 80 - 120 | | | | | 04/13/18 14:17 | 20 |

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TestAmerica Job ID: 680-150889-1

Client: Georgia State University Project/Site: Monitoring Well Installation

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

106

93

| Lab Sample ID: 680-1508 Matrix: Solid | 89-1 MS | | | | | | | CI | ient Sample ID: SB04 Prep Type: TCLP | |
|--|-----------|-----------|----------|--------|-----------|------|---|------|---|---|
| Analysis Batch: 519861 | Sample | Sample | Spike | MS | MS | | | | %Rec. | |
| Analyte | Result | Qualifier | Added | Result | Qualifier | Unit | D | %Rec | Limits | C |
| 1,4-Dichlorobenzene | 0.0092 | U | 1.00 | 0.951 | | mg/L | | 95 | 80 - 120 | 6 |
| Hexachlorobutadiene | 0.050 | U | 1.00 | 0.954 | | mg/L | | 95 | 71 - 131 | |
| Benzene | 0.0086 | U | 1.00 | 1.02 | | mg/L | | 102 | 80 - 120 | |
| 1,2-Dichloroethane | 0.010 | U | 1.00 | 0.984 | | mg/L | | 98 | 72 - 128 | |
| Carbon tetrachloride | 0.0066 | U | 1.00 | 1.01 | | mg/L | | 101 | 67 - 125 | |
| Chlorobenzene | 0.0052 | U | 1.00 | 1.02 | | mg/L | | 102 | 80 - 120 | |
| 1,1-Dichloroethene | 0.0072 | U | 1.00 | 1.01 | | mg/L | | 101 | 80 - 120 | |
| Chloroform | 0.010 | U | 1.00 | 0.990 | | mg/L | | 99 | 80 - 120 | |
| 2-Butanone | 0.068 | U | 5.00 | 5.83 | | mg/L | | 117 | 79-125 | |
| Tetrachloroethene | 0.015 | U | 1.00 | 1.05 | | mg/L | | 105 | 71 - 123 | |
| Trichloroethene | 0.0096 | U | 1.00 | 1.04 | | mg/L | | 104 | 80 - 120 | |
| Vinyl chloride | 0.010 | U | 1.00 | 0.929 | | mg/L | | 93 | 80 - 129 | |
| | MS | MS | | | | | | | | |
| Surrogate | %Recovery | Qualifier | Limits | | | | | | | |
| Toluene-d8 (Surr) | 100 | | 80 - 120 | | | | | | | |
| 1,2-Dichloroethane-d4 (Surr) | 97 | | 73 - 131 | | | | | | | |

80 - 122

80 - 120

Lab Sample ID: 680-150889-1 MSD Matrix: Solid Analysis Batch: 519861

Dibromofluoromethane (Surr) 4-Bromofluorobenzene (Surr)

Client Sample ID: SB04 Prep Type: TCLP

TestAmerica Job ID: 680-150889-1

| Analysis Batch. 515001 | | | | | | | | | | | |
|------------------------------|-----------|-----------|----------|--------|-----------|------|---|------|----------|-----|-------|
| | Sample | Sample | Spike | MSD | MSD | | | | %Rec. | | RPD |
| Analyte | Result | Qualifier | Added | Result | Qualifier | Unit | D | %Rec | Limits | RPD | Limit |
| 1,4-Dichlorobenzene | 0.0092 | U | 1.00 | 0.974 | | mg/L | | 97 | 80 - 120 | 2 | 20 |
| Hexachlorobutadiene | 0.050 | U | 1.00 | 1.04 | | mg/L | | 104 | 71 - 131 | 8 | 20 |
| Benzene | 0.0086 | U | 1.00 | 1.01 | | mg/L | | 101 | 80-120 | 1 | 20 |
| 1,2-Dichloroethane | 0.010 | U | 1.00 | 0.951 | | mg/L | | 95 | 72 - 128 | 3 | 50 |
| Carbon tetrachloride | 0.0066 | U | 1.00 | 1.02 | | mg/L | | 102 | 67 - 125 | 1 | 20 |
| Chlorobenzene | 0.0052 | U | 1.00 | 1.04 | | mg/L | | 104 | 80-120 | 2 | 20 |
| 1,1-Dichloroethene | 0.0072 | U | 1.00 | 1.00 | | mg/L | | 100 | 80-120 | 1 | 20 |
| Chloroform | 0.010 | U | 1.00 | 0.972 | | mg/L | | 97 | 80-120 | 2 | 20 |
| 2-Butanone | 0.068 | U | 5.00 | 5.31 | | mg/L | | 106 | 79-125 | 9 | 20 |
| Tetrachloroethene | 0.015 | U | 1.00 | 1.05 | | mg/L | | 105 | 71 - 123 | 0 | 20 |
| Trichloroethene | 0.0096 | U | 1.00 | 1.05 | | mg/L | | 105 | 80 - 120 | 1 | 20 |
| Vinyl chloride | 0.010 | U | 1.00 | 0.963 | | mg/L | | 96 | 80 - 129 | 4 | 20 |
| | MSD | MSD | | | | | | | | | |
| Surrogate | %Recovery | Qualifier | Limits | | | | | | | | |
| Toluene-d8 (Surr) | 102 | | 80 - 120 | | | | | | | | |
| 1,2-Dichloroethane-d4 (Surr) | 92 | | 73 - 131 | | | | | | | | |
| Dibromofluoromethane (Surr) | 102 | | 80 - 122 | | | | | | | | |
| 4-Bromofluorobenzene (Surr) | 96 | | 80 - 120 | | | | | | | | |

TestAmerica Savannah

| | | | 554113 | • | TestAmerica Job ID: 680-150889-1 |
|----------------|--|---|--|---|--|
| tallation | | | | | |
| atile Orga | nic Comp | ounds (GC | C/MS) | | |
| 22/ 7-A | | | | | Client Sample ID: Method Blank Prep Type: Total/NA |
| MB | MB | | | | Prep Batch: 519522 |
| Result | Qualifier | RL | MDL | Unit | D Prepared Analyzed Dil Fac |
| 39 | U | 320 | 39 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 40 | U | 320 | 40 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 43 | U | 320 | 43 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 34 | U | 320 | 34 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 26 | U | 320 | 26 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 42 | U | 320 | 42 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 51 | U | 640 | 51 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 34 | U | 320 | 34 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 37 | U | 320 | 37 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 28 | U | 320 | 28 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 34 | U | 320 | 34 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 27 | U | 320 | 27 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 1700 | U | 1700 | 1700 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 34 | U | 320 | 34 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 44 | U | 1700 | 44 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 35 | U | 320 | 35 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 45 | U | 1700 | 45 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 38 | U | 320 | 38 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 40 | U | 320 | 40 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 44 | U | 320 | 44 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 810 | U | 1700 | 810 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 48 | U | 320 | 48 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 32 | U | 320 | 32 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 36 | U | 320 | 36 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 43 | U | 320 | 43 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 33 | U | 320 | 33 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 48 | U | 1700 | 48 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 170 | U | 1700 | 170 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 35 | U | 320 | 35 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 35 | U | 320 | 35 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 38 | U | 320 | 38 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 35 | U | 320 | 35 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 40 | U | 320 | 40 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 27 | U | 320 | 27 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 24 | U | 320 | 24 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 32 | U | 320 | 32 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 29 | U | 320 | 29 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 29 | U | 320 | 29 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 25 | U | 320 | 25 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 31 | U | 320 | 31 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 32 | U | 320 | 32 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 31 | U | 320 | 31 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 320 | U | 1700 | 320 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 27 | U | 640 | 27 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 26 | U | 320 | 26 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| 26 | U | 320 | 26 | ug/Kg | 04/11/18 08:30 04/12/18 15:33 1 |
| | | | 22 | um/l/m | 04/44/40 00:00 04/40/40 45:00 4 |
| | tallation atile Organ 22/7-A MB Result 39 40 43 34 26 42 51 34 26 42 51 34 26 42 51 34 26 42 51 34 26 42 51 34 42 51 34 28 34 27 1700 34 44 810 44 810 44 810 48 32 36 40 44 810 44 810 48 32 36 40 40 44 810 44 810 44 810 44 810 44 810 44 810 44 810 44 810 44 810 44 810 44 810 44 810 45 38 83 88 40 44 810 44 810 45 35 38 83 80 40 44 810 44 810 44 810 45 35 38 83 40 44 810 44 810 45 35 36 33 33 33 88 35 35 36 35 35 38 35 36 36 37 37 36 37 37 36 37 36 37 37 36 37 37 36 37 37 36 37 37 36 37 37 37 37 36 37 37 37 37 37 37 37 37 37 37 | QC Satistical Satistica | MB MB Result Qualifier RL 22/7-A Qualifier RL 39 320 320 40 U 320 <td>GC Sample Results tallation atile Organic Compounds (GC/MS) 22/7-A MB MB Result Qualifier RL MDL 39 U 320 39 40 U 320 39 40 U 320 40 43 U 320 43 34 U 320 26 42 U 320 44 26 U 320 34 37 U 320 34 40 U 320 34 41 U 320 34 42 U 320 35 38 U 320</td> <td>ACC Sample Results tallation atile Organic Compounds (GC/MS) 22/7-A MB MB RL MDL Unit Qualifier RL MDL Unit Qualifier RL MDL Unit Qualifier RL MDL Unit 43 U 320 43 ug/Kg 34 U 320 44 ug/Kg 26 U 320 26 ug/Kg 34 U 320 34 ug/Kg 37 U 320 34 ug/Kg 34 U 320 34 ug/Kg 34 U 320 34 ug/Kg 35 U 320 38 ug/Kg 44</td> | GC Sample Results tallation atile Organic Compounds (GC/MS) 22/7-A MB MB Result Qualifier RL MDL 39 U 320 39 40 U 320 39 40 U 320 40 43 U 320 43 34 U 320 26 42 U 320 44 26 U 320 34 37 U 320 34 40 U 320 34 41 U 320 34 42 U 320 35 38 U 320 | ACC Sample Results tallation atile Organic Compounds (GC/MS) 22/7-A MB MB RL MDL Unit Qualifier RL MDL Unit Qualifier RL MDL Unit Qualifier RL MDL Unit 43 U 320 43 ug/Kg 34 U 320 44 ug/Kg 26 U 320 26 ug/Kg 34 U 320 34 ug/Kg 37 U 320 34 ug/Kg 34 U 320 34 ug/Kg 34 U 320 34 ug/Kg 35 U 320 38 ug/Kg 44 |

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| ethod: 8270D - Semivo | latile Orga | aic Com | ounds (G(| | Conti | nuod) | | | |
|------------------------------|------------------|-----------|-----------|-----------|-------|-------|----------------|----------------|---------|
| iethou. 6270D - Sennvo | nathe Organ | | | 5/10/5) (| Conti | nueuj | | | |
| Lab Sample ID: MB 680-519 | 522/7 - A | | | | | | Client Samp | le ID: Method | Blank |
| Matrix: Solid | | | | | | | | Prep Type: 10 | DTAI/NA |
| Analysis Batch: 519765 | MB | MB | | | | | | Prep Batch: | 019022 |
| Analyte | Result | Qualifier | RL | MDL | Unif | D | Prepared | Analyzed | Dil Fac |
| vrene | 26 | U | 320 | 26 | ua/Ka | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |
| sis(2-ethylhexyl) phthalate | 28 | U | 320 | 28 | ua/Ka | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |
| Butyl benzyl phthalate | 25 | U | 320 | 25 | ug/Kg | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |
| Di-n-octyl phthalate | 28 | U | 320 | 28 | ug/Kg | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |
| 3enzo[b]fluoranthene | 37 | U | 320 | 37 | ug/Kg | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |
| Benzo[k]fluoranthene | 63 | U | 320 | 63 | ug/Kg | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |
| Benzo[a]pyrene | 51 | U | 320 | 51 | ug/Kg | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |
| ndeno[1,2,3-cd]pyrene | 27 | U | 320 | 27 | ug/Kg | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |
| Dibenz(a,h)anthracene | 38 | U | 320 | 38 | ug/Kg | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |
| Benzo[g,h,i]perylene | 21 | U | 320 | 21 | ug/Kg | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |
| is (2-chloroisopropyl) ether | 29 | U | 320 | 29 | ug/Kg | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |
| Carbazole | 29 | U | 320 | 29 | ug/Kg | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |
| 2,6-Dinitrotoluene | 41 | U | 320 | 41 | ug/Kg | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |
| -Nitrophenol | 320 | U | 1700 | 320 | ug/Kg | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |
| Atrazine | 22 | U | 320 | 22 | ug/Kg | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |
| 3enzaldehyde | 56 | U | 320 | 56 | ug/Kg | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |
| Caprolactam | 64 | U | 320 | 64 | ug/Kg | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |
| | МВ | MB | | | | | | | |
| Surrogate | %Recovery | Qualifier | Limits | | | | Prepared | Analyzed | Dil Fac |
| Vitrobenzene-d5 (Surr) | 83 | | 37 - 115 | | | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |
| 2-Fluorobiphenyl (Surr) | 84 | | 41 - 116 | | | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |
| Terphenyl-d14 (Surr) | 100 | | 46 - 126 | | | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |
| Phenol-d5 (Surr) | 88 | | 38 - 122 | | | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |
| 2-Fluorophenol (Surr) | 88 | | 39-114 | | | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |
| 2,4,6-Tribromophenol (Surr) | 98 | | 45 - 129 | | | | 04/11/18 08:30 | 04/12/18 15:33 | 1 |

Analysis Batch: 519763

| Spike | LCS | LCS | | | | %Rec. | |
|-------|--|--|---|--|--|--|--|
| Added | Result | Qualifier | Unit | D | %Rec | Limits | |
| 6350 | 5170 | | ug/Kg | | 81 | 47 - 130 | |
| 6350 | 5210 | | ug/Kg | | 82 | 43 - 130 | |
| 6350 | 5120 | | ug/Kg | | 81 | 43 - 130 | |
| 6350 | 5500 | | ug/Kg | | 87 | 48 - 130 | |
| 6350 | 4820 | | ug/Kg | | 76 | 46-130 | |
| 6350 | 5340 | | ug/Kg | | 84 | 46-130 | |
| 6350 | 3830 | | ug/Kg | | 60 | 10-130 | |
| 6350 | 5700 | | ug/Kg | | 90 | 51 - 130 | |
| 6350 | 4790 | | ug/Kg | | 75 | 48 - 130 | |
| 6350 | 5330 | | ug/Kg | | 84 | 50-130 | |
| 6350 | 5150 | | ug/Kg | | 81 | 51 - 130 | |
| 6350 | 5050 | | ug/Kg | | 80 | 44 - 130 | |
| 6350 | 5000 | | ug/Kg | | 79 | 48 - 130 | |
| 6350 | 4950 | | ug/Kg | | 78 | 48-130 | |
| 6350 | 5940 | | ug/Kg | | 93 | 44 - 130 | |
| 6350 | 5070 | | ug/Kg | | 80 | 45-130 | |
| 6350 | 4690 | | ug/Kg | | 74 | 21 - 130 | |
| | Spike Added 6350 | Spike LCS Added Result 6350 5170 6350 5210 6350 5120 6350 5120 6350 5120 6350 4820 6350 5340 6350 5340 6350 5330 6350 5330 6350 5050 6350 5050 6350 5050 6350 5050 6350 5050 6350 5050 6350 5050 6350 5040 6350 5940 6350 5070 6350 5070 6350 4690 | Spike LCS LCS Added Result Qualifier 6350 5170 6350 6350 5210 6350 6350 5120 6350 6350 5400 6350 6350 4820 6350 6350 5340 6350 6350 5340 6350 6350 5370 6350 6350 5330 6350 6350 5050 6350 6350 5050 6350 6350 5050 6350 6350 5050 6350 6350 5050 6350 6350 5050 6350 6350 5040 6350 6350 5940 6350 6350 5070 6350 6350 5070 6350 6350 5070 6350 6350 5070 6350 | Spike LCS LCS Added Result Qualifier Unit 6350 5170 ug/Kg 6350 5210 ug/Kg 6350 5120 ug/Kg 6350 5500 ug/Kg 6350 4820 ug/Kg 6350 5340 ug/Kg 6350 5340 ug/Kg 6350 5340 ug/Kg 6350 5300 ug/Kg 6350 5300 ug/Kg 6350 5300 ug/Kg 6350 5050 ug/Kg 6350 5040 ug/Kg 6350 5940 ug/Kg 6350 5070 ug/Kg 6350 5070 ug/Kg 6350 | Spike LCS LCS Added Result Qualifier Unit D 6350 5170 ug/Kg 0 0 6350 5210 ug/Kg 0 0 6350 5120 ug/Kg 0 0 6350 5120 ug/Kg 0 0 6350 5500 ug/Kg 0 0 6350 5500 ug/Kg 0 0 6350 5340 ug/Kg 0 0 6350 5340 ug/Kg 0 0 6350 5700 ug/Kg 0 0 6350 5700 ug/Kg 0 0 6350 5030 ug/Kg 0 0 6350 5050 ug/Kg 0 0 6350 5050 ug/Kg 0 0 6350 5040 ug/Kg 0 0 6350 5070 ug/Kg 0< | Spike LCS LCS Added Result Qualifier Unit D % Rec 6350 5170 ug/Kg 81 6350 5210 ug/Kg 82 6350 5120 ug/Kg 81 6350 5120 ug/Kg 81 6350 5120 ug/Kg 81 6350 5500 ug/Kg 87 6350 4820 ug/Kg 84 6350 5340 ug/Kg 84 6350 5340 ug/Kg 84 6350 5700 ug/Kg 84 6350 5700 ug/Kg 84 6350 5330 ug/Kg 84 6350 5150 ug/Kg 81 6350 5050 ug/Kg 81 6350 5050 ug/Kg 79 6350 5050 ug/Kg 79 6350 5940 ug/Kg 93 | Spike LCS LCS % Rec. Added Result Qualifier Unit D % Rec. Limits 6350 5170 ug/Kg 81 47-130 47.130 6350 5210 ug/Kg 82 43.130 43.130 6350 5120 ug/Kg 81 43.130 6350 5500 ug/Kg 87 48.130 6350 4820 ug/Kg 87 48.130 6350 5340 ug/Kg 84 46.130 6350 5340 ug/Kg 84 46.130 6350 5340 ug/Kg 84 46.130 6350 5700 ug/Kg 84 45.130 6350 5700 ug/Kg 84 50.130 6350 5330 ug/Kg 84 50.130 6350 5050 ug/Kg 81 51.130 6350 5050 ug/Kg 79 48.130 |

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Client: Georgia State University Project/Site: Monitoring Well Installation

TestAmerica Job ID: 680-150889-1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

| ab Sample ID: LCS 680-519522/8-A | | | | Clie | nt Sa | mple ID | : Lab Control Sample |
|---|-------|--------------|-----------|----------------|-------|----------|----------------------|
| Aatrix: Solid | | | | | | | Prep Type: Total/NA |
| Analysis Batch: 519763 | | | | | | | Prep Batch: 519522 |
| | Spike | LCS | LCS | | | | %Rec. |
| nalyte | Added | Result | Qualifier | Unit | D | %Rec | Limits |
| lis(2-chloroethoxy)methane | 6350 | 5230 | | ug/Kg | | 82 | 47 - 130 |
| cenaphthene | 6350 | 4440 | | ug/Kg | | 70 | 47 - 130 |
| sis(2-chioroethyi)ether | 6350 | 5120 | | ug/Kg | | 81 | 37 - 130 |
| ,4-Dinitrophenol | 12700 | 2960 | | ug/Kg | | 23 | 10-130 |
| ,4-Dinitrotoluene | 6350 | 5220 | | ug/Kg | | 82 | 49-111 |
| | 6350 | 4880 | | ug/Kg | | // | 49-130 |
| Alerandra and an and all an | 6350 | 5170 | | ug/Kg | | 81 | 49-130 |
| -Chiorophenyi phenyi ether | 6350 | 4740 | | ug/Kg | | 75 | 49-130 |
| Ametry prinalate | 6350 | 5090 | | ug/Kg | | 00 | 50-130 |
| | 6350 | 5350 | | ug/Kg | | 04 | 41-130 |
| | 12700 | 5730 | | ug/Kg | | 40 | 23-130 |
| Drement end at end other | 6350 | 4960 | | ug/Kg | | /0 | 52-130 |
| | 6350 | 5260 | | ug/Kg | | 00 | 53-130 |
| | 6350 | 5260 | | ug/Kg | | 03 | 55-150 |
| | 6350 | 4550 | | ug/Kg | | 75 | 40-130 |
| | 6250 | 4700 | | ug/Kg | | 73 | 20-130 |
| exactionoeinane | 6350 | 4700 5100 | | ug/Kg | | /4 00 | 42-130 |
| | 6350 | 5190 | | ug/Kg | | 02 | JU-130 49 120 |
| | 6350 | 1000 | | ug/Kg | | 04 | 40-130 |
| | 6350 | 4090 | | ug/Kg | | 07 | 47 - 130 |
| itrobonzono | 6350 | 5050 | | ug/Kg | | 07 | JZ-130 45 120 |
| lu openzene | 6350 | 5420 | | ug/Kg | | 00 | 40-100 |
| | 6350 | 5130 | | ug/Kg | | 94 | 50 130 |
| | 6350 | 4040 | | ug/Kg | | 04 77 | 20 120 |
| | 12700 | 7040 | | ug/Kg | | 55 | 30-130 41 120 |
| | 6350 | /040 | | ug/Kg | | 55 | 41-130 |
| ,5-Dichiolobenzidine | 6350 | 5120 | | ug/Kg | | 04 | 52 120 |
| | 6250 | 5520 | | ug/Kg | | 01 | 50 120 |
| enzolajanunacene | 6250 | 5070 | | ug/Kg | | 07 | 47 120 |
| herene | 6350 | 5520 | | ug/Kg | | 03 | 47 - 130 |
| | 6350 | 5570 | | ug/Kg | | 07 | 47 - 130 |
| ic/2 athulhavid) anthalata | 6250 | 6120 | | ug/Kg | | 00 | 10-130 |
| utul benzul phthalate | 6350 | 5840 | | ug/Kg ug/Kg | | 90 | 40-130 |
| i. p. octvl phthalate | 6350 | 5970 | | ug/Kg | | 92 | JS-134 46 130 |
| enzolbifluoranthene | 6350 | 5570 | | ug/Kg | | 24 99 | 48 130 |
| enzolsjindorannene enzolkifiuoranthene | 6350 | 4870 | | ug/Kg ug/Kg | | 77 | 48 108 |
| enzolalnyrene | 6350 | 5410 | | ug/Kg | | 85 | 47 131 |
| deno[1.2.3-cd]ovrene | 6350 | 5670 | | ug/Kg | | 80 | 41 130 |
| ideno(1,2,3-od)pyrene ibenz(a b)anthracene | 6350 | 5320 | | ug/Kg | | 84 | 41-130 |
| enzola h ilberylene | 6350 | 5460 | | ug/Kg | | 40 88 | 42 130 |
| is (2-chloroisonronyl) ether | 6350 | 1270 | | ug/Ka | | 60 | 38 130 |
| arbazola | 6350 | 43/0 | | ug/Kg | | 61 03 | 51 130 |
| a Dipitrateluene | 0000 | 5320 | | ug/Kg | | 04 | JI-130 40-130 |
| Nitrophenol | 10200 | 11000 | | ug/Kg | | 0U 07 | 40-130 |
| trazine | 12/00 | E200 | | ug/Kg | | 07 | 40-130 |
| u azınıçı anzal dahuda | 0000 | J20U | | uy/r\g | | 03 | 47 - 130 |
| | 0050 | 1310 | | uy/Kg | | 21 | 10-130 |

TestAmerica Savannah

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| | | | QC | Sample | Resi | ults | ; | | | | | |
|---|----------------------|------|-----------|--|--|-------|--------------|--|----------------|--|--|------------------------------|
| Client: Georgia State Univers Project/Site: Monitoring Well | sity Installation | | | · | | | | | Те | stAmerica . | Job ID: 680-1 | 50889-1 |
| Method: 8270D - Semiv | volatile Org | gar | nic Con | npounds | (GC/M | IS) (| (Cor | tinued |) | | | |
| Lab Sample ID: LCS 680-5 Matrix: Solid | 519522/8-A | | | | | | | Clie | nt S | Sample ID: | Lab Control Prep Type: T | Sample otal/NA |
| Analysis Batch: 519763 | | | | | | | | | | | Prep Batch: | 519522 |
| Surmate | LCS %Recovery | LCS | lifior | l imits | | | | | | | | |
| Nitrobenzene-d5 (Surr) | 85 | | | 37 - 115 | | | | | | | | |
| 2-Fluorobiphenyl (Surr) | 77 | | | 41 - 116 | | | | | | | | |
| Terphenyl-d14 (Surr) | 94 | | | 46 - 126 | | | | | | | | |
| Phenol-d5 (Surr) | 82 | | | 38 - 122 | | | | | | | | |
| 2-Fluorophenol (Surr) | 88 | | | 39-114 | | | | | | | | |
| 2,4,6-Tribromophenol (Surr) | 78 | | | 45 - 129 | | | | | | | | |
| Lab Sample ID: MB 680-5' Matrix: Solid Analysis Batch: 520185 | 19670/16-A | | | | | | | | C | lient Samp | le ID: Metho Prep Type: T Prep Batch: | d Blank otal/NA 519670 |
| · · · · · · · · · · · · · · · · · · · | I | MВ | МВ | | | | | | | | | |
| Analyte | Res | sult | Qualifier | RL | I | MDL | Unit | [| D | Prepared | Analyzed | Dil Fac |
| 1,4-Dichlorobenzene | 0.000 | 054 | U | 0.010 | 0.0 | 0054 | mg/L | | 0 | 4/12/18 15:10 | 04/16/18 19:41 | 1 |
| Pyridine | 0.00 | 023 | U | 0.050 | 0.0 | 0023 | mg/L | | 0 | 4/12/18 15:10 | 04/16/18 19:41 | 1 |
| 2-Methylphenol | 0 | .89 | U | 10 | I. | 0.89 | ug/L | | 0 | 4/12/18 15:10 | 04/16/18 19:41 | 1 |
| 3 & 4 Methylphenol | | 1.3 | U | 10 | | 1.3 | ug/L | | 0 | 4/12/18 15:10 | 04/16/18 19:41 | 1 |
| 2,4,6-Trichlorophenol | 0 | .85 | U | 10 | I. | 0.85 | ug/L | | 0 | 4/12/18 15:10 | 04/16/18 19:41 | 1 |
| 2,4,5-Trichlorophenol | | 1.2 | U | 10 | I. | 1.2 | ug/L | | 0 | 4/12/18 15:10 | 04/16/18 19:41 | 1 |
| 2,4-Dinitrotoluene | | 1.2 | U | 10 | | 1.2 | ug/L | | 0 | 4/12/18 15:10 | 04/16/18 19:41 | 1 |
| Hexachlorobenzene | 0 | 0.79 | U | 10 | I. | 0.79 | ug/L | | 0 | 4/12/18 15:10 | 04/16/18 19:41 | 1 |
| Hexachlorobutadiene | 0 | .62 | U | 10 | I. | 0.62 | ug/L | | 0 | 4/12/18 15:10 | 04/16/18 19:41 | 1 |
| Hexachloroethane | 0 | .76 | U | 10 | | 0.76 | ug/L | | 0 | 4/12/18 15:10 | 04/16/18 19:41 | 1 |
| Nitrobenzene | 0 |).73 | U | 10 | I. | 0.73 | ug/L | | 0 | 4/12/18 15:10 | 04/16/18 19:41 | 1 |
| Pentachlorophenol | | 2.0 | U | 50 | I. | 2.0 | ug/L | | 0 | 4/12/18 15:10 | 04/16/18 19:41 | 1 |
| | | MR | MR | | | | | | | | | |
| Surmaate | %Recov | on | Oualifier | l imits | | | | | | Prenared | Analyzed | Dil Fac |
| Nitrobenzene-d5 (Surr) | | 65 | waanner | 32 118 | | | | | $\overline{0}$ | 4/12/18 15:10 | 04/16/18 19:41 | 1 |
| 2-Eluorobinhenvl | | 68 | | 32 113 | | | | | 0 | 4/12/18 15:10 | 04/16/18 19:41 | 1 |
| Terphenyl-d14 (Surr) | | 91 | | 10_126 | | | | | 0 | 4/12/18 15:10 | 04/16/18 19:41 | 1 |
| Phenol-d5 (Surr) | | 63 | | 27_110 | | | | | 0 | 4/12/18 15:10 | 04/16/18 19:41 | |
| 2-Eluorophenol (Surr) | | 61 | | 26_109 | | | | | 0 | 4/12/18 15:10 | 04/16/18 19:41 | 1 |
| 2,4,6-Tribromophenol (Surr) | | 80 | | 39 - 124 | | | | | 0 | 4/12/18 15:10 | 04/16/18 19:41 | 1 |
| Lab Sample ID: LCS 680-5 Matrix: Solid Analysis Batch: 520185 | 519670/20-A | | | Snike | LCS | 1.05 | | Clie | nt S | Sample ID: | Lab Control Prep Type: T Prep Batch: | Sample otal/NA 519670 |
| Analvte | | | | Added | Result | Qua | - alifier | Unit | | D %Rec | Limits | |
| | | | | 0.100 | 0.0608 | | | mg/L | | 61 | 31 - 130 | |
| 1,4-Dichlorobenzene | | | | 0.200 | 0 115 | | | mg/L | | 57 | 10-130 | |
| I,4-Dichlorobenzene | | | | 0.200 | 0.110 | | | - | | 07 | | |
| 1,4-Dichlorobenzene Pyridine 2-Methylphenol | | | | 100 | 67.1 | | | ug/L | | 67 | 40 - 130 | |
| 1,4-Dichlorobenzene Pyridine 2-Methylphenol 3 & 4 Methylphenol | | | | 100 100 | 67.1 77.4 | | | ug/L ug/L | | 67 77 | 40 - 130 42 - 130 | |
| 1,4-Dichlorobenzene Pyridine 2-Methylphenol 3 & 4 Methylphenol 2,4,6-Trichlorophenol | | | | 100 100 100 | 67.1 77.4 84.7 | | | ug/L ug/L ug/L | | 67 77 85 | 40 - 130 42 - 130 47 - 130 | |
| 1,4-Dichlorobenzene Pyridine 2-Methylphenol 3 & 4 Methylphenol 2,4,6-Trichlorophenol 2,4,5-Trichlorophenol | | | | 100 100 100 100 100 | 67.1 77.4 84.7 77.9 | | | ug/L ug/L ug/L ug/L | | 67 77 85 78 | 40 - 130 42 - 130 47 - 130 48 - 130 | |
| 1,4-Dichlorobenzene Pyridine 2-Methylphenol 3 & 4 Methylphenol 2,4,6-Trichlorophenol 2,4,5-Trichlorophenol 2,4-Dinitrotoluene | | | | 100 100 100 100 100 100 | 67.1 77.4 84.7 77.9 85.1 | | | ug/L ug/L ug/L ug/L ug/L | | 67 77 85 78 85 | 40 - 130 42 - 130 47 - 130 48 - 130 52 - 130 | |
| 1,4-Dichlorobenzene Pyridine 2-Methylphenol 3 & 4 Methylphenol 2,4,6-Trichlorophenol 2,4-5-Trichlorophenol 2,4-Dinitrotoluene Hexachlorobenzene | | | | 100 100 100 100 100 100 100 | 67.1 77.4 84.7 77.9 85.1 79.0 | | | ug/L ug/L ug/L ug/L ug/L ug/L | | 67 77 85 78 85 79 | 40 - 130 42 - 130 47 - 130 48 - 130 52 - 130 43 - 130 | |
| 1,4-Dichlorobenzene Pyridine 2-Methylphenol 3 & 4 Methylphenol 2,4,5-Trichlorophenol 2,4-5.Trichlorophenol 2,4-Dinitrotoluene Hexachlorobenzene Hexachlorobutadiene | | | | 100 100 100 100 100 100 100 100 | 67.1 77.4 84.7 77.9 85.1 79.0 64.8 | | | ug/L ug/L ug/L ug/L ug/L ug/L ug/L | | 67 77 85 78 85 79 65 | 40 - 130 42 - 130 47 - 130 48 - 130 52 - 130 43 - 130 27 - 130 | |

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| lient: Georgia State Univers | sity | | 30 | Samp | 5 10 | 550 | | | | Test | America | Job ID: 680-15 | 0889-1 |
|---|---|--------------|-----------|----------------|-------|--------------|------------|----------------|--------|---------|------------|----------------------------------|---------------------------------------|
| oject/Site: Monitoring Well | Installation | | | | | | | | | | | | |
| ethod: 8270D - Semi | volatile Or | gan | ic Con | npound | s (G(| C/M | S) (| Con | tinued |) | | | |
| Lab Sample ID: LCS 680-5 Matrix: Solid | 519670/20-A | | | | | | | | Clie | nt Sai | mple ID: | Lab Control S Prep Type: To | Sample otal/NA |
| Analysis Batch: 520185 | | | | Spike Added | Re | LCS esult | LCS Qua | lifier | Unit | D | % Rec | Prep Batch: 4 %Rec. Limits | 519670 |
| Nitrobenzene | | | | 100 | | 73.0 | | | ug/L | | 73 | 43 - 130 | |
| Pentachlorophenol | | | | 200 | | 170 | | | ug/L | | 85 | 33 - 130 | |
| | LCS | LCS | | | | | | | | | | | |
| Surrogate | %Recovery | Qual | ifier | Limits | | | | | | | | | |
| Nitrobenzene-d5 (Surr) | 72 | | | 32 - 118 | | | | | | | | | |
| 2-Fluorobiphenyl | 70 | | | 32 - 113 | | | | | | | | | |
| Terphenyl-d14 (Surr) | 94 | | | 10 - 126 | | | | | | | | | |
| Phenol-d5 (Surr) | 67 | | | 27 - 110 | | | | | | | | | |
| 2-Fluorophenol (Surr) | 65 | | | 26 - 109 | | | | | | | | | |
| 2,4,6-Tribromophenol (Surr) | 82 | | | 39 - 124 | | | | | | | | | |
| Lab Sample ID: MB 680-51 Matrix: Water | 19677/8-A | | | | | | | | | Clie | ent Samp | ole ID: Method Prep Type: To | l Blank otal/NA |
| Analysis Batch: 520049 | 1 | MP | MB | | | | | | | | | Prep Batch: | 519677 |
| Analyte | Ros | wi D sult | Qualifier | | RI | M | וחו | Unit | r | ם ר | renared | Analyzed | Dil Eac |
| 2-Chlorophenol | Kes | 1.87 | | | 10 - | ۱۷ ۲ | 1.87 | | | - 104/1 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| 2-Nitrophenol | 0 | ,) 76 | Ŭ | | 10 | r |) 76 | ug/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| 2 4-Dimethylphenol | 0 | 4.0 | - U | | 10 | C | 4 0 | ua/l | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| 2,4 Dichlorophenol | | 7.0 11 | | | 10 | | 7.0 1 1 | ug/L | | 04/1 | 2/18 15:10 | 04/15/18 16:49 | · · · · · · · · · · · · · · · · · · · |
| 2-Methvinhenol | 0 | 0.89 | ŭ | | 10 | ſ | 1.1 | ug/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| 3 & 4 Methylphenol | 0 | 1.3 | Ŭ | | 10 | C | 13 | ug/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| 4-Chloroaniline | | 22 | | | 20 | | 22 | ug/l | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | ····· 4 |
| 4-Chloro-3-methylphenol | | 1.0 | - U | | 10 | | 1.0 | ug/l | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| 2-Methylnaphthalene | a |).78 | - U | | 10 | C |).78 | ua/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| 2.4.6-Trichlorophenol | | 0.85 | - U | | 10 | |).85 | ua/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | |
| 2,4,5-Trichlorophenol | Ŭ | 1.2 | U | | 10 | | 1.2 | ug/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Acetophenone | C |).57 | U | | 10 | C |).57 | ug/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| 1,1'-Biphenyl | | .58 | U | | 10 | |).58 | ug/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | |
| 2-Chloronaphthalene | a | .80 | U | | 10 | c | .80 | ug/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| 2-Nitroaniline | , i i i i i i i i i i i i i i i i i i i | 1.3 | U | | 50 | | 1.3 | ug/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Acenaphthylene | | 0.85 | U | | 10 | C |).85 | ug/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | |
| 3-Nitroaniline | | 5.0 | U | | 50 | | 5.0 | ug/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Bis(2-chloroethoxy)methane | C | .94 | U | | 10 | C |).94 | ug/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Acenaphthene | | 0.76 | U | | 10 | |).76 | ua/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | |
| Bis(2-chloroethyl)ether | - | 1.1 | U | | 10 | | 1.1 | ug/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| 2,4-Dinitrophenol | | 10 | U | | 50 | | 10 | ug/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| 2,4-Dinitrotoluene | | 1.2 | U | | 10 | | 1.2 | ug/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Dibenzofuran | C | .79 | U | | 10 | C |).79 | ug/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Diethyl phthalate | C | .88 | U | | 10 | C | .88 | ug/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| 4-Chlorophenyl phenyl ether | 0 | .84 | U | | 10 | C |).84 | ug/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | |
| Dimethyl phthalate | O | .99 | U | | 10 | C |).99 | ug/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| 4-Nitroaniline | | 5.0 | U | | 50 | | 5.0 | ug/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| 4,6-Dinitro-2-methylphenol | | 10 | U | | 50 | | 10 | ug/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | · · · · · · · · 1 |
| Fluorene | a | .96 | U | | 10 | C |).96 | ug/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| 4-Bromophenyl phenyl ether | C |).77 | U | | 10 | C |).77 | uq/L | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Hexachlorobenzene | | .79 | U | | 10 | |).79 | ua/l | | 04/1 | 2/18 15:10 | 04/15/18 16:48 | |
| | 0 | | - | | | | | ~ . | | 2.01 | 0.10 | | |

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| ient: Georgia State University | | | F • • | | | | | TestA | merica | Job ID: 680-15 | 50889-1 |
|---|---------------|-----------|-----------|--------|---------------|-------|--------|-------|---|--|---------------------------------------|
| oject/Site: Monitoring Well Installa | | nia Com | anoundo (| COM | <u>c) ((</u> | | tinuad | | | | |
| lethod: 8270D - Semivolati | le Orgai | | npounds (| GC/IVI | 5) (C | -on | unuea) | | | | |
| Lab Sample ID: MB 680-519677/4 Matrix: Water Analysis Batch: 520049 | 8-A | | | | | | | Clie | nt Samı | ole ID: Methoo Prep Type: To Prep Batch: | d Blank otal/NA 519677 |
| - | MB | MB | | | | | | | | | |
| Analyte | Result | Qualifier | RL | I | IDL I | Jnit | D | Pr | epared | Analyzed | Dil Fac |
| Hexachlorocyclopentadiene | 2.5 | U | 10 | | 2.5 ι | ıg/L | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| lexachloroethane | 0.76 | U | 10 | | 0.76 ι | ıg/L | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Anthracene | 0.69 | U | 10 | | 0.69 ι | ıg/L | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| sophorone | 0.90 | U | 10 | | 0.90 ι | ıg/L | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Naphthalene | 0.70 | U | 10 | | 0.70 ι | ıg/L | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Di-n-butyl phthalate | 0.83 | U | 10 | | 0.83 ι | ıg/L | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Nitrobenzene | 0.73 | U | 10 | | 0.73 ι | ıg/L | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Fluoranthene | 0.74 | U | 10 | | 0.74 ι | ıg/L | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| N-Nitrosodiphenylamine | 0.92 | U | 10 | | 0.92 ι | ıg/L | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| N-Nitrosodi-n-propylamine | 0.72 | U | 10 | | 0.72 ι | ıg/L | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Pentachlorophenol | 2.0 | U | 50 | | 2.0 i | ıg/L | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| 3,3'-Dichlorobenzidine | 30 | U | 60 | | 30 ι | ıg/L | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Phenanthrene | 0.77 | U | 10 | | 0.77 i | ıg/L | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Benzo[a]anthracene | 0.55 | U | 10 | | 0.55 ι | ıg/L | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Phenol | 0.83 | U | 10 | | 0.83 ι | ıg/L | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Chrysene | 0.51 | U | 10 | | 0.51 ι | ıg/L | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Pyrene | 0.63 | U | 10 | | 0.63 i | ig/L | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| - Bis(2-ethylhexyl) phthalate | 1.6 | U | 10 | | 1.6 u | Ja/L | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Butyl benzyl phthalate | 1.2 | U | 10 | | 1.2 ı | Ja/L | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Di-n-octyl phthalate | 1.4 | - Ū | 10 | | 1.4 | Ja/L | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | · · · · · · · · · · · · · · · · · · · |
| Benzolb Ifluoranthene | 2.6 | - U | 10 | | 26 1 | .g. – | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Benzolk)fluoranthene | 12 | Ŭ. | 10 | | 12 1 | ia/l | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Benzola Invrene | 0.71 | | 10 | | 0.71 | ia/l | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | |
| ndeno[1,2,3-cd]pyrene | 1.0 | U U | 10 | | 10.7 | ia/l | | 04/12 | 2/18 15:10 2/18 15:10 | 04/15/18 16:48 | 1 |
| Dibenz(a h)anthracene | 1.0 | U U | 10 | | 10 | ia/l | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Bibeniz(u,ii)uninacene Benzola h ilhen/ene | 0.87 | | 10 | | 0.87 | ig/L | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | |
| ais (2 abloraisopropul) ether | 0.07 | | 10 | | 0.07 1 | 19/L | | 04/12 | 2/10 13.10 2/19 15:10 | 04/15/18 16:48 | 1 |
| | 0.70 | | 10 | | 0.70 0 | ig/L | | 04/12 | 0/10 15.10 | 04/15/10 10:40 | 1 |
| | 0.71 | | 10 | | 44. | ig/L | | 04/12 | 10 13.10 | 04/15/10 10.40 | |
| | 1.1 | 0 | 10 | | 1.1 0 | IG/L | | 04/12 | 2/10 10.10 | 04/15/10 10.40 | 1 |
| 4-INILIOPHENOI | 1.9 | 0 | 50 | | 1.9 1 | ig/L | | 04/12 | 10 10.10 | 04/15/10 10.40 | 1 |
| nuazine Ponzoldobydo | 1.2 | | 10 | | 1.2 L | ig/L | | 04/12 | 10 15:10 | 04/10/10 10:48 | |
| | 1.1 | U | 10 | | 1.1 l 0.70 | ig/L | | 04/12 | 2/18/15:10 | 04/15/18 16:48 | 1 |
| Japroiaciam | 0.79 | U | 10 | | 0.79 l | ıg/L | | 04/12 | 2/18/15:10 | 04/15/18 16:48 | 1 |
| | MВ | MB | | | | | | | | | |
| Surrogate | %Recovery | Qualifier | Limits | | | | | Pr | epared | Analyzed | Dil Fac |
| Vitrobenzene-d5 (Surr) | 76 | | 32 - 118 | | | | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| 2-Fluorobiphenyl (Surr) | 70 | | 32 - 113 | | | | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Terphenyl-d14 (Surr) | 75 | | 10 - 126 | | | | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| Phenol-d5 (Surr) | 68 | | 27 - 110 | | | | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| 2-Fluorophenol (Surr) | 67 | | 26 - 109 | | | | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| 2,4,6-Tribromophenol (Surr) | 81 | | 39 - 124 | | | | | 04/12 | 2/18 15:10 | 04/15/18 16:48 | 1 |
| _ab Sample ID: LCS 680-519677 Matrix: Water Analysis Batch: 520049 | /9 - A | | Spike | LCS | LCS | | Clien | t San | nple ID: | Lab Control S Prep Type: To Prep Batch: %Rec. | Sample otal/NA 519677 |
| Analyte | | | Added | Result | Quali | fier | Unit | D | %Rec | Limits | |
| 2 Oblanach an al | | | 400 | CAA | aaan | | | | ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | 20 120 | |

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| | QC | Sam | ple | Resı | ılts |
|--|----|-----|-----|------|------|
|--|----|-----|-----|------|------|

Client: Georgia State University Project/Site: Monitoring Well Installation

TestAmerica Job ID: 680-150889-1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

| ab Sample ID: LCS 680-519677/9-A | | | | Clie | nt Sa | mple ID | : Lab Control Sample |
|---|-------|---------------|-----------|------|-------|-----------|----------------------|
| Matrix: Water | | | | | | | Prep Type: Total/NA |
| Analysis Batch: 520049 | | | | | | | Prep Batch: 519677 |
| | Spike | LCS | LCS | | | | %Rec. |
| Analyte | Added | Result | Qualifier | Unit | D | %Rec | Limits |
| 2-Nitrophenol | 100 | 71.2 | | ug/L | | 71 | 43 - 130 |
| 2,4-Dimethylphenol | 100 | 68.9 | | ug/L | | 69 | 37 - 130 |
| 2,4-Dichlorophenol | 100 | 71.5 | | ug/L | | 71 | 44 - 130 |
| 2-Methylphenol | 100 | 69.8 | | ug/L | | 70 | 40-130 |
| 3 & 4 Methylphenol | 100 | 69.8 | | ug/L | | 70 | 42-130 |
| | 100 | 54.1 | | ug/L | | 54 | 42-130 |
| | 100 | /4.4 | | ug/L | | 74 | 47 - 130 |
| -Methylnaphthalene | 100 | 66.3 | | ug/L | | 66 | 40-130 |
| (4,6-) richlorophenol | 100 | 79.1 | | ug/L | | 79 | 47 - 130 |
| | 100 | 79.7 | | ug/L | | 8U 70 | 40-130 |
| | 100 | /1.5 | | ug/L | | 12 | 44-130 |
| | 100 | 73.6 | | ug/L | | 74 | 40-100 |
| | 100 | 13.9 | | ug/L | | /4 00 | 44-100 |
| | 100 | 02.1 | | ug/L | | 02 | JI-130 49 130 |
| Nitroaniline | 100 | /4.2 75.7 | | ug/L | | /4 76 | 40-130 53 130 |
| | 100 | 71.0 | | ug/L | | 70 | JJ 130 17 130 |
| ors(2-onio) delitoxy)memane | 100 | /1.8 70.2 | | ug/L | | 70 | 47 - 130 |
| accuapturene Dis(2.chloroethyl)ether | 100 | 19.3 | | ug/L | | 19 | 40-130 32 130 |
| Disitrophenol | 200 | 160 | | ug/L | | 00 | 31 130 |
| | 100 | 100 | | ug/L | | 04 85 | 52 130 |
| i,+-Diniti Oluciic | 100 | 00.4 77 0 | | ug/L | | 70 | 50 130 |
| | 100 | 11.0 88.9 | | ug/L | | 70 80 | 53 130 |
| L-Chloronhenvl phenvl ether | 100 | 00.0 79.2 | | ug/L | | 79 | 45-130 |
| Dimethyl phthalate | 100 | , J.Z 81 0 | | ug/L | | , J 81 | 53-130 |
| 1-Nitroaniline | 100 | 76.5 | | ug/L | | 76 | 49-130 |
| 4 6-Dinitro-2-methylphenol | 200 | 200 | | ug/L | | 100 | 42-130 |
| | 100 | 823 | | ug/L | | 82 | 50, 130 |
| I-Bromonhenyl phenyl ether | 100 | 82.5 | | ug/L | | 83 | 47 - 130 |
| Hexachlorobenzene | 100 | 81 3 | | ug/L | | 81 | 43-130 |
| Hexachlorobutadiene | 100 | 58.3 | | ua/l | | 58 | 27.130 |
| Hexachlorocyclonentadiene | 100 | Δ7 1 | | ug/L | | 47 | 11_130 |
| Hexachloroethane | 100 | 54.5 | | ug/L | | 55 | 29-130 |
| Anthracene | 100 | 85.2 | | ua/L | | 85 | 49-130 |
| sophorone | 100 | 70.6 | | ua/L | | 71 | 47 - 130 |
| Naphthalene | 100 | 66.0 | | ua/L | | 66 | 39-130 |
| Di-n-butyl phthalate | 100 | 92.2 | | ua/L | | 92 | 51 - 130 |
| litrobenzene | 100 | 68.6 | | ua/L | | 69 | 43 - 130 |
| luoranthene | 100 | 84.9 | | ua/L | | 85 | 47 - 130 |
| I-Nitrosodiphenvlamine | 100 | 85.0 | | ua/L | | 85 | 50 - 130 |
| I-Nitrosodi-n-propylamine | 100 | 71.8 | | ua/L | | 72 | 42-130 |
| Pentachlorophenol | 200 | 175 | | ua/L | | 87 | 33 - 130 |
| .3'-Dichlorobenzidine | 100 | 85.4 | | ua/l | | 85 | 46 - 130 |
| Phenanthrene | 100 | 83.2 | | ua/L | | 83 | 51 - 130 |
| Benzola lanthracene | 100 | 82.3 | | ua/l | | 82 | 44.130 |
| Phenol | 100 | 63.6 | | ua/L | | 64 | 35.130 |
| hrysene | 100 | 83.3 | | ua/I | | 83 | 47 - 130 |
| λ/rene | 100 | 82.4 | | ug/L | | 82 | 52 130 |

TestAmerica Savannah

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Client: Georgia State University Project/Site: Monitoring Well Installation TestAmerica Job ID: 680-150889-1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

| Lab Sample ID: LCS 680-519677/9-A Matrix: Water | | | | Clie | nt Sai | mple ID | : Lab Control Sample Prep Type: Total/NA | |
|--|-------|--------|-----------|------|--------|---------|---|---|
| Analysis Batch: 520049 | | | | | | | Prep Batch: 519677 | 5 |
| | Spike | LCS | LCS | | | | %Rec. | |
| Analyte | Added | Result | Qualifier | Unit | D | %Rec | Limits | |
| Bis(2-ethylhexyl) phthalate | 100 | 88.1 | | ug/L | | 88 | 45 - 130 | 6 |
| Butyl benzyl phthalate | 100 | 84.3 | | ug/L | | 84 | 50 - 130 | |
| Di-n-octyl phthalate | 100 | 96.1 | | ug/L | | 96 | 42 - 130 | |
| Benzo[b]fluoranthene | 100 | 82.2 | | ug/L | | 82 | 43 - 130 | |
| Benzo[k]fluoranthene | 100 | 79.2 | | ug/L | | 79 | 40 - 130 | |
| Benzo[a]pyrene | 100 | 80.8 | | ug/L | | 81 | 44 - 130 | |
| Indeno[1,2,3-cd]pyrene | 100 | 91.8 | | ug/L | | 92 | 31 - 130 | |
| Dibenz(a,h)anthracene | 100 | 83.0 | | ug/L | | 83 | 41 - 130 | |
| Benzo[g,h,i]perylene | 100 | 82.4 | | ug/L | | 82 | 41 - 130 | |
| bis (2-chloroisopropyl) ether | 100 | 70.7 | | ug/L | | 71 | 26 - 130 | |
| Carbazole | 100 | 88.1 | | ug/L | | 88 | 54 - 130 | |
| 2,6-Dinitrotoluene | 100 | 81.3 | | ug/L | | 81 | 52 - 130 | |
| 4-Nitrophenol | 200 | 159 | | ug/L | | 80 | 44 - 130 | |
| Atrazine | 100 | 81.0 | | ug/L | | 81 | 39 - 130 | |
| Benzaldehyde | 100 | 47.8 | | ug/L | | 48 | 14 - 130 | |
| Caprolactam | 100 | 82.9 | | ug/L | | 83 | 26 - 130 | |
| 105 105 | | | | | | | | |

| | 200 | 200 | |
|-----------------------------|-----------|-----------|----------|
| Surrogate | %Recovery | Qualifier | Limits |
| Nitrobenzene-d5 (Surr) | 69 | | 32 - 118 |
| 2-Fluorobiphenyl (Surr) | 75 | | 32 - 113 |
| Terphenyl-d14 (Surr) | 76 | | 10 - 126 |
| Phenol-d5 (Surr) | 63 | | 27 - 110 |
| 2-Fluorophenol (Surr) | 58 | | 26 - 109 |
| 2,4,6-Tribromophenol (Surr) | 79 | | 39 - 124 |
| | | | |

Lab Sample ID: LCSD 680-519677/10-A Matrix: Water

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

| Analysis Batch: 520049 | | | | | | | Prep Batch: 519677 | | |
|----------------------------|-------|--------|-----------|------|---|------|--------------------|-----|-------|
| | Spike | LCSD | LCSD | | | | %Rec. | | RPD |
| Analyte | Added | Result | Qualifier | Unit | D | %Rec | Limits | RPD | Limit |
| 2-Chlorophenol | 100 | 72.3 | | ug/L | | 72 | 39-130 | 12 | 50 |
| 2-Nitrophenol | 100 | 74.6 | | ug/L | | 75 | 43 - 130 | 5 | 50 |
| 2,4-Dimethylphenol | 100 | 71.1 | | ug/L | | 71 | 37 - 130 | 3 | 50 |
| 2,4-Dichlorophenol | 100 | 75.5 | | ug/L | | 75 | 44 - 130 | 5 | 50 |
| 2-Methylphenol | 100 | 74.8 | | ug/L | | 75 | 40 - 130 | 7 | 50 |
| 3 & 4 Methylphenol | 100 | 75.6 | | ug/L | | 76 | 42-130 | 8 | 50 |
| 4-Chloroaniline | 100 | 61.2 | | ug/L | | 61 | 42-130 | 12 | 50 |
| 4-Chloro-3-methylphenol | 100 | 77.8 | | ug/L | | 78 | 47 - 130 | 5 | 50 |
| 2-Methylnaphthalene | 100 | 72.3 | | ug/L | | 72 | 40 - 130 | 9 | 50 |
| 2,4,6-Trichlorophenol | 100 | 82.4 | | ug/L | | 82 | 47 - 130 | 4 | 50 |
| 2,4,5-Trichlorophenol | 100 | 83.3 | | ug/L | | 83 | 48 - 130 | 4 | 50 |
| Acetophenone | 100 | 76.2 | | ug/L | | 76 | 44 - 130 | 6 | 50 |
| 1,1'-Biphenyl | 100 | 77.8 | | ug/L | | 78 | 45 - 130 | 5 | 50 |
| 2-Chloronaphthalene | 100 | 77.6 | | ug/L | | 78 | 44 - 130 | 5 | 50 |
| 2-Nitroaniline | 100 | 84.7 | | ug/L | | 85 | 51 - 130 | 3 | 50 |
| Acenaphthylene | 100 | 80.4 | | ug/L | | 80 | 48 - 130 | 8 | 50 |
| 3-Nitroaniline | 100 | 83.6 | | ug/L | | 84 | 53 - 130 | 10 | 50 |
| Bis(2-chloroethoxy)methane | 100 | 75.2 | | ug/L | | 75 | 47 - 130 | 5 | 50 |

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Client: Georgia State University Project/Site: Monitoring Well Installation

TestAmerica Job ID: 680-150889-1

Method: 8270D - Semivolatile Organic Compounds (GC/MS) (Continued)

| ab Sample ID: LCSD 680-519677/10-A | | | C | Client Sa | ample | ID: Lab | Control | Sample | e Dup | |
|------------------------------------|--------------------|--------------|-----------|-----------|-------|----------|----------|----------|-------|--|
| Aatrix: Water | Prep Type: Total/N | | | | | | | | | |
| Analysis Batch: 520049 | | | | | | | Prep Ba | atch: 5' | 19677 | |
| | Spike | LCSD | LCSD | | | | %Rec. | | RPD | |
| Inalyte | Added | Result | Qualifier | Unit | D | %Rec | Limits | RPD | Limit | |
| cenaphthene | 100 | 85.1 | | ug/L | | 85 | 48 - 130 | 7 | 50 | |
| is(2-chloroethyl)ether | 100 | 72.7 | | ug/L | | 73 | 32-130 | 10 | 50 | |
| 4-Dinitrophenol | 200 | 180 | | ug/L | | 90 | 31 - 130 | 7 | 50 | |
| 4-Dinitrotoluene | 100 | 85.4 | | ug/L | | 85 | 52-130 | 0 | 50 | |
| benzofuran | 100 | 79.7 | | ug/L | | 80 | 50_130 | 2 | 50 | |
| iethyl phthalate | 100 | 85.8 | | ug/L | | 86 | 53 - 130 | 3 | 50 | |
| Chlorophenyl phenyl ether | 100 | 80.4 | | ug/L | | 80 | 45-130 | 1 | 50 | |
| methyl phthalate | 100 | 83.3 | | ug/L | | 83 | 53 - 130 | 3 | 50 | |
| Nitroaniline | 100 | 75.6 | | ug/L | | 76 | 49-130 | 1 | 50 | |
| 6-Dinitro-2-methylphenol | 200 | 175 | | ug/L | | 87 | 42-130 | 13 | 50 | |
| uorene | 100 | 82.1 | | ug/L | | 82 | 50-130 | 0 | 50 | |
| Bromophenyl phenyl ether | 100 | 77.5 | | ug/L | | 77 | 47 - 130 | 6 | 50 | |
| exachlorobenzene | 100 | 79.4 | | ug/L | | 79 | 43 - 130 | 2 | 50 | |
| exachlorobutadiene | 100 | 67.0 | | ug/L | | 67 | 27 - 130 | 14 | 50 | |
| exachlorocyclopentadiene | 100 | 49.8 | | ug/L | | 50 | 11_130 | 6 | 50 | |
| exachloroethane | 100 | 66.6 | | ug/L | | 67 | 29-130 | 20 | 50 | |
| nthracene | 100 | 83.3 | | ug/L | | 83 | 49-130 | 2 | 50 | |
| ophorone | 100 | 76.0 | | ug/L | | 76 | 47 - 130 | 7 | 50 | |
| phthalene | 100 | 71.5 | | ug/L | | 71 | 39-130 | 8 | 50 | |
| -n-butyl phthalate | 100 | 82.3 | | ug/L | | 82 | 51 - 130 | 11 | 50 | |
| trobenzene | 100 | 73.9 | | ug/L | | 74 | 43 - 130 | 8 | 50 | |
| uoranthene | 100 | 79.4 | | ug/L | | 79 | 47 - 130 | 7 | 50 | |
| Nitrosodiphenylamine | 100 | 76.2 | | ug/L | | 76 | 50 - 130 | 11 | 50 | |
| Nitrosodi-n-propylamine | 100 | 77.2 | | ua/L | | 77 | 42-130 | 7 | 50 | |
| entachlorophenol | 200 | 172 | | ug/L | | 86 | 33 - 130 | 2 | 50 | |
| 3'-Dichlorobenzidine | 100 | 85.5 | | ua/L | | 85 | 46 - 130 | 0 | 50 | |
| nenanthrene | 100 | 81.9 | | ug/L | | 82 | 51 - 130 | 2 | 50 | |
| enzolalanthracene | 100 | 85.0 | | ua/L | | 85 | 44 - 130 | 3 | 50 | |
| nenol | 100 | 73.1 | | ug/L | | 73 | 35-130 | 14 | 50 | |
| hrvsene | 100 | 83.7 | | ua/L | | 84 | 47 - 130 | 0 | 50 | |
| vrene | 100 | 74.5 | | ua/L | | 75 | 52-130 | 10 | 50 | |
| s(2-ethylhexyl) phthalate | 100 | 85.4 | | ua/L | | 85 | 45-130 | 3 | 50 | |
| ityl benzyl phthalate | 100 | 83.0 | | ua/l | | 83 | 50-130 | 2 | 50 | |
| -n-octvl phthalate | 100 | 87.8 | | ua/L | | 88 | 42-130 | 9 | 50 | |
| enzolbifluoranthene | 100 | 85.5 | | ua/l | | 85 | 43_130 | 4 | 50 | |
| enzolkifluoranthene | 100 | 82.9 | | ua/l | | 83 | 40_130 | 5 | 50 | |
| enzolalnyrene | 100 | 02.5 84 २ | | ug/L | | 84 | 44_130 | | 50 | |
| deno[1 2 3-cd]nvrene | 100 | 86.3 | | ug/L | | 86 | 31_130 | r A | 50 | |
| henz(a h)anthracene | 100 | 85.7 | | ug/L | | 86 | 41 130 | 3 2 | 50 | |
| nzola h ilnen/ene | 100 | 00.7 85 C | | ug/L | | 85 | 41 130 | | 50 | |
| s (2-chloroisonronyl) ether | 100 | 76.1 | | ug/L | | 76 | 26 130 | 7 | 50 | |
| | 100 | 70.1 95.2 | | ug/L | | 25 | 54 120 | 3 | 50 | |
| | 100 | 00.3 | | ug/L | | C0 20 | 52 120 | ى | 50 | |
| 5-Dimit otoluene | 100 | 85.2 | | ug/L | | 80 | JZ-13U | 5 | 50 | |
| | 200 | 162 | | ug/L | | 81 | 44 - 130 | 2 | 50 | |
| razine | 100 | /5.9 | | ug/L | | 76 | 39-130 | 6 | 50 | |
| enzaidenyde | 100 | 52.1 | | ug/L | | 52 | 14 - 130 | 9 | 50 | |
| aprolactam | 100 | 63.3 | | ua/l | | 63 | 26_130 | 27 | 50 | |

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| | | QC | Sample | e Results | 5 | | | 1 |
|--|-----------|-----------|----------|-----------|-------------|----------------|----------------|---------|
| Client: Georgia State University Project/Site: Monitoring Well Installa | tion | | | | | TestAmerica | Job ID: 680-15 | 0889-1 |
| Method: 8270D - Semivolatil | e Orga | nic Con | npounds | (GC/MS) | (Continued) |) | | 3 |
| Lab Sample ID: LCSD 680-51967 | 7/10-A | | | | Client Sa | mple ID: Lab | Control Samp | le Dup |
| Matrix: Water | | | | | | | Prep Type: To | otal/NA |
| Analysis Batch: 520049 | | | | | | | Prep Batch: | 519677 |
| L | LCSD LCS | SD | | | | | | |
| Surrogate %Reco | overy Qua | alifier | Limits | | | | | 6 |
| Nitrobenzene-d5 (Surr) | 75 | | 32 - 118 | | | | | |
| 2-Fluorobiphenyl (Surr) | 76 | | 32 - 113 | | | | | |
| Terphenyl-d14 (Surr) | 69 | | 10 - 126 | | | | | |
| Phenol-d5 (Surr) | 70 | | 27 - 110 | | | | | |
| 2-Fluorophenol (Surr) | 66 | | 26 - 109 | | | | | |
| 2,4,6-Tribromophenol (Surr) | 82 | | 39 - 124 | | | | | |
| Lab Sample ID: LB 680-519572/1- | -В | | | | | Client Sam | le ID: Method | l Blank |
| Matrix: Solid | _ | | | | | | Prep Type | : TCLP |
| Analysis Batch: 520185 | | | | | | | Prep Batch: | 519670 |
| | LB | LB | | | | | | 1 |
| Analyte | Result | Qualifier | F | L MDL | Unit D | Prepared | Analyzed | Dil Fac |
| 1,4-Dichlorobenzene | 0.0026 | U | 0.04 | 0.0026 | mg/L | 04/12/18 15:10 | 04/16/18 20:04 | 1 1 |
| Pyridine | 0.012 | U | 0.2 | 24 0.012 | mg/L | 04/12/18 15:10 | 04/16/18 20:04 | 1 |
| 2-Methylphenol | 0.0043 | U | 0.04 | 0.0043 | mg/L | 04/12/18 15:10 | 04/16/18 20:04 | 1 |
| 3 & 4 Methylphenol | 0.0062 | U | 0.04 | 8 0.0062 | mg/L | 04/12/18 15:10 | 04/16/18 20:04 | 1 |
| 2,4,6-Trichlorophenol | 0.0041 | U | 0.04 | 0.0041 | mg/L | 04/12/18 15:10 | 04/16/18 20:04 | 1 |
| 2,4,5-Trichlorophenol | 0.0058 | U | 0.04 | 8 0.0058 | mg/L | 04/12/18 15:10 | 04/16/18 20:04 | 1 |
| 2,4-Dinitrotoluene | 0.0058 | U | 0.04 | 8 0.0058 | mg/L | 04/12/18 15:10 | 04/16/18 20:04 | 1 |
| Hexachlorobenzene | 0.0038 | U | 0.04 | 8 0.0038 | mg/L | 04/12/18 15:10 | 04/16/18 20:04 | 1 |
| Hexachlorobutadiene | 0.0030 | U | 0.04 | 8 0.0030 | mg/L | 04/12/18 15:10 | 04/16/18 20:04 | 1 |
| Hexachloroethane | 0.0037 | U | 0.04 | 8 0.0037 | mg/L | 04/12/18 15:10 | 04/16/18 20:04 | 1 |
| Nitrobenzene | 0.0036 | U | 0.04 | 8 0.0036 | mg/L | 04/12/18 15:10 | 04/16/18 20:04 | 1 |
| Pentachlorophenol | 0.0096 | U | 0.2 | 0.0096 | mg/L | 04/12/18 15:10 | 04/16/18 20:04 | 1 |
| | LB | LB | | | | | | |
| Surrogate % | Recovery | Qualifier | Limits | | | Prepared | Analyzed | Dil Fac |
| Nitrobenzene-d5 (Surr) | 161 | X | 39 - 130 |) | | 04/12/18 15:10 | 04/16/18 20:04 | 1 |
| 2-Fluorobiphenyl | 144 | X | 38 - 130 |) | | 04/12/18 15:10 | 04/16/18 20:04 | 1 |
| Terphenyl-d14 (Surr) | 166 | X | 10 - 143 | 3 | | 04/12/18 15:10 | 04/16/18 20:04 | 1 |
| Phenol-d5 (Surr) | 156 | X | 25 - 130 |) | | 04/12/18 15:10 | 04/16/18 20:04 | 1 |
| 2-Fluorophenol (Surr) | 152 | X | 25 - 130 |) | | 04/12/18 15:10 | 04/16/18 20:04 | 1 |
| 2,4,6-Tribromophenol (Surr) | 173 | Х | 31 - 14 | ł | | 04/12/18 15:10 | 04/16/18 20:04 | 1 |

Method: 9056A - Anions, Ion Chromatography

| Lab Sample ID: MB 680-51973 Matrix: Water Analysis Batch: 519736 | 36/88 | | | | | | Client Sam | ple ID: Method Prep Type: To | l Blank otal/NA |
|--|--------|-----------|------|------|------|---|------------|---------------------------------|--------------------|
| | MB | MB | | | | | | | |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| Chloride | 0.20 | U | 0.50 | 0.20 | mg/L | | | 04/12/18 19:59 | 1 |
| Sulfate | 0.40 | U | 1.0 | 0.40 | ma/L | | | 04/12/18 19:59 | 1 |

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| | | QC | Sam | ple | Resi | ults | ; | | | | | | |
|---|--------|-----------|--------|-------|--------|-------|--------|---------|--------|-------------|---------------------------------------|-----------------------|--------------------------|
| lient: Georgia State University roject/Site: Monitoring Well Installation | n | | | | | | | | Test | tAmerica | Job ID: 680 |)-15(|)889-1 |
| /lethod: 9056A - Anions, Ion C | hron | natogra | phy (C | Cont | inuec | d) | | | | | | | |
| Lab Sample ID: LCS 680-519736/89 | | | | | | | | Clie | ent Sa | mple ID: | Lab Contr | ol S | ample |
| Analysis Batch: 519736 | | | | | | | | | | | Fieb Type | . 10 | lai/INA |
| - | | | Spike | | LCS | LCS | ; | | | | %Rec. | | |
| Analyte | | | Added | | Result | Qua | lifier | Unit | D | %Rec | Limits | | |
| Chloride | | | 10.0 | | 9.94 | | | mg/L | | 99 | 90-110 | | |
| Sulfate | | | 10.0 | | 9.78 | | | mg/L | | 98 | 90-110 | | |
| Lab Sample ID: LCSD 680-519736/9 Matrix: Water | 0 | | | | | | C | lient S | ample | e ID: Lab | Control Sa Prep Type | impl : To | e Dup tal/NA |
| Analysis Batch: 519736 | | | | | | | | | | | | | |
| | | | Spike | | LCSD | LCS | D | | | | %Rec. | | RPD |
| Analyte | | | Added | | Result | Qua | lifier | Unit | D | %Rec | Limits | RPD | Limit |
| Chloride | | | 10.0 | | 9.96 | | | mg/L | | 100 | 90-110 | 0 | 15 |
| Sulfate | | | 10.0 | | 9.86 | | | mg/L | | 99 | 90-110 | 1 | 15 |
| /lethod: 2340B-2011 - Total Ha | rdne | ss (as | CaCO | 3) by | / calc | ulat | tion | | | | | | |
| Lab Sample ID: MB 680-520877/1 | | | | | | | | | Cli | ent Sam | ole ID: Met | hod | Blank |
| Matrix: Water | | | | | | | | | | | Prep Type | : То | tal/NA |
| Analysis Batch: 520877 | | | | | | | | | | | | | |
| | MВ | MB | | | | | | | | | | | |
| Analyte | Result | Qualifier | | RL | | MDL | Unit | | D_F | Prepared | Analyzed | 1 | Dil Fac |
| Hardness as calcium carbonate | 3.3 | 0 | | 3.3 | | 3.3 | mg/L | | | | 04/20/10 12 | .15 | 1 |
| Method: 6010C - Metals (ICP) Lab Sample ID: MB 680-519520/1-A Matrix: Solid Analysis Batch: 519787 | | | | | | | | | Cli | ent Sam | ole ID: Met Prep Type Prep Bato | hod : To :h: 5 | Blank tal/NA 19520 |
| Apolyto | IVI B | NB | | ы | | MDI | Unit | | | Proporad | Apolyzor | 4 | Dil Eco |
| | 0.73 | | | 1.8 | | 0.73 | ma/Ki | a | | 11/18 06:50 | Analyzet | - -00 - | 1 |
| Barium | 0.75 | U U | | 0.92 | | 0.15 | mg/K | 9 | 04/ | 11/18 06:50 | 04/11/18 21 | .00 | 1 |
| Cadmium | 0.092 | Ŭ | | 0.46 | C | 0.092 | ma/Ki | a | 04/ | 11/18 06:50 | 04/11/18 21 | :00 | 1 |
| Chromium | 0.19 | - U | | 0.92 | | 0.19 | ma/K | a | 04/ | 11/18 06:50 | 04/11/18 21 | :00 | . 1 |
| Lead | 0.31 | U | | 0.92 | | 0.31 | ma/K | a | 04/ | 11/18 06:50 | 04/11/18 21 | :00 | 1 |
| Selenium | 0.89 | U | | 2.3 | | 0.89 | ma/K | a | 04/ | 11/18 06:50 | 04/11/18 21 | :00 | 1 |
| Silver | 0.055 | U | | 0.92 | C | 0.055 | mg/K | g | 04/ | 11/18 06:50 | 04/11/18 21 | :00 | 1 |
| Lab Sample ID: LCS 680-519520/2-A Matrix: Solid Analysis Batch: 519787 | A | | | | | | | Clie | ent Sa | mple ID: | Lab Contr Prep Type Prep Bato | ol S : To :h: 5 | ample tal/NA 19520 |
| | | | Spike | | LCS | LCS | 5 | | | | %Rec. | | |
| Analyte | | | Added | | Result | Qua | lifier | Unit | D | %Rec | Limits | | |
| Arsenic | | | 9.35 | | 9.14 | | | mg/Kg | | 98 | 80 - 120 | | |
| Barium | | | 9.35 | | 9.22 | | | mg/Kg | | 99 | 80-120 | | |
| Cadmium | | | 4.67 | | 4.70 | | | mg/Kg | | 101 | 80-120 | | |
| Chromium | | | 9.35 | | 9.76 | | | mg/Kg | | 104 | 80-120 | | |
| Lead | | | 46.7 | | 44.6 | | | mg/Kg | | 96 | 80-120 | | |
| Selenium | | | 9.35 | | 8.25 | | | mg/Kg | | 88 | 80-120 | | |
| Silver | | | 4.67 | | 4.70 | | | mg/Kg | | 101 | 80-120 | | |

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Client: Georgia State University Project/Site: Monitoring Well Installation

TestAmerica Job ID: 680-150889-1

Method: 6010C - Metals (ICP) (Continued)

| Lab Sample ID: 680-150889 Matrix: Solid | -1 MS | | | | | | | CI | lient Sample ID: SB04 Prep Type: Total/NA | |
|--|--------|-----------|-------|--------|-----------|-------|-------------------|------|--|---|
| Analysis Batch: 519787 | Sample | Sample | Spike | MS | MS | | | | Prep Batch: 519520 %Rec. | 5 |
| Analyte | Result | Qualifier | Added | Result | Qualifier | Unit | D | %Rec | Limits | G |
| Arsenic | 2.1 | J | 11.0 | 12.3 | | mg/Kg | \$ | 94 | 75 - 125 | D |
| Barium | 130 | | 11.0 | 144 | 4 | mg/Kg | ⇔ | 148 | 75 - 125 | |
| Cadmium | 0.11 | U | 5.49 | 4.93 | | mg/Kg | \Leftrightarrow | 90 | 75 - 125 | |
| Chromium | 33 | F1 | 11.0 | 35.1 | F1 | mg/Kg | \$ | 21 | 75 - 125 | |
| Lead | 13 | | 54.9 | 63.7 | | mg/Kg | \Leftrightarrow | 92 | 75 - 125 | |
| Selenium | 1.1 | U F1 | 11.0 | 9.57 | | mg/Kg | ☆ | 87 | 75-125 | |
| Silver | 0.067 | U | 5.49 | 4.76 | | mg/Kg | \$ | 87 | 75 - 125 | |

Lab Sample ID: 680-150889-1 MSD Matrix: Solid C40707

| Lab Sample ID: 680-150889 Matrix: Solid Analysis Batch: 519787 | -1 MSD | Sample | Spiko | MCD | MSD | | | C | lient Sam Prep Typ Prep Ba | ple ID: pe: Tot itch: 51 | SB04 al/NA 19520 |
|--|--------|-----------|-------|--------|-----------|-------|----|------|----------------------------------|--------------------------------|------------------------|
| Analyte | Result | Qualifier | Added | Result | Qualifier | Unif | D | %Rec | Limits | RPD | Limit |
| Arsenic | 2.1 | | 11.0 | 12.5 | | mg/Kg | | 95 | 75 - 125 | 1 | 20 |
| Barium | 130 | | 11.0 | 137 | 4 | mg/Kg | ⇔ | 91 | 75-125 | 5 | 20 |
| Cadmium | 0.11 | U | 5.49 | 5.04 | | mg/Kg | ⇔ | 92 | 75-125 | 2 | 20 |
| Chromium | 33 | F1 | 11.0 | 32.1 | F1 | mg/Kg | \$ | -7 | 75-125 | 9 | 20 |
| Lead | 13 | | 54.9 | 60.5 | | mg/Kg | ☆ | 86 | 75-125 | 5 | 20 |
| Selenium | 1.1 | U F1 | 11.0 | 8.11 | F1 | mg/Kg | ⇔ | 74 | 75-125 | 17 | 20 |
| Silver | 0.067 | U | 5.49 | 4.94 | | mg/Kg | \$ | 90 | 75-125 | 4 | 20 |

Lab Sample ID: MB 680-520055/1-A Matrix: Water Analysis Batch: 520707

Client Sample ID: Method Blank Prep Type: Total/NA Prep Batch: 520055

| ranary sis bacom of or | | | | | | | | ricp bacom | 020000 |
|------------------------|--------|-----------|------|------|------|---|----------------|----------------|---------|
| | MB | MB | | | | | | | |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| Aluminum | 24 | U | 200 | 24 | ug/L | | 04/14/18 16:02 | 04/18/18 17:03 | 1 |
| Antimony | 5.3 | U | 20 | 5.3 | ug/L | | 04/14/18 16:02 | 04/18/18 17:03 | 1 |
| Arsenic | 6.2 | U | 20 | 6.2 | ug/L | | 04/14/18 16:02 | 04/18/18 17:03 | 1 |
| Barium | 1.7 | U | 10 | 1.7 | ug/L | | 04/14/18 16:02 | 04/18/18 17:03 | 1 |
| Beryllium | 0.10 | U | 4.0 | 0.10 | ug/L | | 04/14/18 16:02 | 04/18/18 17:03 | 1 |
| Cadmium | 1.0 | U | 5.0 | 1.0 | ug/L | | 04/14/18 16:02 | 04/18/18 17:03 | 1 |
| Calcium | 25 | U | 500 | 25 | ug/L | | 04/14/18 16:02 | 04/18/18 17:03 | 1 |
| Chromium | 1.6 | U | 10 | 1.6 | ug/L | | 04/14/18 16:02 | 04/18/18 17:03 | 1 |
| Cobalt | 1.0 | U | 10 | 1.0 | ug/L | | 04/14/18 16:02 | 04/18/18 17:03 | 1 |
| Copper | 1.8 | U | 20 | 1.8 | ug/L | | 04/14/18 16:02 | 04/18/18 17:03 | 1 |
| Iron | 24.2 | J | 50 | 17 | ug/L | | 04/14/18 16:02 | 04/18/18 17:03 | 1 |
| Lead | 3.9 | U | 10 | 3.9 | ug/L | | 04/14/18 16:02 | 04/18/18 17:03 | 1 |
| Magnesium | 33 | U | 500 | 33 | ug/L | | 04/14/18 16:02 | 04/18/18 17:03 | 1 |
| Manganese | 1.0 | U | 10 | 1.0 | ug/L | | 04/14/18 16:02 | 04/18/18 17:03 | 1 |
| Nickel | 2.1 | U | 40 | 2.1 | ug/L | | 04/14/18 16:02 | 04/18/18 17:03 | 1 |
| Potassium | 17 | U | 1000 | 17 | ug/L | | 04/14/18 16:02 | 04/18/18 17:03 | 1 |
| Selenium | 9.9 | U | 20 | 9.9 | ug/L | | 04/14/18 16:02 | 04/18/18 17:03 | 1 |
| Silver | 0.60 | U | 10 | 0.60 | ug/L | | 04/14/18 16:02 | 04/18/18 17:03 | 1 |
| Sodium | 480 | U | 1000 | 480 | ug/L | | 04/14/18 16:02 | 04/18/18 17:03 | 1 |
| Thallium | 6.0 | U | 25 | 6.0 | ug/L | | 04/14/18 16:02 | 04/18/18 17:03 | 1 |
| Vanadium | 1.0 | U | 10 | 1.0 | ug/L | | 04/14/18 16:02 | 04/18/18 17:03 | 1 |
| Zinc | 7.0 | U | 20 | 7.0 | ug/L | | 04/14/18 16:02 | 04/18/18 17:03 | 1 |
| | | | | | | | | | |

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Client: Georgia State University Project/Site: Monitoring Well Installation

Method: 6010C - Metals (ICP) (Continued)

| Lab Sample ID: LCS 680-520055/2-A Matrix: Water | | | | Clie | ent Sample ID | : Lab Control Sample Prep Type: Total/NA | |
|--|-------|--------|-----------|------|---------------|---|---|
| Analysis Batch: 520707 | Spike | LCS | LCS | | | Prep Batch: 520055 %Rec. | |
| Analyte | Added | Result | Qualifier | Unit | D % Rec | Limits | C |
| Aluminum | 5000 | 5060 | | ug/L | | 80 - 120 | 6 |
| Antimony | 50.0 | 45.2 | | ug/L | 90 | 80 - 120 | |
| Arsenic | 100 | 102 | | ug/L | 102 | 80 - 120 | |
| Barium | 100 | 103 | | ug/L | 103 | 80 - 120 | |
| Beryllium | 50.0 | 52.0 | | ug/L | 104 | 80 - 120 | |
| Cadmium | 50.0 | 51.9 | | ug/L | 104 | 80 - 120 | |
| Calcium | 5000 | 5170 | | ug/L | 103 | 80 - 120 | |
| Chromium | 100 | 105 | | ug/L | 105 | 80 - 120 | |
| Cobalt | 50.0 | 52.4 | | ug/L | 105 | 80 - 120 | |
| Copper | 100 | 105 | | ug/L | 105 | 80 - 120 | |
| Iron | 5000 | 5100 | | ug/L | 102 | 80 - 120 | |
| Lead | 500 | 510 | | ug/L | 102 | 80 - 120 | |
| Magnesium | 5000 | 5120 | | ug/L | 102 | 80 - 120 | |
| Manganese | 500 | 535 | | ug/L | 107 | 80 - 120 | |
| Nickel | 100 | 105 | | ug/L | 105 | 80 - 120 | |
| Potassium | 8000 | 8280 | | ug/L | 104 | 80 - 120 | |
| Selenium | 100 | 98.1 | | ug/L | 98 | 80 - 120 | |
| Silver | 50.0 | 50.7 | | ug/L | 101 | 80 - 120 | |
| Sodium | 5000 | 5180 | | ug/L | 104 | 80 - 120 | |
| Thallium | 40.0 | 42.8 | | ug/L | 107 | 80 - 120 | |
| Vanadium | 100 | 105 | | ug/L | 105 | 80 - 120 | |
| Zinc | 100 | 103 | | ug/L | 103 | 80 - 120 | |

Lab Sample ID: MB 680-520523/1-A Matrix: Solid Analysis Batch: 520874

Client Sample ID: Method Blank Prep Type: Total/NA Prep Batch: 520523

| Analysis Datum. J20014 | | | | | | | | riep battin. | JZUJZJ | |
|------------------------|--------|-----------|-------|-------|------|---|----------------|----------------|---------|--|
| - | MB | MB | | | | | | - | | |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac | |
| Arsenic | 0.020 | U | 0.020 | 0.020 | mg/L | | 04/18/18 13:16 | 04/19/18 16:38 | 1 | |
| Barium | 0.10 | U | 0.10 | 0.10 | mg/L | | 04/18/18 13:16 | 04/19/18 16:38 | 1 | |
| Cadmium | 0.010 | U | 0.010 | 0.010 | mg/L | | 04/18/18 13:16 | 04/19/18 16:38 | 1 | |
| Chromium | 0.020 | U | 0.020 | 0.020 | mg/L | | 04/18/18 13:16 | 04/19/18 16:38 | 1 | |
| Lead | 0.020 | U | 0.020 | 0.020 | mg/L | | 04/18/18 13:16 | 04/19/18 16:38 | 1 | |
| Selenium | 0.050 | U | 0.050 | 0.050 | mg/L | | 04/18/18 13:16 | 04/19/18 16:38 | 1 | |
| Silver | 0.010 | U | 0.010 | 0.010 | ma/L | | 04/18/18 13:16 | 04/19/18 16:38 | 1 | |

Lab Sample ID: LCS 680-520523/2-A Matrix: Solid

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

| Analysis Batch: 520874 | | | | | | | Prep Batch: 520523 |
|------------------------|-------|--------|-----------|------|---|------|--------------------|
| | Spike | LCS | LCS | | | | %Rec. |
| Analyte | Added | Result | Qualifier | Unit | D | %Rec | Limits |
| Arsenic | 2.00 | 2.12 | | mg/L | | 106 | 80 - 120 |
| Barium | 2.00 | 2.01 | | mg/L | | 100 | 80 - 120 |
| Cadmium | 1.00 | 1.00 | | mg/L | | 100 | 80 - 120 |
| Chromium | 2.00 | 2.04 | | mg/L | | 102 | 80 - 120 |
| Lead | 10.0 | 9.79 | | mg/L | | 98 | 80 - 120 |
| Selenium | 2.00 | 1.95 | | mg/L | | 97 | 80 - 120 |
| Silver | 1.00 | 1.02 | | mg/L | | 102 | 80 - 120 |

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TestAmerica Job ID: 680-150889-1

Client: Georgia State University Project/Site: Monitoring Well Installation TestAmerica Job ID: 680-150889-1

Method: 6010C - Metals (ICP) (Continued)

| Lab Sample ID: LB 680-519572 Matrix: Solid | 2/1 -D | | | Client Sample ID: Method Blank Prep Type: TCLP | | | | | | |
|---|---------------|-----------|------|---|---|----------------|----------------|---------|---|--|
| Analysis Batch: 520874 | | | | | | | Prep Batch: | 520523 | 5 | |
| | LB | LB | | | | | | | | |
| Analyte | Result | Qualifier | RL | MDL Unit | D | Prepared | Analyzed | Dil Fac | C | |
| Arsenic | 0.20 | U | 0.20 | 0.20 mg/L | | 04/18/18 13:16 | 04/19/18 16:48 | 1 | 0 | |
| Barium | 1.0 | U | 1.0 | 1.0 mg/L | | 04/18/18 13:16 | 04/19/18 16:48 | 1 | | |
| Cadmium | 0.10 | U | 0.10 | 0.10 mg/L | | 04/18/18 13:16 | 04/19/18 16:48 | 1 | | |
| Chromium | 0.20 | U | 0.20 | 0.20 mg/L | | 04/18/18 13:16 | 04/19/18 16:48 | 1 | | |
| Lead | 0.20 | U | 0.20 | 0.20 mg/L | | 04/18/18 13:16 | 04/19/18 16:48 | 1 | | |
| Selenium | 0.50 | U | 0.50 | 0.50 mg/L | | 04/18/18 13:16 | 04/19/18 16:48 | 1 | | |
| Silver | 0.10 | U | 0.10 | 0.10 mg/L | | 04/18/18 13:16 | 04/19/18 16:48 | 1 | | |

Lab Sample ID: 680-150889-1 MS Matrix: Solid Analysis Batch: 520874

| Matrix: Solid Analysis Batch: 520874 | | | | | | | | | Prep Prep Ba | Type: TCLP atch: 520523 |
|---|--------|-----------|-------|--------|-----------|------|---|------|-----------------|----------------------------|
| | Sample | Sample | Spike | MS | MS | | | | %Rec. | |
| Analyte | Result | Qualifier | Added | Result | Qualifier | Unit | D | %Rec | Limits | |
| Arsenic | 0.20 | U F1 | 1.60 | 0.895 | F1 | mg/L | | 56 | 75 - 125 | |
| Barium | 1.0 | U | 1.60 | 1.74 | | mg/L | | 109 | 75-125 | |
| Cadmium | 0.10 | U | 1.60 | 1.48 | | mg/L | | 93 | 75-125 | |
| Chromium | 0.20 | U | 1.60 | 1.51 | | mg/L | | 94 | 75-125 | |
| Lead | 0.20 | U | 1.60 | 1.48 | | mg/L | | 93 | 75-125 | |
| Selenium | 0.50 | U | 1.60 | 1.24 | | mg/L | | 78 | 75-125 | |
| Silver | 0.10 | U F1 F2 | 1.60 | 0.486 | F1 | mg/L | | 30 | 75-125 | |

Lab Sample ID: 680-150889-1 MSD Matrix: Solid nalysis Batch: 520874

Method: 7470A - Mercury (CVAA)

| Client Sample ID: SB04 |
|------------------------|
| Prep Type: TCLP |
| Prep Batch: 520523 |

Client Sample ID: SB04

| Analysis Datch, 520074 | | | | | | | | | гіер Ба | IIII. J | 20323 |
|------------------------|--------|-----------|-------|--------|-----------|------|---|------|----------|---------|-------|
| | Sample | Sample | Spike | MSD | MSD | | | | %Rec. | | RPD |
| Analyte | Result | Qualifier | Added | Result | Qualifier | Unit | D | %Rec | Limits | RPD | Limit |
| Arsenic | 0.20 | U F1 | 1.60 | 0.852 | F1 | mg/L | | 53 | 75 - 125 | 5 | 20 |
| Barium | 1.0 | U | 1.60 | 1.76 | | mg/L | | 110 | 75-125 | 1 | 20 |
| Cadmium | 0.10 | U | 1.60 | 1.49 | | mg/L | | 93 | 75 - 125 | 1 | 20 |
| Chromium | 0.20 | U | 1.60 | 1.52 | | mg/L | | 95 | 75-125 | 1 | 20 |
| Lead | 0.20 | U | 1.60 | 1.47 | | mg/L | | 92 | 75-125 | 1 | 20 |
| Selenium | 0.50 | U | 1.60 | 1.34 | | mg/L | | 83 | 75-125 | 7 | 20 |
| Silver | 0.10 | U F1 F2 | 1.60 | 0.603 | F1 F2 | mg/L | | 38 | 75 - 125 | 22 | 20 |
| | | | | | | | | | | | |

| Lab Sample ID: MB 680-519560/13-A Matrix: Water Analysis Batch: 519944 ME | 6 MB | | | Client Sam | ple ID: Method Blank Prep Type: Total/NA Prep Batch: 519560 |
|--|-----------|----------|-----------|-------------------|---|
| Analyte Result | Qualifier | RL M | DL Unit | D Prepared | Analyzed Dil Fac |
| Mercury 0.080 | U | 0.20 0.0 | 080 ug/L | 04/11/18 09:42 | 04/13/18 07:53 1 |
| Lab Sample ID: LCS 680-519560/14-A Matrix: Water Analysis Batch: 519944 | | | | Client Sample ID: | Lab Control Sample Prep Type: Total/NA Prep Batch: 519560 |
| | Spike | LCS I | LCS | | %Rec. |
| Analyte | Added | Result (| Qualifier | Unit D %Rec | Limits |
| Mercury | 2.50 | 2.60 | | ug/L104 | 80 - 120 |

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| | QC | Sample | Results | | 1 | |
|--|----------------|---------|------------------|-------------------|--|---|
| Client: Georgia State University Project/Site: Monitoring Well Installation | | | | TestAmerica | Job ID: 680-150889-1 | |
| Lab Sample ID: MB 680-519887/1-A Matrix: Solid | | | | Client Sam | ble ID: Method Blank Prep Type: Total/NA | |
| Analysis Batch: 520140 | МВ МВ | | | | Prep Batch: 519887 4 | |
| Analyte Re: | sult Qualifier | RL | MDL Unit | D Prepared | Analyzed Dil Fac | |
| Mercury 0.00 | 020 U | 0.00020 | 0.00020 mg/L | 04/13/18 09:27 | 04/16/18 09:14 1 5 | Þ |
| Lab Sample ID: LCS 680-519887/2-A | | | | Client Sample ID: | Lab Control Sample 6 | 5 |
| Matrix: Solid | | | | | Prep Type: Total/NA | |
| Analysis Batch: 520140 | | Spike | LCS LCS | | Prep Batch: 519887 %Rec. | |
| Analyte | | Added | Result Qualifier | Unit D %Rec | Limits | |
| Mercury | | 0.250 | 0.252 | mg/L 101 | 80-120 | |
| Lab Sample ID: LB 680-519572/1-C Matrix: Solid | | | | Client Sam | Prep Type: TCLP | |
| Analysis Batch: 520140 | LB LB | | | | Prep Batch: 519887 | |
| Analyte Re: | sult Qualifier | RL | MDL Unit | D Prepared | Analyzed Dil Fac | |
| Mercury 0. | 020 U | 0.020 | 0.020 mg/L | 04/13/18 09:27 | 04/16/18 09:21 1 | |
| Lab Sample ID: 680-150889-1 MS Matrix: Solid Analysis Batch: 520140 | | | | Cli | ent Sample ID: SB04 Prep Type: TCLP Prep Batch: 519887 | |
| Sample | Sample | Spike | | | % Rec. | |
| Mercury 0.020 | | 0.0830 | 0.0833 | mg/L D % Rec 100 | 80-120 | |
| Lab Sample ID: 680-150889-1 MSD Matrix: Solid Analysis Batch: 520140 | | | | Cli | ent Sample ID: SB04 Prep Type: TCLP Prep Batch: 519887 | |
| Sample | Sample | Spike | MSD MSD | | %Rec. RPD | |
| Analyte Result | Qualifier | Added | Result Qualifier | Unit D %Rec | Limits RPD Limit | |
| Mercury 0.020 | U | 0.0830 | 0.0802 | mg/L 97 | 80-120 4 20 | |
| Method: 7471B - Mercury (CVAA) |) | | | | | |

| Lab Sample ID: MB 680-5194 Matrix: Solid Analysis Batch: 519903 | 79/1-A Me | 8 MB | | | | | | | Clie | ent Sam | ple ID: Metho Prep Type: T Prep Batch: | d Blank otal/NA 519479 |
|--|--------------|-----------|-------------------------|-------|------------------------|-------------|--------|------------------------|------------|--------------|---|------------------------------|
| Analyte | Result | Qualifier | | RL | 1 | MDL | Unit | 1 | D P | repared | Analyzed | Dil Fac |
| Mercury | 0.0075 | Ū | | 0.019 | 0.0 | 0075 | mg/Kg | <u>j</u> | 04/1 | 0/18 15:11 | 1 04/12/18 17:45 | 1 |
| Lab Sample ID: LCS 680-5194 Matrix: Solid Analysis Batch: 519903 Analyte Mercury | 479/2-A | | Spike Added 0.236 | | LCS Result 0.238 | LCS Qual | lifier | Clies Unit mg/Kg | nt Sa D | mple ID: | : Lab Control Prep Type: T Prep Batch: %Rec. Limits 80-120 | Sample otal/NA 519479 |
| Lab Sample ID: 680-150889-1 | MS | | | | | | | | | Cl | ient Sample II | D: SB04 |
| Matrix: Solid | | | | | | | | | | | Prep Type: T | otal/NA |
| Analysis Batch: 519903 | | | | | | | | | | | Prep Batch: | 519479 |
| | Sample Sa | mple | Spike | | MS | MS | | | | | %Rec. | |
| Analyte | Result Qu | alifier | Added | | Result | Qual | lifier | Unit | D | %Rec | Limits | |
| Mercury | 0.0090 U | | 0.123 | | 0.136 | | | mg/Kg | — <u>*</u> | 110 | 80 - 120 | |

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| | | QC | Samp | ble | Resi | llts | | _ | | | | 00.45 | 0000 - |
|---|--|---|------------------------|---|-------------------------|---|---|-------------------------------|-----------------|----------------------------------|--|--|---|
| nent: Georgia State University roject/Site: Monitoring Well Inst | allation | | | | | | | 1 | est/ | America | a Jod ID: 6 | 80-15 | 0889-1 |
| Lab Sample ID: 680-150889-1 | MSD | | | | | | | | | С | lient Sam | ple ID | : SB04 |
| Matrix: Solid | | | | | | | | | | | Prep Ty | pe: To | tal/NA |
| Analysis Batch: 519903 | Sample S | ample | Snike | | MSD | MSD | | | | | WRec | atch: : | 019479 RPD |
| Analvte | Result Q | ualifier | Added | | Result | Qualifie | ər | Unit | D | %Rec | Limits | RPD | Limit |
| Mercury | 0.0090 U | | 0.117 | | 0.118 | | | mg/Kg | \$ | 101 | 80 - 120 | 14 | 20 |
| /lethod: 1030 - Ignitability | /, Solids | | | | | | | | | | | | |
| Lab Sample ID: MB 680-5197 | 33/1 | | | | | | | | Clie | nt San | nple ID: M | ethod | Blank |
| Matrix: Solid | | | | | | | | | | | Prep Ty | pe: To | tal/NA |
| Analysis Batch: 519733 | | | | | | | | | | | | | |
| | _ M | вмв | | | | | | _ | _ | | | | |
| Analyte | Resu | It Qualifier | | RL | | | | <u> </u> | Pi | repared | | 2ed | DII Fac |
| - | IN | D | | | | 1111 | 11/50 | 50 | | | 04/12/10 | 07.57 | 1 |
| Lab Sample ID: LCS 680-5197 | /33/2 | | | | | | | Client | Sar | nple ID | : Lab Co | ntrol S | ample |
| Matrix: Solid | | | | | | | | | | | Prep Tv | pe: To | tal/NA |
| Analysis Batch: 519733 | | | | | | | | | | | | | |
| - | | | Spike | | LCS | LCS | | | | | %Rec. | | |
| Analyte | | | Added | | Result | Qualifie | er | Unit | D | %Rec | Limits | | |
| Ignitability | | | 3.18 | | 3.178 | | | mm/sec | | 100 | 75-125 | | |
| | | | | | | | | | | | | | |
| Lab Sample ID: LCSD 680-519 Matrix: Solid Analysis Batch: 519733 | 9733/12 | | | | | | C | lient San | ıple | ID: Lat | Control Prep Ty | Samp pe: To | le Dup tal/NA |
| Lab Sample ID: LCSD 680-51 Matrix: Solid Analysis Batch: 519733 | 9733/12 | | Spike | | LCSD | LCSD | C | lient San | nple | ID: Lat | Control Prep Ty %Rec. | Samp pe: To | le Dup tal/NA RPD |
| Lab Sample ID: LCSD 680-519 Matrix: Solid Analysis Batch: 519733 Analyte | 9733/12 | | Spike Added | | LCSD Result | LCSD Qualifie | C | lient San ^{Unit} | nple D | ID: Lat %Rec | Control Prep Ty %Rec. Limits | Samp pe: To RPD | le Dup tal/NA RPD Limit |
| Lab Sample ID: LCSD 680-51 Matrix: Solid Analysis Batch: 519733 Analyte | 9733/12 | | Spike Added 3.12 | | LCSD Result 3.118 | LCSD Qualifie | C er | Unit mm/sec | D | 1D: Lat %Rec 100 | Control Prep Ty %Rec. Limits 75 - 125 | Samp pe: To RPD 2 | le Dup otal/NA RPD Limit 10 |
| Lab Sample ID: LCSD 680-519 Matrix: Solid Analysis Batch: 519733 Analyte Ignitability Aethod: 2320B-2011 - Alk Lab Sample ID: MB 680-51953 Matrix: Water Analysis Batch: 519530 | 9733/12 <u>:alinity, 1</u> 30/7 M | otal | Spike Added 3.12 | | LCSD Result 3.118 | LCSD Qualifie | C er | Unit mm/sec | D Clie | NRec 100 | Control Prep Ty %Rec. Limits 75-125 | Samp pe: To 2 lethod pe: To | le Dup tal/NA RPD Limit 10 Blank tal/NA |
| Lab Sample ID: LCSD 680-519 Matrix: Solid Analysis Batch: 519733 Analyte Ignitability Aethod: 2320B-2011 - Alk Lab Sample ID: MB 680-51953 Matrix: Water Analysis Batch: 519530 Analyte | 9733/12 xalinity, 1 30/7 M Resu | otal B MB It Qualifier | Spike Added 3.12 | RL | LCSD Result 3.118 | LCSD Qualifie | C er iit | Unit mm/sec | D Clie | NRec 100 | % Rec. Limits 75-125 | Samp pe: To 2 ethod pe: To zed | le Dup tal/NA RPD Limit 10 Blank tal/NA Dil Fac |
| Lab Sample ID: LCSD 680-519 Matrix: Solid Analysis Batch: 519733 Analyte Ignitability Aethod: 2320B-2011 - Alk Lab Sample ID: MB 680-51953 Matrix: Water Analysis Batch: 519530 Analyte Alkalinity | 9733/12 xalinity, 1 30/7 M Resu 5 5 | otal B MB It Qualifier | Spike Added 3.12 | RL 5.0 | LCSD Result 3.118 | LCSD Qualifie | c iit | Unit D | D Clie | NRec 100 | Analy Odv/10/18 | Samp pe: To 2 ethod pe: To 2 zed 17:40 | le Dup ttal/NA RPD Limit 10 Blank ttal/NA Dil Fac |
| Lab Sample ID: LCSD 680-519 Matrix: Solid Analysis Batch: 519733 Analyte Ignitability Aethod: 2320B-2011 - Alk Lab Sample ID: MB 680-51953 Matrix: Water Analysis Batch: 519530 Analyte Alkalinity Bicarbonate Alkalinity as CaCO3 Gerbeste Alkalinity as CaCO3 | 9733/12 xalinity, 1 30/7 M Resu 5 5 5 5 5 5 5 5 5 5 5 5 5 | Fotal B MB It Qualifier 0 U 0 U | Spike Added 3.12 | RL 5.0 5.0 | LCSD Result 3.118 | LCSD Qualifie 5.0 mg 5.0 mg | iit iit | Unit D_ | D Clie | NRec 100 | Control Prep Ty %Rec. Limits 75-125 pile ID: M Prep Ty 04/10/18 04/10/18 | Samp pe: To 2 ethod pe: To 2 zed 17:40 47:40 | Limit Limit 10 Blank tal/NA |
| Lab Sample ID: LCSD 680-519 Matrix: Solid Analysis Batch: 519733 Analyte Ignitability Aethod: 2320B-2011 - Alk Lab Sample ID: MB 680-51953 Matrix: Water Analysis Batch: 519530 Analyte Alkalinity Bicarbonate Alkalinity as CaCO3 Carbonate Alkalinity as CaCO3 Hordrovide Alkalinity as CaCO3 | 9733/12 xalinity, 1 30/7 M Resu 5 5 5 5 5 5 5 5 5 5 5 5 5 | otal B MB It Qualifier 0 U 0 U 0 U | Spike Added 3.12 | RL 5.0 5.0 5.0 | LCSD Result 3.118 | LCSD Qualifie VIDL Un 5.0 mg 5.0 mg 5.0 mg | er iit g/L g/L | Unit D | D Clie | ID: Lat | Control Prep Ty %Rec. Limits 75-125 pple ID: M Prep Ty Analy 04/10/18 04/10/18 | Samp pe: To 2 ethod pe: To 77:40 17:40 17:40 17:40 | le Dup tal/NA RPD Limit 10 Blank tal/NA Dil Fac |
| Lab Sample ID: LCSD 680-519 Matrix: Solid Analysis Batch: 519733 Analyte Ignitability Alethod: 2320B-2011 - Alk Lab Sample ID: MB 680-51953 Matrix: Water Analysis Batch: 519530 Analyte Alkalinity Bicarbonate Alkalinity as CaCO3 Carbonate Alkalinity as CaCO3 Hydroxide Alkalinity Carbon Divide Erec | 9733/12 salinity, 1 30/7 M Resu 5 5 5 5 5 5 5 5 5 5 5 5 5 | otal B MB It Qualifier 0 U 0 U 0 U 0 U 0 U | Spike Added 3.12 | RL 5.0 5.0 5.0 5.0 5.0 | LCSD Result 3.118 | VIDL Un 5.0 mg 5.0 mg 5.0 mg 5.0 mg | it | Unit mm/sec | D Clie | ID: Lat | Control Prep Ty % Rec. Limits 75-125 pple ID: M Prep Ty Analy 04/10/18 04/10/18 04/10/18 | Samp pe: To 2 ethod pe: To 7:40 17:40 17:40 17:40 | Limit Limit 10 Blank btal/NA Dil Fac |
| Lab Sample ID: LCSD 680-519 Matrix: Solid Analysis Batch: 519733 Analyte Ignitability //ethod: 2320B-2011 - Alk Lab Sample ID: MB 680-51953 Matrix: Water Analysis Batch: 519530 Analyte Alkalinity Bicarbonate Alkalinity as CaCO3 Carbonate Alkalinity as CaCO3 Hydroxide Alkalinity Carbon Dioxide, Free Deapolottbalein Alkalinity | 9733/12 salinity, 1 30/7 M Resu 5 5 5 5 5 5 5 5 5 5 5 5 5 | otal B MB It Qualifier 0 U 0 U 0 U 0 U 0 U 0 U 0 U 0 U 0 U 0 U | Spike Added 3.12 | RL 5.0 5.0 5.0 5.0 5.0 5.0 | LCSD Result 3.118 | VIDL Un 5.0 mg 5.0 mg 5.0 mg 5.0 mg 5.0 mg | iit j /L j /L j /L j /L | Unit mm/sec | D Clie | ID: Lat | Control Prep Ty %Rec. Limits 75-125 pple ID: M Prep Ty Analy 04/10/18 04/10/18 04/10/18 04/10/18 | Samp pe: To 2 ethod pe: To 7:40 17:40 17:40 17:40 17:40 17:40 | le Dup tal/NA RPD Limit 10 Blank tal/NA Dil Fac 1 1 1 1 |
| Lab Sample ID: LCSD 680-519 Matrix: Solid Analysis Batch: 519733 Analyte Ignitability Alethod: 2320B-2011 - Alk Lab Sample ID: MB 680-51953 Matrix: Water Analysis Batch: 519530 Analyte Alkalinity Bicarbonate Alkalinity as CaCO3 Carbon Dioxide, Free Phenolphthalein Alkalinity Bicarbonate ion as HCO3 | 9733/12 calinity, 1 30/7 M Resu 5 5 5 5 5 5 5 5 5 5 5 5 5 | Fotal B MB It Qualifier 0 U 0 U 0 U 0 U 0 U 0 U 0 U 0 U 0 U 0 U 0 U 0 U 0 U 0 U 0 U 0 U | Spike Added 3.12 | RL 5.0 5.0 5.0 5.0 5.0 5.0 5.0 6.1 | LCSD Result 3.118 | LCSD Qualifie 5.0 6.1 | iit <i>i</i> /L <i>y</i> /L <i>y</i> /L <i>y</i> /L <i>y</i> /L | Unit mm/sec | D Clie | ID: Lat | Control Prep Ty % Rec. Limits 75-125 pile ID: M Prep Ty 04/10/18 04/10/18 04/10/18 04/10/18 | Samp pe: To 2 ethod pe: To 7:40 17:40 17:40 17:40 17:40 17:40 17:40 17:40 | Limit RPD Limit 10 Blank tal/NA Dil Fac 1 1 1 1 1 1 1 1 |
| Lab Sample ID: LCSD 680-519 Matrix: Solid Analysis Batch: 519733 Analyte Ignitability Alethod: 2320B-2011 - Alk Lab Sample ID: MB 680-51953 Matrix: Water Analysis Batch: 519530 Analyte Alkalinity Bicarbonate Alkalinity as CaCO3 Carbonate Alkalinity as CaCO3 Hydroxide Alkalinity Carbon Dioxide, Free Phenolphthalein Alkalinity Bicarbonate ion as HCO3 Lab Sample ID: LCS 680-5195 Matrix: Water | 9733/12 calinity, 1 30/7 M Resu 5 5 5 5 5 5 5 5 5 5 5 5 5 | Fotal B MB It Qualifier 0 U 0 U 0 U 0 U 0 U 0 U 0 U 0 U 0 U 1 U | Spike Added 3.12 | RL 5.0 5.0 5.0 5.0 5.0 6.1 | LCSD Result 3.118 | LCSD Qualifie VIDL Un 5.0 mg 5.0 mg 5.0 mg 5.0 mg 5.0 mg 5.0 mg 6.1 mg | it it j /L j /L j /L j /L | Unit mm/sec D Client | D Clie | NRec 100 nt San | Control Prep Ty % Rec. Limits 75-125 pple ID: M Prep Ty Analy 04/10/18 04/10/18 04/10/18 04/10/18 04/10/18 04/10/18 04/10/18 | Samp pe: To 2 ethod pe: To 2 ethod pe: To 17:40 17:40 17:40 17:40 17:40 17:40 17:40 17:40 17:40 17:40 | Limit RPD Limit 10 Blank tal/NA Dil Fac 1 1 1 1 1 1 3 ample tal/NA |
| Lab Sample ID: LCSD 680-519 Matrix: Solid Analysis Batch: 519733 Analyte Ignitability //ethod: 2320B-2011 - Alk Lab Sample ID: MB 680-51953 Matrix: Water Analysis Batch: 519530 Analyte Akalinity Bicarbonate Alkalinity as CaCO3 Carbonate Alkalinity as CaCO3 Hydroxide Alkalinity Carbon Dioxide, Free Phenolphthalein Alkalinity Bicarbonate ion as HCO3 Lab Sample ID: LCS 680-5195 Matrix: Water Analysis Batch: 519530 | 9733/12 calinity, 1 30/7 M Resu 5 5 5 5 5 5 5 5 5 5 5 5 5 | Fotal B MB It Qualifier 0 U 0 U 0 U 0 U 0 U 0 U 0 U 0 U 0 U 1 U | Spike Added 3.12 | RL 5.0 5.0 5.0 5.0 5.0 5.0 6.1 | LCSD Result 3.118 | VDL Un 5.0 mg 5.0 mg 5.0 mg 5.0 mg 6.1 mg | iit | Unit mm/sec | D D Clie | NRec 100 nt San repared | Control Prep Ty % Rec. Limits 75-125 pple ID: M Prep Ty Analy 04/10/18 04/10/18 04/10/18 04/10/18 04/10/18 04/10/18 04/10/18 | Samp pe: To 2 ethod pe: To 2 ethod pe: To 17:40 17:40 17:40 17:40 17:40 17:40 17:40 17:40 17:40 17:40 | Limit RPD Limit 10 Blank tal/NA Dil Fac 1 1 1 1 1 1 3 ample tal/NA |
| Lab Sample ID: LCSD 680-519 Matrix: Solid Analysis Batch: 519733 Analyte Ignitability Alethod: 2320B-2011 - Alk Lab Sample ID: MB 680-51953 Matrix: Water Analysis Batch: 519530 Analyte Alkalinity Bicarbonate Alkalinity as CaCO3 Carbonate Alkalinity as CaCO3 Hydroxide Alkalinity Carbon Dioxide, Free Phenolphthalein Alkalinity Bicarbonate ion as HCO3 Lab Sample ID: LCS 680-5195 Matrix: Water Analysis Batch: 519530 Analyte | 9733/12 calinity, 1 30/7 M Resu 5 5 5 5 5 5 5 5 5 5 5 5 5 | Fotal B MB It Qualifier 0 U 0 U 0 U 0 U 0 U 0 U 0 U 0 U 0 U 1 U | Spike Added 3.12 | RL 5.0 5.0 5.0 5.0 5.0 5.0 6.1 | LCSD Result 3.118 | VDL Un 5.0 mg 5.0 mg 5.0 mg 6.1 mg LCS | C iii j/L j/L j/L j/L j/L j/L | Unit mm/sec D | D Clie Pr | NRec 100 nt San repared | Control Prep Ty %Rec. Limits 75-125 nple ID: M Prep Ty 04/10/18 04/10/18 04/10/18 04/10/18 04/10/18 04/10/18 04/10/18 04/10/18 04/10/18 | Samp pe: To 2 ethod pe: To 2 2 ethod pe: To 17:40 17:40 17:40 17:40 17:40 17:40 17:40 17:40 17:40 17:40 17:40 | Limit RPD Limit 10 Blank tal/NA Dil Fac 1 1 1 1 1 3 ample tal/NA |

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| | | QC | Samp | le | Resi | ılts | | | | | | |
|--|------|-----------------|----------------|------|--------|-----------|-----------|---------|---------|----------------------|---------------------|------------------------------|
| Client: Georgia State University Project/Site: Monitoring Well Installation | | | | | | | | TestA | America | Job ID: 6 | 80-150 | 889-1 |
| Method: 2320B-2011 - Alkalinity, | То | tal (Co | ntinued | d) | | | | | | | | 3 |
| Lab Sample ID: LCSD 680-519530/16 Matrix: Water | | | | | | C | Client Sa | ample | ID: Lab | Control Prep Tv | Sampl | e Dup 4 |
| Analysis Batch: 519530 | | | Snike | | LCSD | LCSD | | | | %Rec. | | RPD 5 |
| Analyte | | | Added | | Result | Qualifier | Unit | D | % Rec | Limits | RPD | Limit 6 |
| | | | 230 | | 200 | | Ing/L | | 101 | 00-120 | | 7 |
| Method: 2540C-2011 - Total Diss | olv | ed Soli | ds (Dri | ed a | at 180 |) °C) | | | | | | |
| Lab Sample ID: MB 680-519801/1 Matrix: Water | | | | | | | | Clie | nt Sam | ple ID: M Prep Ty | ethod pe: Tot | Blank ⁸ tal/NA |
| Analysis Batch: 519801 | мв | МВ | | | | | | | | | | |
| Analyte Re: | sult | Qualifier | | RL | | MDL Unit | | D Pr | epared | Analy | zed | Dil Fac 1 |
| Total Dissolved Solids | 5.0 | U | | 5.0 | | 5.0 mg/L | | | | 04/11/18 | 12:30 | 1 |
| Lab Sample ID: LCS 680-519801/2 Matrix: Water | | | | | | | Clie | nt San | nple ID | : Lab Cor Prep Ty | ntrol Sa pe: Tot | ample tal/NA |
| Analysis Batch: 519801 | | | 0 | | 100 | 1.00 | | | | 0/ D | | |
| Analyte | | | Added | | Result | Qualifier | Unit | D | % Rec | % Rec. Limits | | |
| Total Dissolved Solids | | | 68.8 | | 71.0 | | mg/L | | 103 | 80 - 120 | | |
| Lab Sample ID: LCSD 680-519801/3 Matrix: Water | | | | | | C | Client Sa | ample | ID: Lab | Control Prep Ty | Sample pe: Tot | e Dup tal/NA |
| Analysis Batch: 519801 | | | | | | | | | | | | |
| Analyte | | | Spike Added | | Result | Qualifier | Unit | D | % Rec | % Rec. Limits | RPD | Limit |
| Total Dissolved Solids | | | 68.8 | | 74.0 | | mg/L | | 108 | 80 - 120 | 4 | 25 |
| Lab Sample ID: MB 680-519837/1 Matrix: Water Analysis Batch: 519837 | | | | | | | | Clie | nt Sam | ple ID: M Prep Ty | ethod pe: Tot | Blank tal/NA |
| Analyte Re | MB | MB Qualifier | | RI | | VIDI Unit | | D Pr | enared | Analy | zed | Dil Fac |
| Total Dissolved Solids | 5.0 | U | | 5.0 | | 5.0 mg/L | | | opurou | 04/12/18 | 15:54 | 1 |
| Lab Sample ID: LCS 680-519837/2 Matrix: Water | | | | | | | Clie | ent San | nple ID | : Lab Cor Prep Ty | ntrol Sa pe: Tot | ample tal/NA |
| Analysis Batch: 519837 | | | Spike | | LCS | LCS | | | | %Rec. | | |
| Analyte | | | Added | | Result | Qualifier | Unit | D | % Rec | Limits | | |
| | | | 50.0 | | 11.0 | | mg/L | | 112 | 00-120 | | |
| Lab Sample ID: LCSD 680-519837/3 Matrix: Water | | | | | | (| Client Sa | ample | ID: Lab | Control Prep Ty | Sample pe: Tot | e Dup tal/NA |
| Analysis Batch: 519837 | | | Spike | | LCSD | LCSD | | | | %Rec. | | RPD |
| Analyte | | | Added | | Result | Qualifier | Unit | D | % Rec | Limits | RPD | Limit |
| Total Dissolved Solids | | | 68.8 | | 73.0 | | mg/L | | 106 | 80 - 120 | 5 | 25 |

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| | | | QC | Samp | le | Resi | ults | | | | | | |
|--|-----------------|------|-----------|--------|------|---------|------------|-----------|-------------|-------------|------------------------|------------------|------------------|
| Client: Georgia State University Project/Site: Monitoring Well Inst | allation | | | | | | | | Test | America | Job ID: 68 | 0-150 | 889-1 |
| Method: 9012B - Cyanide, | , Total a | and | lor Am | enable | | | | | | | | | 3 |
| Lab Sample ID: MB 680-51971 Matrix: Solid | 14/1 - A | | | | | | | | Clie | ent Samp | ole ID: Me Pren Tyn | thod I | Blank 4 |
| Analysis Batch: 519778 | | | | | | | | | | | Prep Bat | ch: 5' | 19714 5 |
| Apolyto | Ba | MB | MB | | ы | | | | | repored | Apolyza | d | Dil Eas |
| Cvanide Total | | 0.13 | | | 0.50 | | 0.13 mg/K | | 04/1 | 12/18 05:29 | 04/12/18 1 | u 0:56 | |
| | | | • | | | | ente migni | 9 | • • • • | | | | |
| Lab Sample ID: LCS 680-5197 Matrix: Solid | '14/2-A | | | | | | | Clie | nt Sa | mple ID: | Lab Cont Prep Type | rol Sa e: Tot | ample 7 al/NA |
| Analysis Batch: 519778 | | | | | | | | | | | Prep Bat | ch: 5′ | 19714 8 |
| Analyte | | | | Spike | | LCS | LCS | Unit | п | % Rec | % Rec. | | |
| Cvanide. Total | | | | 4.85 | | 4.81 | acuanner | ma/Ka | | 99 | 75-125 | | ೨ |
| | | | | | | | | | | | | | |
| Lab Sample ID: 680-150889-1 | MS | | | | | | | | | Cli | ent Samp | e ID: | SB04 |
| Matrix: Solid | | | | | | | | | | | Prep Type | e: Tot | al/NA |
| Analysis Batch: 519778 | Sample | Sam | anle | Spike | | MS | MS | | | | Prep Bat | cn: 5 | 19/14 |
| Analyte | Result | Qua | lifier | Added | | Result | Qualifier | Unit | D | %Rec | Limits | | |
| Cyanide, Total | 0.20 | J | | 6.34 | | 6.85 | | mg/Kg | | 105 | 75 - 125 | | |
| | | | | | | | | | | | | | |
| Lab Sample ID: 680-150889-1 | MSD | | | | | | | | | Cli | ent Sampl | e ID: | SB04 |
| Matrix: Solid Analysis Batch: 519778 | | | | | | | | | | | Prep Type Prep Bat | e: 100 ch: 5/ | ai/NA 10717 |
| Analysis Baten, 515110 | Sample | Sam | nple | Spike | | MSD | MSD | | | | %Rec. | cn. 5 | RPD |
| Analyte | Result | Qua | difier | Added | | Result | Qualifier | Unit | D | %Rec | Limits | RPD | Limit |
| Cyanide, Total | 0.20 | J | | 6.41 | | 6.60 | | mg/Kg | — <u>\$</u> | 100 | 75-125 | 4 | 30 |
| Mothadi 0024 Culfida A | aid Cal | ubl | o and b | naalub | | Tituina | ofrio) | | | | | | |
| wethod: 9034 - Suinde, Ad | cia Soi | lau | e and l | nsolup | ie (| I Itrim | ietric) | | | | | | |
| Lab Sample ID: MB 680-51970 |)8/1-A | | | | | | | | Clie | ent Samp | ole ID: Me | thod | Blank |
| Matrix: Solid | | | | | | | | | | | Prep Type | e: Tot | al/NA |
| Analysis Batch: 519/10 | | MB | MB | | | | | | | | Prep Bat | ch: 5' | 19708 |
| Analyte | Re | sult | Qualifier | | RL | | MDL Unit | | D P | repared | Analyze | d | Dil Fac |
| Sulfide | | 60 | U | | 60 | | 60 mg/K | g | 04/1 | 12/18 04:00 | 04/12/18 0 | 4:30 | 1 |
| | | | | | | | | | | | | | |
| Lab Sample ID: LCS 680-5197 | ′08/2-A | | | | | | | Clie | nt Sa | mple ID: | Lab Cont | rol Sa | imple |
| Matrix: Solid Analysis Batch: 519710 | | | | | | | | | | | Prop Type | e: 100 ch:5/ | ai/NA 10709 |
| Analysis Batch. 515710 | | | | Spike | | LCS | LCS | | | | %Rec. | un. J | 197 00 |
| Analyte | | | | Added | | Result | Qualifier | Unit | D | %Rec | Limits | | |
| Sulfide | | | | 1250 | | 1180 | | mg/Kg | | 94 | 50 - 150 | | |
| Lab Sample ID: LCSD 680-519 | 9708/3-A | | | | | | c | Client Sa | mple | ID: Lab | Control S | ample | e Dup |
| Matrix: Solid | | | | | | | | | | | Prep Type | e: Tot | al/NA |
| Analysis Batch: 519710 | | | | Spike | | LCSD | LCSD | | | | Rec. | cn: 5' | RPD |
| Analyte | | | | Added | | Result | Qualifier | Unit | D | % Rec | Limits | RPD | Limit |
| Sulfide | | | | 1250 | | 1170 | | mg/Kg | | 93 | 50 - 150 | 1 | 50 |
| | | | | | | | | | | | | | |

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| | QC Samp | ole Resu | ılts | | | | == | |
|--|------------|---------------|-----------|------------|--------|--------------|---|---|
| Client: Georgia State University Project/Site: Monitoring Well Installation | | | | | l estA | merica | a Job ID: 680-150889-1 | |
| Method: 9045D - Corrosivity as | рΗ | | | | | | | |
| Lab Sample ID: LCS 680-520696/1 Matrix: Solid | | | | Clie | nt San | nple ID | : Lab Control Sample Prep Type: Total/NA | |
| Analysis Batch: 520696 | Spike | LCS | LCS | | | | %Rec. | 5 |
| Analyte corrosivity by pH | Added 7.00 | Result 7.1 | Qualifier | Unit SU | D | % Rec 101 | Limits | 6 |
| Lab Sample ID: 680-150889-1 DU | | | | | | С | lient Sample ID: SB04 | |
| Analysis Batch: 520696 | Sampla | DU | DU | | | | Prep Type: Total/NA | |
| Analyte Result | Qualifier | Result | Qualifier | Unit | D | | | |
| | ΠF | 5.0 | | 30 | | | 4 40 | |
| | | | | | | | | |
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Client: Georgia State University Project/Site: Monitoring Well Installation

| Project/Site: Monitorir | ng Well Installation | | IE | ID ID | 2 2 |
|-------------------------|------------------------|-----------|--------|--------|---|
| GC/MS VOA | | | | | 3 |
| Analysis Batch: 519 | 398 | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| LB 680-519459/1-A | Method Blank | Total/NA | Water | 8260B | 519459 5 |
| MB 680-519398/9 | Method Blank | Total/NA | Water | 8260B | |
| LCS 680-519398/4 | Lab Control Sample | Total/NA | Water | 8260B | |
| LCSD 680-519398/5 | Lab Control Sample Dup | Total/NA | Water | 8260B | ••••••••••••••••••••••••••••••••••••••• |
| Leach Batch: 51945 | 9 | | | | 7 |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| LB 680-519459/1-A | Method Blank | Total/NA | Water | 1311 | 8 |
| Analysis Batch: 519 | 536 | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-2 | MW-01 | Total/NA | Water | 8260B | 10 |
| 680-150889-3 | MW-02 | Total/NA | Water | 8260B | |
| 680-150889-4 | Trip Blank | Total/NA | Water | 8260B | |
| MB 680-519536/9 | Method Blank | Total/NA | Water | 8260B | |
| LCS 680-519536/5 | Lab Control Sample | Total/NA | Water | 8260B | |
| LCSD 680-519536/6 | Lab Control Sample Dup | Total/NA | Water | 8260B | |
| Prep Batch: 519552 | | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-1 | SB04 | Total/NA | Solid | 5035 | |
| Analysis Batch: 519 | 580 | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-1 | SB04 | Total/NA | Solid | 8260B | 519552 |
| MB 680-519580/11 | Method Blank | Total/NA | Solid | 8260B | |
| LCS 680-519580/4 | Lab Control Sample | Total/NA | Solid | 8260B | |
| LCSD 680-519580/5 | Lab Control Sample Dup | Total/NA | Solid | 8260B | |
| Leach Batch: 51959 | 9 | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-1 | SB04 | TCLP | Solid | 1311 | |
| LB 680-519599/1-A | Method Blank | TCLP | Solid | 1311 | |
| 680-150889-1 MS | SB04 | TCLP | Solid | 1311 | |
| 680-150889-1 MSD | SB04 | TCLP | Solid | 1311 | |
| Analysis Batch: 519 | 861 | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-1 | SB04 | TCLP | Solid | 8260B | 519599 |
| LB 680-519599/1-A | Method Blank | TCLP | Solid | 8260B | 519599 |
| MB 680-519861/9 | Method Blank | Total/NA | Solid | 8260B | |
| LCS 680-519861/4 | Lab Control Sample | Total/NA | Solid | 8260B | |
| LCSD 680-519861/5 | Lab Control Sample Dup | Total/NA | Solid | 8260B | |
| 680-150889-1 MS | SB04 | TCLP | Solid | 8260B | 519599 |
| 680-150889-1 MSD | SB04 | TCLP | Solid | 8260B | 519599 |

TestAmerica Savannah

Client: Georgia State University Project/Site: Monitoring Well Installation

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| GC/MS Semi VOA | i i | | | | |
|----------------------|------------------------|-----------|--------|--------|------------|
| Prep Batch: 519522 | | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-1 | SB04 | Total/NA | Solid | 3546 | |
| MB 680-519522/7-A | Method Blank | Total/NA | Solid | 3546 | |
| LCS 680-519522/8-A | Lab Control Sample | Total/NA | Solid | 3546 | |
| Leach Batch: 519572 | | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-1 | SB04 | TCLP | Solid | 1311 | |
| LB 680-519572/1-B | Method Blank | TCLP | Solid | 1311 | |
| Prep Batch: 519670 | | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-1 | SB04 | TCLP | Solid | 3520C | 519572 |
| LB 680-519572/1-B | Method Blank | TCLP | Solid | 3520C | 519572 |
| MB 680-519670/16-A | Method Blank | Total/NA | Solid | 3520C | |
| LCS 680-519670/20-A | Lab Control Sample | Total/NA | Solid | 3520C | |
| Prep Batch: 519677 | | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-2 | MW-01 | Total/NA | Water | 3520C | |
| 680-150889-3 | MW-02 | Total/NA | Water | 3520C | |
| MB 680-519677/8-A | Method Blank | Total/NA | W/ater | 3520C | |
| LCS 680-519677/9-A | Lab Control Sample | Total/NA | Water | 3520C | |
| LCSD 680-519677/10-A | Lab Control Sample Dup | Total/NA | Water | 3520C | |
| Analysis Batch: 5197 | 63 | | | | |
| Lab Sample ID | Client Sample ID | Prop Type | Matrix | Mathod | Prop Batch |
| MB 680-519522/7-A | Method Blank | Total/NA | Solid | 82700 | 519522 |
| LCS 680-519522/8-A | Lab Control Sample | Total/NA | Solid | 8270D | 519522 |
| Analysis Batch: 5200 | 45 | | | | |
| Lab Sample ID | Client Sample ID | Pren Tyne | Matrix | Method | Pren Batch |
| 680-150889-1 | SB04 | Total/NA | Solid | 8270D | 519522 |
| Analysis Patch: 5200 | 40 | Total TV | Solid | 02100 | 010022 |
| Analysis Batch. 5200 | 45 | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| MB 680-51967778-A | Method Blank | I otal/NA | Water | 8270D | 519677 |
| LCS 680-519677/9-A | Lab Control Sample | Total/NA | Water | 8270D | 519677 |
| LCSD 680-519677/10-A | Lab Control Sample Dup | Total/NA | Water | 8270D | 519677 |
| Analysis Batch: 5200 | 52 | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-2 | MVV-01 | Total/NA | Water | 8270D | 519677 |
| 680-150889-3 | MW-02 | Total/NA | Water | 8270D | 519677 |
| Analysis Batch: 5201 | 85 | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-1 | SB04 | TCLP | Solid | 8270D | 519670 |
| LB 680-519572/1-B | Method Blank | TCLP | Solid | 8270D | 519670 |
| MB 680-519670/16-A | Method Blank | Total/NA | Solid | 8270D | 519670 |
| LCS 680-519670/20-A | Lab Control Sample | Total/NA | Solid | 8270D | 519670 |

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Client: Georgia State University Project/Site: Monitoring Well Installation

HPLC/IC

Analysis Batch: 519736

680-150889-1 MSD

SB04

| HPLC/IC | | | | | |
|----------------------|------------------------|-----------|--------|--------|------------|
| Analysis Batch: 5197 | 736 | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-2 | MVV-01 | Total/NA | Water | 9056A | |
| 680-150889-2 | MVV-01 | Total/NA | Water | 9056A | |
| 680-150889-3 | MVV-02 | Total/NA | Water | 9056A | |
| 680-150889-3 | MW-02 | Total/NA | Water | 9056A | |
| MB 680-519736/88 | Method Blank | Total/NA | Water | 9056A | |
| LCS 680-519736/89 | Lab Control Sample | Total/NA | Water | 9056A | |
| LCSD 680-519736/90 | Lab Control Sample Dup | Total/NA | Water | 9056A | |
| Metals | | | | | |
| rep Batch: 519479 | | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-1 | SB04 | Total/NA | Solid | 7471B | |
| MB 680-519479/1-A | Method Blank | Total/NA | Solid | 7471B | |
| LCS 680-519479/2-A | Lab Control Sample | Total/NA | Solid | 7471B | |
| 680-150889-1 MS | SB04 | Total/NA | Solid | 7471B | |
| 680-150889-1 MSD | SB04 | Total/NA | Solid | 7471B | |
| Prep Batch: 519520 | | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-1 | SB04 | Total/NA | Solid | 3050B | |
| MB 680-519520/1-A | Method Blank | Total/NA | Solid | 3050B | |
| LCS 680-519520/2-A | Lab Control Sample | Total/NA | Solid | 3050B | |
| 680-150889-1 MS | SB04 | Total/NA | Solid | 3050B | |
| 680-150889-1 MSD | SB04 | Total/NA | Solid | 3050B | |
| Prep Batch: 519560 | | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-2 | MVV-01 | Total/NA | Water | 7470A | |
| 680-150889-3 | MW-02 | Total/NA | Water | 7470A | |
| MB 680-519560/13-A | Method Blank | Total/NA | Water | 7470A | |
| LCS 680-519560/14-A | Lab Control Sample | Total/NA | Water | 7470A | |
| _each Batch: 519572 | | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 000-150889-1 | | TOLP | Solid | 1311 | |
| LB 680-5195/2/1-C | wethod Blank | TOLP | Solid | 1311 | |
| LB 680-5195/2/1-D | Method Blank | ICLP | Solid | 1311 | |
| 680-150889-1 MS | SB04 | ICLP | Solid | 1311 | |
| 680-150889-1 MSD | SB04 | TCLP | Solid | 1311 | |
| Analysis Batch: 5197 | 787 | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-1 | SB04 | Total/NA | Solid | 6010C | 519520 |
| MB 680-519520/1-A | Method Blank | Total/NA | Solid | 6010C | 519520 |
| LCS 680-519520/2-A | Lab Control Sample | Total/NA | Solid | 6010C | 519520 |
| 680-150889-1 MS | SB04 | Total/NA | Solid | 6010C | 519520 |

6010C

Total/NA

Solid

4/20/2018

519520

TestAmerica Job ID: 680-150889-1

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| Metals (Continue | d) | | | | |
|----------------------|--------------------|-----------|--------|--------|------------|
| Prep Batch: 519887 | | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-1 | SB04 | TCLP | Solid | 7470A | 519572 |
| LB 680-519572/1-C | Method Blank | TCLP | Solid | 7470A | 519572 |
| MB 680-519887/1-A | Method Blank | Total/NA | Solid | 7470A | |
| LCS 680-519887/2-A | Lab Control Sample | Total/NA | Solid | 7470A | |
| 680-150889-1 MS | SB04 | TCLP | Solid | 7470A | 519572 |
| 680-150889-1 MSD | SB04 | TCLP | Solid | 7470A | 519572 |
| Analysis Batch: 5199 | 903 | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-1 | SB04 | Total/NA | Solid | 7471B | 519479 |
| MB 680-519479/1-A | Method Blank | Total/NA | Solid | 7471B | 519479 |
| LCS 680-519479/2-A | Lab Control Sample | Total/NA | Solid | 7471B | 519479 |
| 680-150889-1 MS | SB04 | Total/NA | Solid | 7471B | 519479 |
| 680-150889-1 MSD | SB04 | Total/NA | Solid | 7471B | 519479 |
| Analysis Batch: 519 | 944 | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-2 | MW-01 | Total/NA | Water | 7470A | 519560 |
| 680-150889-3 | MW-02 | Total/NA | Water | 7470A | 519560 |
| MB 680-519560/13-A | Method Blank | Total/NA | Water | 7470A | 519560 |
| LCS 680-519560/14-A | Lab Control Sample | Total/NA | Water | 7470A | 519560 |
| Prep Batch: 520055 | | | | | |
| Lah Sample ID | Client Sample ID | Pren Type | Matrix | Method | Pren Batch |
| 680-150889-2 | MW-01 | Total/NA | Water | 3010A | |
| 680-150889-3 | MW-02 | Total/NA | Water | 3010A | |
| MB 680-520055/1-A | Method Blank | Total/NA | Water | 3010A | |
| LCS 680-520055/2-A | Lab Control Sample | Total/NA | Water | 3010A | |
| Analysis Batch: 520 | 140 | | | | |
| Lah Sample ID | Client Sample ID | Pren Type | Matrix | Method | Pren Batch |
| 680-150889-1 | SB04 | TCLP | Solid | 7470A | 519887 |
| LB 680-519572/1-C | Method Blank | TCLP | Solid | 7470A | 519887 |
| MB 680-519887/1-A | Method Blank | Total/NA | Solid | 7470A | 519887 |
| LCS 680-519887/2-A | Lab Control Sample | Total/NA | Solid | 7470A | 519887 |
| 680-150889-1 MS | SB04 | TCLP | Solid | 7470A | 519887 |
| 680-150889-1 MSD | SB04 | TCLP | Solid | 7470A | 519887 |
| Prep Batch: 520523 | | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-1 | SB04 | TCLP | Solid | 3010A | 519572 |
| LB 680-519572/1-D | Method Blank | TCLP | Solid | 3010A | 519572 |
| MB 680-520523/1-A | Method Blank | Total/NA | Solid | 3010A | |
| LCS 680-520523/2-A | Lab Control Sample | Total/NA | Solid | 3010A | |
| 680-150889-1 MS | SB04 | TCLP | Solid | 3010A | 519572 |
| 680-150889-1 MSD | SB04 | TCLP | Solid | 3010A | 519572 |
| Analysis Batch: 5207 | 707 | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-2 | | Total/NA | Water | 6010C | 520055 |
| 680-150889-3 | MW-02 | Total/NA | Water | 6010C | 520055 |

TestAmerica Savannah

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Metals (Continued)

Analysis Batch: 520707 (Continued)

Client: Georgia State University Project/Site: Monitoring Well Installation

| Lab Sample ID | Client Sample ID | Prep Type | ₩atrix | ₩ethod | Prep Batch | |
|----------------------|--------------------|-----------|--------|------------|------------|---|
| MB 680-520055/1-A | Method Blank | Total/NA | Water | 6010C | 520055 | 5 |
| LCS 680-520055/2-A | Lab Control Sample | Total/NA | Water | 6010C | 520055 | |
| Analysis Batch: 5208 | 374 | | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch | 7 |
| 680-150889-1 | SB04 | TCLP | Solid | 6010C | 520523 | 1 |
| LB 680-519572/1-D | Method Blank | TCLP | Solid | 6010C | 520523 | |
| MB 680-520523/1-A | Method Blank | Total/NA | Solid | 6010C | 520523 | |
| LCS 680-520523/2-A | Lab Control Sample | Total/NA | Solid | 6010C | 520523 | |
| 680-150889-1 MS | SB04 | TCLP | Solid | 6010C | 520523 | |
| 680-150889-1 MSD | SB04 | TCLP | Solid | 6010C | 520523 | |
| Analysis Batch: 5208 | 277 | | | | | |
| | | | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch | |
| 680-150889-2 | MW-01 | Total/NA | Water | 2340B-2011 | | |
| 680-150889-3 | MW-02 | Total/NA | Water | 2340B-2011 | | |
| MB 680-520877/1 | Method Blank | Total/NA | Water | 2340B-2011 | | |
| | | | | | | |

General Chemistry

Analysis Batch: 519530

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|------------------------|-----------|--------|------------|------------|
| 680-150889-2 | MW-01 | Total/NA | Water | 2320B-2011 | |
| 680-150889-3 | MW-02 | Total/NA | Water | 2320B-2011 | |
| MB 680-519530/7 | Method Blank | Total/NA | Water | 2320B-2011 | |
| LCS 680-519530/8 | Lab Control Sample | Total/NA | Water | 2320B-2011 | |
| LCSD 680-519530/16 | Lab Control Sample Dup | Total/NA | Water | 2320B-2011 | |

Analysis Batch: 519542

| Lab Sample ID 680-150889-1 | Client Sample ID SB04 | Prep Type Total/NA | Matrix Solid | Method Moisture | Prep Batch |
|-------------------------------|--------------------------|-----------------------|-----------------|--------------------|------------|
| Prep Batch: 519708 | | | | | |
| Lab Sample ID 680-150889-1 | Client Sample ID | Prep Type Total/NA | Matrix Solid | Method 9030B | Prep Batch |
| MB 680-519708/1-A | Method Blank | Total/NA | Solid | 9030B | |
| LCS 680-519708/2-A | Lab Control Sample | Total/NA | Solid | 9030B | |
| LCSD 680-519708/3-A | Lab Control Sample Dup | Total/NA | Solid | 9030B | |

Analysis Batch: 519710

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---------------------|------------------------|-----------|--------|--------|------------|
| 680-150889-1 | SB04 | Total/NA | Solid | 9034 | 519708 |
| MB 680-519708/1-A | Method Blank | Total/NA | Solid | 9034 | 519708 |
| LCS 680-519708/2-A | Lab Control Sample | Total/NA | Solid | 9034 | 519708 |
| LCSD 680-519708/3-A | Lab Control Sample Dup | Total/NA | Solid | 9034 | 519708 |

Prep Batch: 519714

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|-------------------|------------------|-----------|--------|--------|------------|
| 680-150889-1 | SB04 | Total/NA | Solid | 9012B | |
| MB 680-519714/1-A | Method Blank | Total/NA | Solid | 9012B | |

TestAmerica Savannah

General Chemistry (Continued)

| General Chemist | ry (Continued) | | | | |
|---------------------|------------------------|-----------|--------|------------|------------|
| Prep Batch: 519714 | (Continued) | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| LCS 680-519714/2-A | Lab Control Sample | Total/NA | Solid | 9012B | · |
| 680-150889-1 MS | SB04 | Total/NA | Solid | 9012B | |
| 680-150889-1 MSD | SB04 | Total/NA | Solid | 9012B | |
| Analysis Batch: 519 | 733 | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-1 | SB04 | Total/NA | Solid | 1030 | · |
| MB 680-519733/1 | Method Blank | Total/NA | Solid | 1030 | |
| LCS 680-519733/2 | Lab Control Sample | Total/NA | Solid | 1030 | |
| LCSD 680-519733/12 | Lab Control Sample Dup | Total/NA | Solid | 1030 | |
| Analysis Batch: 519 | 778 | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-1 | SB04 | Total/NA | Solid | 9012B | 519714 |
| MB 680-519714/1-A | Method Blank | Total/NA | Solid | 9012B | 519714 |
| LCS 680-519714/2-A | Lab Control Sample | Total/NA | Solid | 9012B | 519714 |
| 680-150889-1 MS | SB04 | Total/NA | Solid | 9012B | 519714 |
| 680-150889-1 MSD | SB04 | Total/NA | Solid | 9012B | 519714 |
| Analysis Batch: 519 | 801 | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-2 | MW-01 | Total/NA | Water | 2540C-2011 | |
| 680-150889-3 | MW-02 | Total/NA | Water | 2540C-2011 | |
| MB 680-519801/1 | Method Blank | Total/NA | Water | 2540C-2011 | |
| LCS 680-519801/2 | Lab Control Sample | Total/NA | Water | 2540C-2011 | |
| LCSD 680-519801/3 | Lab Control Sample Dup | Total/NA | Water | 2540C-2011 | |
| Analysis Batch: 519 | 837 | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| MB 680-519837/1 | Method Blank | Total/NA | Water | 2540C-2011 | |
| LCS 680-519837/2 | Lab Control Sample | Total/NA | Water | 2540C-2011 | |
| LCSD 680-519837/3 | Lab Control Sample Dup | Total/NA | Water | 2540C-2011 | |
| Analysis Batch: 520 | 696 | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-150889-1 | SB04 | Total/NA | Solid | 9045D | |
| LCS 680-520696/1 | Lab Control Sample | Total/NA | Solid | 9045D | |
| 680-150889-1 DU | SB04 | Total/NA | Solid | 9045D | |

TestAmerica Savannah

Lab Chronicle

Client: Georgia State University Project/Site: Monitoring Well Installation

Client Sample ID: SB04

TestAmerica Job ID: 680-150889-1

Lab Sample ID: 680-150889-1 Matrix: Solid

| oate Collecte Date Receive | ed: 04/09/18 14 ed: 04/10/18 08 | 4:00 8:00 | | | | | | | Ma | atrix: Soli |
|-------------------------------|------------------------------------|-------------------------|-----|---------------|-------------------|-----------------|-----------------|-------------------------|---------|-------------|
| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
| TCLP | Leach | 1311 | | | 20.05 g | 400 mL | 519599 | 04/11/18 16:45 | EAB | TAL SAV |
| TCLP | Analysis Instrument | 8260B ID: CMSP2 | | 20 | 5 mL | 5 mL | 519861 | 04/13/18 14:41 | JLK | TAL SAV |
| TCLP | Leach | 1311 | | | 100.13 g | 2000 mL | 519572 | 04/11/18 16:50 | EAB | TAL SAV |
| TCLP | Prep | 3520C | | | 205.7 mL | 1 mL | 519670 | 04/12/18 15:10 | CMJ | TAL SAV |
| TCLP | Analysis Instrument | 8270D ID: CMSN | | 1 | | | 520185 | 04/17/18 01:31 | KNW | TAL SAV |
| TCLP | Leach | 1311 | | | 100.13 g | 2000 mL | 519572 | 04/11/18 16:50 | EAB | TAL SAV |
| TCLP | Prep | 3010A | | | 5 mL | 50 mL | 520523 | 04/18/18 13:16 | AJR | TAL SAV |
| TCLP | Analysis Instrument | 6010C ID: ICPF | | 1 | | | 520874 | 04/19/18 16:53 | BCB | TAL SAV |
| TCLP | Leach | 1311 | | | 100.13 g | 2000 mL | 519572 | 04/11/18 16:50 | EAB | TAL SAV |
| TCLP | Prep | 7470A | | | 0.5 mL | 50 mL | 519887 | 04/13/18 09:27 | NVF | TAL SAV |
| TCLP | Analysis Instrument | 7470A ID: LEEMAN2 | | 1 | | | 520140 | 04/16/18 09:24 | NVF | TAL SAV |
| Total/NA | Analysis Instrument | 1030 ID: NOEQUIP | | 1 | | | 519733 | 04/12/18 07:57 | CFJ | TAL SAV |
| Total/NA | Analysis Instrument | 9045D ID: GEpHM2 | | 1 | 19.91 g | 20 mL | 520696 | 04/19/18 13:18 | CFJ | TAL SAV |
| Total/NA | Analysis Instrument | Moisture ID: NOEQUIP | | 1 | | | 519542 | 04/11/18 09:25 | EAB | TAL SAV |

Client Sample ID: SB04 Date Collected: 04/09/18 14:00 Date Received: 04/10/18 08:00

Lab Sample ID: 680-150889-1 Matrix: Solid Percent Solids: 76.5

| | Batch | Batch | | Dil | Initial | Final | Batch | Prepared | | |
|-----------|-----------------------|------------------------|-----|--------|---------|--------|--------|----------------|---------|---------|
| Prep Type | Туре | Method | Run | Factor | Amount | Amount | Number | or Analyzed | Analyst | Lab |
| Total/NA | Prep | 5035 | | | 6.514 g | 5 mL | 519552 | 04/11/18 09:15 | FES | TAL SAV |
| Total/NA | Analysis Instrumen | 8260B t ID: CMSAB | | 1 | 5 g | 5 g | 519580 | 04/11/18 18:08 | JLK | TAL SAV |
| Total/NA | Prep | 3546 | | | 15.51 g | 1 mL | 519522 | 04/11/18 08:30 | JAM | TAL SAV |
| Total/NA | Analysis Instrumen | 8270D t ID: CMSN | | 1 | | | 520045 | 04/15/18 21:02 | DBM | TAL SAV |
| Total/NA | Prep | 3050B | | | 1.17 g | 100 mL | 519520 | 04/11/18 06:50 | CDD | TAL SAV |
| Total/NA | Analysis Instrumen | 6010C t ID: ICPF | | 1 | | | 519787 | 04/11/18 21:10 | BCB | TAL SAV |
| Total/NA | Prep | 7471B | | | 0.58 g | 50 mL | 519479 | 04/10/18 15:11 | NVF | TAL SAV |
| Total/NA | Analysis Instrumen | 7471B t ID: LEEMAN2 | | 1 | | | 519903 | 04/12/18 17:59 | NVF | TAL SAV |
| Total/NA | Prep | 9012B | | | 1.01 g | 50 mL | 519714 | 04/12/18 05:29 | DAM | TAL SAV |
| Total/NA | Analysis Instrumen | 9012B t ID: LACHAT1 | | 1 | | | 519778 | 04/12/18 10:14 | DAM | TAL SAV |
| Total/NA | Prep | 9030B | | | 1.05 g | 6 mL | 519708 | 04/12/18 04:00 | DAM | TAL SAV |

TestAmerica Savannah

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4/20/2018

| | | | | Lab (| Chronicl | е | | | | |
|---|--|----------------------------------|-----|---------------|-------------------|-----------------|------------------|----------------------------------|---------------|--------------------------------|
| Client: Georgia Project/Site: N | a State Unive Ionitoring We | ersity Il Installation | | | | | T | TestAmerica Jo | ob ID: 68 | 0-150889-1 |
| Client Sam | ple ID: SB | 04 | | | | | La | ib Sample I | D: 680- M | 150889-1 atrix: Solid |
| Date Receive | d: 04/10/18 0 | 8:00 | | | | | | P | ercent S | olids: 76.5 |
| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
| Total/NA | Analysis Instrumer | 9034 nt ID: NOEQUIP | | 1 | 6 mL | 6 mL | 519710 | 04/12/18 04:30 | DAM | TAL SAV |
| Client Sam Date Collecte Date Receive | ple ID: MW d: 04/09/18 (d: 04/10/18 0 | /-01 09:00 08:00 | | | | | La | b Sample I | D: 680- Ma | 150889-2 trix: Water |
| Pren Tyne | Batch | Batch Method | Run | Dil | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
| Total/NA | Analysis Instrumer | 8260B nt ID: CMSP2 | | 1 | 5 mL | 5 mL | 519536 | 04/11/18 15:14 | Y1S | TAL SAV |
| Total/NA Total/NA | Prep Analysis Instrumer | 3520C 8270D nt ID: CMST | | 1 | 1039.4 mL | 1 mL | 519677 520052 | 04/12/18 15:10 04/16/18 00:03 | CMJ KNW | TAL SAV TAL SAV |
| Total/NA | Analysis Instrumer | 9056A nt ID: CICK | | 1 | 5 mL | 5 mL | 519736 | 04/12/18 20:38 | CJM | TAL SAV |
| Total/NA | Analysis Instrumer | 9056A nt ID: CICK | | 5 | 5 mL | 5 mL | 519736 | 04/12/18 20:51 | CJM | TAL SAV |
| Total/NA | Analysis Instrumer | 2340B-2011 nt ID: NOEQUIP | | 1 | | | 520877 | 04/20/18 12:15 | BCB | TAL SAV |
| Total/NA Total/NA | Prep Analysis Instrumer | 3010A 6010C nt ID: ICPF | | 1 | 50 mL | 50 mL | 520055 520707 | 04/14/18 16:02 04/18/18 19:12 | AJR BCB | TAL SAV TAL SAV |
| Total/NA Total/NA | Prep Analysis Instrumer | 7470A 7470A nt ID: LEEMAN2 | | 1 | 50 mL | 50 mL | 519560 519944 | 04/11/18 09:42 04/13/18 08:23 | NVF NVF | TAL SAV TAL SAV |
| Total/NA | Analysis Instrumer | 2320B-2011 nt ID: MANTECH | | 1 | | | 519530 | 04/10/18 18:09 | BTD | TAL SAV |
| Total/NA | Analysis Instrumer | 2540C-2011 nt ID: NOEQUIP | | 1 | 50 mL | 100 mL | 519801 | 04/11/18 12:30 | BTD | TAL SAV |

Client Sample ID: MW-02 Date Collected: 04/09/18 09:55 Date Received: 04/10/18 08:00

Lab Sample ID: 680-150889-3 Matrix: Water

| Prep Type Total/NA | Batch Type Analysis Instrument | Batch Method 8260B ID: CMSP2 | Run | Dil Factor 1 | Initial Amount 5 mL | Final Amount 5 mL | Batch Number 519536 | Prepared or Analyzed 04/11/18 18:32 | Analyst Y1S | Lab TAL SAV |
|-----------------------|---|---------------------------------------|-----|--------------------|---------------------------|-------------------------|---------------------------|---|----------------|--------------------|
| Total/NA Total/NA | Prep Analysis Instrument | 3520C 8270D : ID: CMST | | 1 | 1043.9 mL | 1 mL | 519677 520052 | 04/12/18 15:10 04/16/18 00:27 | CMJ KNW | TAL SAV TAL SAV |
| Total/NA | Analysis Instrument | 9056A : ID: CICK | | 1 | 5 mL | 5 mL | 519736 | 04/12/18 21:04 | CJM | TAL SAV |

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Lab Chronicle

Client: Georgia State University Project/Site: Monitoring Well Installation

Client Sample ID: MW-02

Date Collected: 04/09/18 09:55

TestAmerica Job ID: 680-150889-1

Lab Sample ID: 680-150889-3 Matrix: Water

| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
|----------------------|-------------------------------|---------------------------------|-----|---------------|-------------------|-----------------|------------------|----------------------------------|------------|--------------------|
| otal/NA | Analysis Instrumen | 9056A t ID: CICK | | 5 | 5 mL | 5 mL | 519736 | 04/12/18 21:17 | CJM | TAL SAV |
| Fotal/NA | Analysis Instrumen | 2340B-2011 t ID: NOEQUIP | | 1 | | | 520877 | 04/20/18 12:15 | BCB | TAL SAV |
| Total/NA Total/NA | Prep Analysis Instrumen | 3010A 6010C t ID: ICPF | | 1 | 50 mL | 50 mL | 520055 520707 | 04/14/18 16:02 04/18/18 19:06 | AJR BCB | TAL SAV TAL SAV |
| Total/NA Total/NA | Prep Analysis Instrumen | 7470A 7470A t ID: LEEMAN2 | | 1 | 50 mL | 50 mL | 519560 519944 | 04/11/18 09:42 04/13/18 08:33 | NVF NVF | TAL SAV TAL SAV |
| Total/NA | Analysis Instrumen | 2320B-2011 t ID: MANTECH | | 1 | | | 519530 | 04/10/18 18:15 | BTD | TAL SAV |
| Fotal/NA | Analysis Instrumen | 2540C-2011 t ID: NOEQUIP | | 1 | 50 mL | 100 mL | 519801 | 04/11/18 12:30 | BTD | TAL SAV |

Client Sample ID: Trip Blank Date Collected: 04/09/18 00:00 Date Received: 04/10/18 08:00

Lab Sample ID: 680-150889-4 Matrix: Water

| Prep Type Total/NA | Batch Type Analysis | Batch Method 8260B | Run | Dil Factor | Initial Amount 5 mL | Final Amount 5 mL | Batch Number 519536 | Prepared or Analyzed 04/11/18 14:25 | Analyst Y1S | Lab TAL SAV |
|-----------------------|---------------------------|--------------------------|-----|---------------|---------------------------|-------------------------|---------------------------|---|----------------|----------------|
| | Instrument | ID: CMSP2 | | | | | | | | |

Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

TestAmerica Savannah

| | Accreditatio | on/Certificatio | n Summary | | |
|--|--|-----------------|-----------------------|-------------------------------|---|
| Client: Georgia State Project/Site: Monitorin | University g Well Installation | | Tes | tAmerica Job ID: 680-150889-1 | |
| Laboratory: Test | America Savannah ions listed below are applicable to this r | report. | | | |
| Authority | Program | EPA Region | Identification Number | Expiration Date | |
| Georgia | State Program | 4 | 803 | 06-30-18 | 5 |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | 9 |
| | | | | | |
| | | | | | |

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Method Summary

Client: Georgia State University Project/Site: Monitoring Well Installation

Metals (ICP)

Mercury (CVAA)

Mercury (CVAA)

Ignitability, Solids

Corrosivity as pH

Percent Moisture

TCLP Extraction

Preparation, Total Metals

Preparation, Metals

Microwave Extraction

Preparation, Mercury

Preparation, Mercury

Purge and Trap

Alkalinity, Total

Method Description

Anions, Ion Chromatography

Volatile Organic Compounds (GC/MS)

Semivolatile Organic Compounds (GC/MS)

Total Hardness (as CaCO3) by calculation

Total Dissolved Solids (Dried at 180 °C)

Liquid-Liquid Extraction (Continuous)

Closed System Purge and Trap

Sulfide, Acid Soluble and Insoluble (Titrimetric)

Cyanide, Total andor Amenable

Method

8260B

8270D

9056A

6010C

7470A

7471B

1030

9012B

9045D

Moisture

9034

1311

3010A

3050B

3520C

5030B

5035

7470A

7471B

9012B

9030B

3546

2340B-2011

2320B-2011

2540C-2011

TestAmerica Job ID: 680-150889-1

Laboratory

TAL SAV

Protocol

SW846

EPA

SM

SM

SM

| 10 | |
|----|--|
| 11 | |
| | |

| Protocol | References |
|----------|------------|

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

Cyanide, Total and/or Amenable, Distillation

Sulfide, Distillation (Acid Soluble and Insoluble)

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

Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

TestAmerica Savannah

| TestAmerica Savannah | | | | | | | | | | | | | | | | 24 |
|--|------------------------|---------------|---------------------------------------|---------------------------------------|--|---------------|---------------------|----------------|-------------|----------------|------------|-------------------------------|-------------|-----------------|---|--|
| 5102 LaRoche Avenue Bovanneh, GA 31404 Ponse / 4301 Statz Peter Ex. / 6303 Stor Alee | 0 | Chain (| of Cus | tody R | ecor | - | | | | 5 | tan | 84-2 | 3 | | €ST> | 20200 |
| Client Information | Sampler: | | | Lab Pr | Korton Korto | | | | | Ca | mer Tra | king No | (s): | | COC No: | |
| Cliant Contact: Dr. Brian Meyer | Phone: | | | E-Mail | | | | | | Τ | | | | | 680-92602-36878 Page: | 8.1 |
| Company: Georgia State University | | | | עכמור | | Clean | amence | A matu | E 4 | | | | | | Page 1 of 2 Job#: | |
| Address: Dept of GeoSciences 24 Peachtree Center Avenue Suite 340 | Due Date Reques | :ed: | | | | | F | | | | | | | - | Preservation Code | |
| City. Atlanta | TAT Requested (d | ays): | | | | | | | | | | | | | A - HCL B - NaOH | M - Hexane N - None |
| State, Zip: GA, 30303 | | | | | | | | | | | | | | | C - Zn Acetate D - Nitric Acid E - NaHSO4 | 0 - AsNaO2 P - Na204S 0 - Na2SO3 |
| Phone: 404-391-3339(Tel) | PO #: Purchase Orde | r not require | | | 6 | _ | | | | | əfe'l | | | | F - MeCH G - Amchlor | R - Na2S203 S - H2S04 |
| Email: bmeyer2@gsu.edu | :# OM | | | | le) or No | | | | | _ | ng % e | | | ę | H - Ascorbic Acid 1 - Ice | 1 - TSP Dodecahydrate U - Acetone |
| Project Name: Monitoring Well Installation | Project #: 68019780 | | | | 6967) (| | | | _ | tiles D | phold; | E | | spiloS | K - EDTA | v - muceo W - pH 4-5 Z - other (specify) |
| Site: | SSOW#: | | | | anne SD (X0 | | | səlltek | | 4, 904 (b) | 28D - C | | | pevlos | Other: | |
| Sample Identification | Sample Date | Sample | Sample Type (C=comp, G=orab) | Matrix Wewaterald, Oewastelall, | Sberetu 1 bian M/SM phitethe M/SM phitethe | S60B - VOCs | 220D - 2X0D - 2X0C+ | S608 - TCLP Vo | A0747, 2010 | 220D - TCLP Se | MRDRO_A880 | 2208 - Alfalinity 22.09.02 | SODB - AOCS | sid IsloT - Obk | S JOUWIN (B)G | |
| | X | X | Preserva | BIOTI Code | | 8 7 | 8 Z 9 Z | 8 3 | 9 7 | 8 | 6 7 | 5 | .8 | 17 | Special Inst | tructions/Note: |
| 5BOA | Alglig | (ACO | I | Solid | | - | | : | | 2 | 2 | | < | 2 | | |
| 5BOA | 419118 | 141V | J | Solid | - | - | | r. | | - | | + | | | | |
| | | | | Solid | | | ┢ | 7 | 1 | - | | + | | <u>* .</u> | | |
| NW-OI | | | | Water | | | | | | - | - | - | 6 | - | 4 | |
| MW-OZ | | | | Water | | | 1 | | | ╞ | - | | 26 | | | |
| | | | | Water | | | | | | + | - | - | | - | | |
| | | | | Water | | | - | † | | | | | | | 1 | |
| | | | | Water | | | - | 1 | | | | | | | | |
| | | | | | | | - | 1 | | | | | | | | |
| | | | | | | | - | 1 1 | 680-1 | 50883 | 0 Cha | Ú Ú | ustody | | | |
| Breakhia Hassed Identification | | | | | | | | _ | _ | _ | _ | - | _ | | - | |
| Non-Hazard Crammable Skin Irriant Coison | 1 B [] | | dintocinal | | Sampi | e Disp | osal (| A fee / | nay bi | 9 2550 | ssed | samp | les an | e retal | ned longer than 1 n | nonth) |
| Deliverable Requested: I, II, III, IV, Other (specify) | | | innikoioin | | Specia | Instru | ctions/ | ac Re | quiren | Tents: | Sal B | Lab | | AG | hive For | Months |
| Empty Kit Reinquished by: | | Date: | | | ime: | | | | | | Metho | d of Ship | ment: | | | |
| Kelinquished by | Date/Time: | 10 | 66.6 | ompany C | Rec | in the second | | R | | K | | R | STING. | 1 | | ~ Auterturo |
| Relinquighed by: | Date/Time: | 7:25 | | Alenha | VER _ | eived by | 8 | N | 1 | 1 | | | (Time: | | | Jul U Company |
| | Date/Time: | | <u> </u> | ompany | Rec | d bavit | H | 6 | 2 | K | 17 | Dat | ou// | 10 | 08:00 | Company 72 |
| oustudy areats milliard: Uutstody seal No.: ∆ Yes ∆ No | | | | | 2000 | ler Tem | oerature | (s) °C ar | Id Other | Remar | | 10/. | 15 | 1 | 1.7/1.2.0 | |
| | | | | | • | | | | | 1 | - | 1 | | | | Ver: 08/04/2016 |
| | | | | | | | | 12 | 11 | | | | | | 4 5 6 | |
| | | | | | | | | 2 | 1 | | | | | | | |

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Login Sample Receipt Checklist

| Login Sample Recei | pt Checkl | ist | |
|---|-----------|---|--------|
| Client: Georgia State University | | Job Number: 680-150889-1 | |
| Login Number: 150889 List Number: 1 Creator: Edwards, Jessica R | | List Source: TestAmerica Savannah | 4 5 |
| Question | Answer | Comment | |
| Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td> <td></td> | N/A | | |
| The cooler's custody seal, if present, is intact. | True | | |
| Sample custody seals, if present, are intact. | True | | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | | |
| Samples were received on ice. | True | | |
| Cooler Temperature is acceptable. | True | | |
| Cooler Temperature is recorded. | True | | |
| COC is present. | True | | |
| COC is filled out in ink and legible. | True | | 12 |
| COC is filled out with all pertinent information. | False | No date or time on COC or containers. | 12 |
| Is the Field Sampler's name present on COC? | N/A | | |
| There are no discrepancies between the containers received and the COC. | False | Refer to Job Narrative for details. | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | | |
| Sample containers have legible labels. | True | | |
| Containers are not broken or leaking. | True | | |
| Sample collection date/times are provided. | False | No date or time on COC or sample containers | |
| Appropriate sample containers are used. | True | | |
| Sample bottles are completely filled. | True | | |
| Sample Preservation Verified. | True | | |
| There is sufficient vol. for all requested analyses, incl. any requested $\ensuremath{MS/MSDs}$ | True | | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | True | | |
| Multiphasic samples are not present. | True | | |
| Samples do not require splitting or compositing. | True | | |
| Residual Chlorine Checked. | N/A | | |

TestAmerica Savannah

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<u>TestAmerica</u>

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc. TestAmerica Savannah 5102 LaRoche Avenue Savannah, GA 31404 Tel: (912)354-7858

TestAmerica Job ID: 680-159059-1 Client Project/Site: Monitoring Well Installation

For:

Georgia State University Dept of GeoSciences 24 Peachtree Center Avenue Suite 340 Atlanta, Georgia 30303

Attn: Dr. Brian Meyer

Mik Com

Authorized for release by: 10/22/2018 4:05:23 PM Keaton Conner, Project Manager I (813)885-7427

keaton.conner@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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

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

1

Definitions/Glossary

| Client: Georg | gia State University TestAmerica Job ID: 680-159059-1 | |
|---------------|--|------|
| Project/Site: | Monitoring Well Installation | 2 |
| Qualifiers | ; | 3 |
| HPLC/IC | | |
| Qualifier | Qualifier Description | |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. | |
| U | Indicates the analyte was analyzed for but not detected. | 0 |
| Metals | | |
| Qualifier | Qualifier Description | |
| В | Compound was found in the blank and sample. | 7 |
| J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. | |
| U | Indicates the analyte was analyzed for but not detected. | |
| General Ch | emistry | |
| Qualifier | Qualifier Description | |
| U | Indicates the analyte was analyzed for but not detected. | • |
| Glossary | | . 10 |
| Abbreviation | These commonly used abbreviations may or may not be present in this report. | |
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis | . 49 |
| %R | Percent Recovery | |
| CFL | Contains Free Liquid | |
| CNF | Contains No Free Liquid | |

- DER Duplicate Error Ratio (normalized absolute difference) Dil Fac Dilution Factor DL Detection Limit (DoD/DOE) DL, RA, RE, IN Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample Decision Level Concentration (Radiochemistry) DLC EDL Estimated Detection Limit (Dioxin) LOD Limit of Detection (DoD/DOE) LOQ Limit of Quantitation (DoD/DOE) MDA Minimum Detectable Activity (Radiochemistry) MDC Minimum Detectable Concentration (Radiochemistry) MDL Method Detection Limit ML Minimum Level (Dioxin) NC Not Calculated ND Not Detected at the reporting limit (or MDL or EDL if shown) PQL Practical Quantitation Limit Quality Control QC RER Relative Error Ratio (Radiochemistry) Reporting Limit or Requested Limit (Radiochemistry) RL RPD Relative Percent Difference, a measure of the relative difference between two points TEF Toxicity Equivalent Factor (Dioxin)
- TEQ Toxicity Equivalent Quotient (Dioxin)

TestAmerica Savannah

| | Sam | ole Summary | | 1 |
|--|--|-------------|------------------------------|--------------------|
| Client: Georgia St Project/Site: Moni | ate University toring Well Installation | | estAmerica Job ID: 680-15905 | ⁵⁹⁻¹ 2 |
| Lab Sample ID | Client Samle ID | Matrix | Collected Receive | |
| 680-159059-1 | RW - 01 | Water | 10/07/18 14:00 10/10/18 0 | ^{99:40} 4 |
| | | | | 5 |
| | | | | |
| | | | | |
| | | | | 8 |
| | | | | 9 |
| | | | | |
| | | | | |

10/22/2018

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Case Narrative

Client: Georgia State University Project/Site: Monitoring Well Installation

Job ID: 680-159059-1

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE Client: Georgia State University Project: Monitoring Well Installation

Report Number: 680-159059-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT

The samples were received on 10/10/2018; the samples arrived in good condition and properly preserved. The temperature of the coolers at receipt was 21.6° C.

RECEIPT EXCEPTIONS

The following sample was received at the laboratory outside the required temperature criteria: RW - 01 (680-159059-1). The client was contacted regarding this issue, and the laboratory was instructed to proceed with analysis.

METALS (ICP)

Sample RW - 01 (680-159059-1) was analyzed for Metals (ICP) in accordance with EPA SW-846 Method 6010C. The samples were prepared on 10/13/2018 and analyzed on 10/22/2018.

Aluminum, Calcium and Silver were detected in method blank MB 680-543244/1-A at levels that were above the method detection limit but below the reporting limit. The values should be considered estimates, and have been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

<u>ALKALINITY</u>

Sample RW - 01 (680-159059-1) was analyzed for alkalinity in accordance with SM 2320B. The samples were analyzed on 10/15/2018.

TOTAL DISSOLVED SOLIDS

Sample RW - 01 (680-159059-1) was analyzed for total dissolved solids in accordance with SM 2540C. The samples were analyzed on 10/11/2018.

9056 ANIONS

Sample RW - 01 (680-159059-1) was analyzed for 9056 Anions in accordance with SW 846 9056. The samples were analyzed on 10/21/2018.

TOTAL HARDNESS (AS CACO3) BY CALCULATION

Sample RW - 01 (680-159059-1) was analyzed for total hardness (as CaCO3) by calculation in accordance with SM 2340B. The samples were analyzed on 10/22/2018.

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TestAmerica Savannah 10/22/2018 4

TestAmerica Job ID: 680-159059-

| | | Client | Sample R | esul | ts | | | | |
|--|------------|-----------|-------------|------|------|----|----------------|----------------|---------|
| Client: Georgia State University Project/Site: Monitoring Well Instal | lation | | | | | Т | estAmerica . | lob ID: 680-15 | 9059-1 |
| Client Sample ID: RW - 01 | | | | | | La | b Sample | ID: 680-159 | 059-1 |
| Date Collected: 10/07/18 14:00 Date Received: 10/10/18 09:40 | | | | | | | | Matrix | : Water |
| Method: 9056A - Anions, Ion Cl | hromatogr | aphy | | | | | | | |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| Chloride | 0.41 | J | 0.50 | 0.20 | mg/L | | | 10/21/18 00:40 | 1 |
| Sulfate | 0.40 | U | 1.0 | 0.40 | mg/L | | | 10/21/18 00:40 | 1 |
| - Method: 2340B-2011 - Total Hai | rdness (as | CaCO3) by | calculation | | | | | | |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| Hardness as calcium carbonate | 3.3 | U | 3.3 | 3.3 | mg/L | | | 10/22/18 15:22 | 1 |
| Ξ | | | | | - | | | | |
| Method: 6010C - Metals (ICP) | _ | | | | | | _ | | |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| Aluminum | 68 | JB | 200 | 24 | ug/L | | 10/13/18 10:15 | 10/22/18 14:46 | 1 |
| Antimony | 12 | J | 20 | 5.3 | ug/L | | 10/13/18 10:15 | 10/22/18 14:46 | 1 |
| Arsenic | 6.2 | U | 20 | 6.2 | ug/L | | 10/13/18 10:15 | 10/22/18 14:46 | 1 |
| Barium | 130 | | 10 | 1.7 | ug/L | | 10/13/18 10:15 | 10/22/18 14:46 | 1 |
| Beryllium | 0.10 | U | 4.0 | 0.10 | ug/L | | 10/13/18 10:15 | 10/22/18 14:46 | 1 |
| Cadmium | 1.0 | U | 5.0 | 1.0 | ug/L | | 10/13/18 10:15 | 10/22/18 14:46 | |
| Calcium | 610 | в | 500 | 25 | ug/L | | 10/13/18 10:15 | 10/22/18 14:46 | 1 |
| Chromium | 1.6 | U | 10 | 1.6 | ug/L | | 10/13/18 10:15 | 10/22/18 14:46 | 1 |
| Codait | 1.0 | | 10 | 1.0 | ug/L | | 10/13/18 10:15 | 10/22/18 14:46 | 1 |
| Copper | 7.8 | 3 | 20 | 1.0 | ug/L | | 10/13/16 10.15 | 10/22/10 14:46 | 1 |
| lead | 48 | J | 10 | 30 | ug/L | | 10/13/18 10:15 | 10/22/18 14:46 | 1 |
| Magnaaium | 120 | • | 500 | 3.9 | ug/L | | 10/13/18 10:15 | 10/22/18 14:46 | ····· |
| Magnesium | 6.1 | | 10 | 10 | ug/L | | 10/13/18 10:15 | 10/22/18 14:46 | 1 |
| Nickel | 21 | U U | 40 | 2.1 | ug/L | | 10/13/18 10:15 | 10/22/18 14:46 | 1 |
| Potaesium | 033 | | 1000 | 17 | ug/L | | 10/13/18 10:15 | 10/22/18 14:46 | ····· 1 |
| Selenium | 99 | ŭ | 20 | 99 | ug/L | | 10/13/18 10:15 | 10/22/18 14:46 | 1 |
| Silver | 0.85 | JB | 10 | 0.60 | ug/L | | 10/13/18 10:15 | 10/22/18 14:46 | 1 |
| Sodium | 490 | 1 | 1000 | 480 | ua/L | | 10/13/18 10:15 | 10/22/18 14:46 | |
| Thallium | 6.0 | U | 25 | 6.0 | ug/L | | 10/13/18 10:15 | 10/22/18 14:46 | 1 |
| Vanadium | 1.0 | U | 10 | 1.0 | ua/L | | 10/13/18 10:15 | 10/22/18 14:46 | 1 |
| Zinc | 71 | | 20 | 7.0 | ug/L | | 10/13/18 10:15 | 10/22/18 14:46 | 1 |
| General Chemistry | | | | | | | | | |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac |
| Alkalinity | 5.0 | U | 5.0 | 5.0 | mg/L | | | 10/15/18 11:51 | 1 |
| Bicarbonate Alkalinity as CaCO3 | 5.0 | U | 5.0 | 5.0 | mg/L | | | 10/15/18 11:51 | 1 |
| Carbonate Alkalinity as CaCO3 | 5.0 | U | 5.0 | 5.0 | mg/L | | | 10/15/18 11:51 | 1 |
| Hydroxide Alkalinity | 5.0 | U | 5.0 | 5.0 | mg/L | | | 10/15/18 11:51 | 1 |
| Carbon Dioxide, Free | 5.0 | U | 5.0 | 5.0 | mg/L | | | 10/15/18 11:51 | 1 |
| Phenolphthalein Alkalinity | 5.0 | U | 5.0 | 5.0 | mg/L | | | 10/15/18 11:51 | 1 |
| Bicarbonate ion as HCO3 | 6.1 | U | 6.1 | 6.1 | mg/L | | | 10/15/18 11:51 | 1 |
| Total Dissolved Solids | 5.0 | U | 5.0 | 5.0 | mg/L | | | 10/11/18 07:03 | 1 |

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| light: Coordin State University | | | QC | Sam | ole | Resi | ults | | | Ŧ | oot Amoria- | | 0 150 | 050 4 |
|--|--|---|--|-------|---|--------------------------------|--|---|--------------|----------|--|--|---|---|
| roject/Site: Monitoring Well In: | y Istallation | | | | | | | | | I | estAmerica | 00 U. 00 | 0-108 | 9009-1 |
| lethod: 9056A - Anions | , Ion Chi | ron | natogra | phy | | | | | | | | | | |
| Lab Sample ID: MB 680-544 | 217/65 | | | | | | | | | | Client Samp | ole ID: Me | thod | Blank |
| Matrix: Water | | | | | | | | | | | | Prep Type | e: To | tal/NA |
| Analysis Batch: 544217 | | | | | | | | | | | | | | |
| | | МВ | MB | | | | | | | | | | | |
| Analyte | Re | sult | Qualifier | | RL | | MDL U | nit | | D | Prepared | Analyze | d | Dil Fac |
| Chloride | | 0.20 | U | | 0.50 | | 0.20 m | g/L | | _ | | 10/20/18 1 | 9:56 | 1 |
| Sulfate | | 0.40 | U | | 1.0 | | 0.40 m | g/L | | | | 10/20/18 1 | 9:56 | 1 |
| Lab Sample ID: LCS 680-544 | 4217/66 | | | | | | | | Cli | ent | Sample ID: | Lab Cont | rol S | ample |
| Matrix: Water | | | | | | | | | | | | Prep Typ | e: To | tal/NA |
| Analysis Batch: 544217 | | | | | | | | | | | | | | |
| | | | | Spike | | LCS | LCS | | | | | %Rec. | | |
| Analyte | | | | Added | | Result | Qualifi | er | Unit | | D %Rec | Limits | | |
| Chloride | | | | 10.0 | | 9.98 | | <u> </u> | ma/L | | | 90-110 | | |
| Sulfate | | | | 10.0 | | 9.00 9.00 | | | ma/l | | 100 | 90_110 | | |
| unuto | | | | 10.0 | | 5.55 | | | mg/L | | 100 | 50-110 | | |
| ab Sample ID: LCSD 680-54 | 44217/67 | | | | | | | C | lient S | am | ple ID: Lab | Control S | ampl | e Dup |
| Matrix: Water | | | | | | | | | | | | Prep Type | e: To | tal/NA |
| Analysis Batch: 544217 | | | | | | | | | | | | | | |
| | | | | Spike | | LCSD | LCSD | | | | | %Rec. | | RPD |
| nalyte | | | | Added | | Result | Qualifi | er | Unit | | D %Rec | Limits | RPD | Limit |
| Chloride | | | | 10.0 | | 9.92 | | | mg/L | | 99 | 90-110 | 1 | 15 |
| Sulfate | | | | 10.0 | | 9.71 | | | mg/L | | 97 | 90-110 | 3 | 15 |
| | | | | | | | | | - | | | | | |
| Lab Sample ID: 680-159059- | -1 DU | | | | | | | | | | Client | t Sample | ID: R | W - 01 |
| Matrix: Water | | | | | | | | | | | | Pren Typ | e: To | tal/NA |
| alveis Batch: 544217 | | | | | | | | | | | | i icp i jp | | cuntor (|
| analysis Baten: 544217 | Sample | San | nole | | | DU | DU | | | | | | | RPD |
| | - and the second | - | lifior | | | Result | Oualifi | er | Unit | | п | | RPD | Limit |
| Analyte | Result | QU2 | mmer | | | | | •. | | | | | | 45 |
| Analyte | Result | Qua | | | | 0 403 | J | | ma/l | | | | - 3 | 10 |
| Analyte | 0.41 | Qua J | | | | 0.403 | J | | mg/L mg/l | | | | 3 NC | 15 |
| nnalyte Chloride Sulfate | Result 0.41 0.40 | Qua J U | | | | 0.403 0.40 | J U | | mg/L mg/L | | | | 3 NC | 15 |
| Analyte | Result 0.41 0.40 otal Harc | Qua J U | ss (as (| CaCO3 | 3) by | 0.403 0.40 | | on | mg/L mg/L | | | | 3 NC | 15 |
| Analyte Chloride Sulfate Iethod: 2340B-2011 - To | Result 0.41 0.40 Otal Harc | Qua J U | ss (as (| CaCO3 | B) by | 0.403 0.40 7 calc | U U U | on | mg/L mg/L | | Client Same | | 3 NC | 15 15 |
| Analyte Chloride Sulfate lethod: 2340B-2011 - To Lab Sample ID: MB 680-544 | Result 0.41 0.40 otal Harc 401/1 | Qua J U | ss (as (| CaCO3 | B) by | 0.403 0.40 | U U U | on | mg/L mg/L | | Client Samp | ole ID: Me | 3 NC | 15 15 Blank |
| Analyte Chloride Sulfate lethod: 2340B-2011 - To Lab Sample ID: MB 680-5444 Matrix: Water | Result 0.41 0.40 0tal Harc 401/1 | Qua J U | ss (as (| CaCO3 | B) by | 0.403 0.40 | | on | mg/L mg/L | | Client Samp | ole ID: Me Prep Type | 3 NC thod e: To | Blank tal/NA |
| Malyte Chloride Sulfate ethod: 2340B-2011 - To Lab Sample ID: MB 680-5444 Matrix: Water Analysis Batch: 544401 | Result 0.41 0.40 0tal Harc 401/1 | | SS (as (| CaCO3 | B) by | 0.403 0.40 | | on | mg/L mg/L | | Client Samp | ble ID: Me Prep Type | 3 NC thod e: To | Blank tal/NA |
| Analyte Chloride Sulfate ethod: 2340B-2011 - To Lab Sample ID: MB 680-5444 Matrix: Water Analysis Batch: 544401 | Result 0.41 0.40 0tal Harc 401/1 | | SS (as (| CaCO3 | B) by | 0.403 0.40 | | on | mg/L mg/L | | Client Samp | ble ID: Me Prep Type | 3 NC thod e: To | Blank tal/NA |
| nalyte hloride sulfate ethod: 2340B-2011 - To .ab Sample ID: MB 680-5444 fatrix: Water \nalysis Batch: 544401 .nalyte | Result 0.41 0.40 0tal Harc 401/1 Re | | MB Qualifier | CaCO3 | 8) by | 0.403 0.40 | | nit | mg/L mg/L | D | Client Samp | ble ID: Me Prep Type Analyze | 3 NC thod e: To | Blank tal/NA Dil Fac |
| Analyte Chloride Sulfate ethod: 2340B-2011 - To Lab Sample ID: MB 680-5444 Aatrix: Water Analysis Batch: 544401 Analyte Hardness as calcium carbonate | Result 0.41 0.40 0tal Harc 401/1 Re | MB sult 3.3 | MB Qualifier | | RL 3.3 | 0.403 0.40 | MDL U 3.3 m | nit g/L | mg/L mg/L | D | Client Samp Prepared | Die ID: Me Prep Type Analyze 10/22/18 1 | 3 NC thod e: To ed 5:22 | Blank tal/NA Dil Fac |
| Analyte Chloride Sulfate Iethod: 2340B-2011 - To Lab Sample ID: MB 680-544 Matrix: Water Analysis Batch: 544401 Analyte Hardness as calcium carbonate Iethod: 6010C - Metals | Result 0.41 0.40 0tal Harc 401/1 | Qua J U Ine Sult 3.3 | MB Qualifier U | CaCO3 | RL 3.3 | 0.403 0.40 | MDL U 3.3 m | nit g/L | mg/L mg/L | D | Client Samp Prepared | Die ID: Me Prep Type Analyze 10/22/18 1 | 3 NC thod e: To ed 5:22 | Blank tal/NA Dil Fac |
| Analyte Chloride Sulfate lethod: 2340B-2011 - To Lab Sample ID: MB 680-544 Matrix: Water Analysis Batch: 544401 Analyte Hardness as calcium carbonate lethod: 6010C - Metals Lab Sample ID: MB 680-543 | Result 0.41 0.40 0tal Harc 401/1 Re (ICP) 244/1-A | Qua J U Ine Sult 3.3 | MB Qualifier U | CaCO3 | RL 3.3 | 0.403 0.40 calc | MDL U 3.3 m | nit g/L | mg/L mg/L | D | Client Samp Prepared | Die ID: Me Prep Type Analyze 10/22/18 1 | thod e: To | Blank tal/NA Dil Fac 1 |
| Analyte Chloride Sulfate lethod: 2340B-2011 - To Lab Sample ID: MB 680-544 Matrix: Water Analysis Batch: 544401 Analyte Hardness as calcium carbonate lethod: 6010C - Metals Lab Sample ID: MB 680-543; Matrix: Water | Result 0.41 0.40 0tal Harc 401/1 | Qua J U Ine MB sult 3.3 | MB Qualifier U | CaCO3 | RL 3.3 | 0.403 0.40 7 calc | MDL U | nit g/L | mg/L mg/L | D | Client Samp Prepared Client Samp | Analyze 10/22/18 1 Die ID: Me Prep Type | thod e: To ed 5:22 | Blank tal/NA Dil Fac 1 Blank |
| Analyte Chloride Sulfate Lethod: 2340B-2011 - To Lab Sample ID: MB 680-5444 Matrix: Water Analysis Batch: 544401 Analyte Hardness as calcium carbonate Lethod: 6010C - Metals Lab Sample ID: MB 680-543; Matrix: Water Natyrix: Water | Result 0.41 0.40 0tal Harc 401/1 | MB sult 3.3 | MB Qualifier U | CaCO3 | RL 3.3 | 0.403 0.40 7 calc | MDL U | nit g/L | mg/L mg/L | <u>D</u> | Client Samp Prepared Client Samp | Analyze 10/22/18 1 Die ID: Me Prep Type Prep Type | 3 NC thod e: To ed 5:22 thod e: To | Blank tal/NA Dil Fac 1 Blank tal/NA |
| malyte Chloride Sulfate ethod: 2340B-2011 - To Lab Sample ID: MB 680-5444 Matrix: Water Analysis Batch: 544401 Malyte Hardness as calcium carbonate ethod: 6010C - Metals Lab Sample ID: MB 680-5433 Matrix: Water Analysis Batch: 544400 | Result 0.41 0.40 0tal Harc 401/1 | Quaa J U Ine MB sult 3.3 | MB Qualifier U | CaCO3 | RL 3.3 | 0.403 0.40 calc | MDL U | nit g/L | mg/L mg/L | D | Client Samp Prepared Client Samp | ole ID: Me Prep Type Analyze 10/22/18 1 Die ID: Me Prep Type Prep Bat | thod e: To ed 5:22 thod e: To tch: 5 | Blank tal/NA Dil Fac 1 Blank tal/NA 43244 |
| Analyte Chloride Sulfate Lethod: 2340B-2011 - To Lab Sample ID: MB 680-5444 Matrix: Water Analysis Batch: 544401 Analyte Hardness as calcium carbonate Lethod: 6010C - Metals Lab Sample ID: MB 680-5433 Matrix: Water Analysis Batch: 544400 Analyte | Result 0.41 0.40 0tal Harc 401/1 | MB MB Sult | MB Qualifier U | CaCO3 | RL 3.3 | 0.403 0.40 calc | MDL U | nit g/L | mg/L mg/L | D | Client Samp Prepared Client Samp | Analyze Analyze 10/22/18 1 Die ID: Me Prep Type Prep Bat | thod e: To sd 5:22 | Blank tal/NA Dil Fac 1 Blank tal/NA 43244 |
| Inalyte Chloride Sulfate ethod: 2340B-2011 - To Lab Sample ID: MB 680-5444 Matrix: Water Analysis Batch: 544401 Analyte Hardness as calcium carbonate ethod: 6010C - Metals Lab Sample ID: MB 680-5433 Matrix: Water Analysis Batch: 544400 Analysis Batch: 544400 Analysis Batch: 544400 Analysis Batch: 544400 | Result 0.41 0.40 0tal Harc 401/1 Re (ICP) 244/1-A Re | MB Sult 3.3 MB | MB Qualifier U MB Qualifier | CaCO3 | RL 200 | 0.40 0.40 | MDL U | nit g/L | mg/L mg/L | D | Client Sam Prepared Client Sam | Analyze 10/22/18 1 Die ID: Me Prep Type Prep Bat Analyze | thod sid size To thod e: To thod e: To thod e: To thod e: To | Blank tal/NA Dil Fac 1 Blank tal/NA 43244 Dil Fac |
| Analyte Chloride Sulfate ethod: 2340B-2011 - To Lab Sample ID: MB 680-544 Matrix: Water Analysis Batch: 544401 Analyte Hardness as calcium carbonate ethod: 6010C - Metals Lab Sample ID: MB 680-543; Matrix: Water Analysis Batch: 544400 Analyte Numinum | Result 0.41 0.40 otal Harc 401/1 Re (ICP) 244/1-A | MB Sult 3.3 MB Sult 25.0 | MB Qualifier U MB Qualifier J | CaCO3 | RL 3.3 RL 200 | 0.403 0.40 Calc | MDL U 24 up | nit g/L | mg/L mg/L | | Client Samp Prepared Client Samp Prepared 10/13/18 10:15 | Analyze 10/22/18 1 Die ID: Me Prep Type Prep Type Prep Bat Analyze 10/22/18 1 | 3 3 NC thod e: To 5:22 thod e: To tch: 5 | Blank tal/NA Dil Fac 1 Blank tal/NA 43244 Dil Fac |
| Analyte Chloride Sulfate ethod: 2340B-2011 - To Lab Sample ID: MB 680-544 Matrix: Water Analysis Batch: 544401 Analyte Hardness as calcium carbonate ethod: 6010C - Metals Lab Sample ID: MB 680-543 Matrix: Water Analysis Batch: 544400 Analyte Numinum Analyte Numinum Analyte | Result 0.41 0.40 otal Harc 401/1 | MB sult 3.3 MB sult 5.3 | MB Qualifier U MB Qualifier J U | CaCO3 | Fill State Stat | 0.403 0.40 7 calc | MDL U 3.3 m MDL U 24 u 5.3 u | nit g/L g/L | mg/L mg/L | <u>D</u> | Client Samp Prepared Client Samp Prepared 10/13/18 10:15 10/13/18 10:15 | Die ID: Me Prep Type 10/22/18 1 Die ID: Me Prep Type Prep Bat 10/22/18 1 10/22/18 1 | 3 NC thod e: To 5:22 thod e: To tch: 5 d 4:38 4:38 | Blank tal/NA Dil Fac 1 Blank tal/NA 43244 Dil Fac 1 |
| Analyte Chloride Sulfate Lab Sample ID: MB 680-5444 Aatrix: Water Analysis Batch: 544401 Analyte Hardness as calcium carbonate ethod: 6010C - Metals Lab Sample ID: MB 680-5433 Matrix: Water Analysis Batch: 544400 Vinalyte Juminum vitimony visenic | Result 0.41 0.40 otal Harc 401/1 Re (ICP) 244/1-A | Qual J U Ine Sult 3.3 MB sult 25.0 5.3 6.2 | MB Qualifier U MB Qualifier J U U | CaCO3 | FL 200 20 20 20 | 0.403 0.40 7 calc | MDL U 3.3 m MDL U 24 u 5.3 u 6.2 u | nit g/L nit g/L | mg/L mg/L | | Client Samp Prepared Client Samp Prepared 10/13/18 10:15 10/13/18 10:15 | Die ID: Me Prep Type 10/22/18 1 Die ID: Me Prep Type Prep Bat 10/22/18 1 10/22/18 1 10/22/18 1 | 3 NC thod e: To od 5:22 thod e: To tch: 5 cd 4:38 4:38 4:38 | Blank tal/NA Dil Fac 1 Blank tal/NA 43244 Dil Fac 1 1 |
| Analyte Chloride Sulfate Lethod: 2340B-2011 - T(Lab Sample ID: MB 680-5444 Matrix: Water Analysis Batch: 544401 Analysis Batch: 544401 Analyte Lab Sample ID: MB 680-5433 Matrix: Water Analysis Batch: 544400 Analysis Batch: 54400 Analysis Batch: 5400 Analysis Bat | Result 0.41 0.40 otal Harc 401/1 Re (ICP) 244/1-A Re | MB sult 25.0 5.3 6.2 1.7 | MB Qualifier U MB Qualifier J U U U | CaCO3 | RL 3.3 RL 200 20 20 10 | 0.403 0.40 7 calc | MDL U 3.3 m MDL U 24 u 5.3 u 6.2 u 1.7 u | nit g/L nit g/L g/L g/L g/L | mg/L mg/L | | Client Samp Prepared Client Samp Prepared 10/13/18 10:15 10/13/18 10:15 10/13/18 10:15 | Die ID: Me Prep Type 10/22/18 1 Die ID: Me Prep Type Prep Bat 10/22/18 1 10/22/18 1 10/22/18 1 10/22/18 1 | 3 NC thod 5:22 thod e: To tch: 5 d 4:38 4:38 4:38 | Blank tal/NA Dil Fac 1 Blank tal/NA 43244 Dil Fac 1 1 1 |
| Analyte Chloride Sulfate ethod: 2340B-2011 - To Lab Sample ID: MB 680-5444 Matrix: Water Analysis Batch: 544401 Analyte tardness as calcium carbonate ethod: 6010C - Metals Lab Sample ID: MB 680-5433 Matrix: Water Analysis Batch: 544400 Vinalyte Juminum Analysis Batch: 544400 Vinalyte | Result 0.41 0.40 otal Harc 401/1 Re (ICP) 244/1-A | Qual J U Ince MB sult 3.3 MB sult 25.0 5.3 6.2 1.7 0.10 | MB Qualifier U MB Qualifier J U U U U | CaCO3 | RL 200 20 20 10 4.0 | 0.40 0.40 calc | MDL U 24 u 5.3 u 6.2 u 1.7 u 0.10 u | nit g/L g/L g/L g/L g/L g/L | mg/L mg/L | | Client Samp Prepared Client Samp Prepared 10/13/18 10:15 10/13/18 10:15 10/13/18 10:15 10/13/18 10:15 | Die ID: Me Prep Type 10/22/18 1 Die ID: Me Prep Type Prep Bat 10/22/18 1 10/22/18 1 10/22/18 1 | 3 NC thod e: To thod e: To tch: 5 tch: 5 ed 4:38 4:38 4:38 4:38 | Blank tal/NA Dil Fac 1 Blank tal/NA 43244 Dil Fac 1 1 1 1 1 |

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Client: Georgia State University Project/Site: Monitoring Well Installation

TestAmerica Job ID: 680-159059-1

Method: 6010C - Metals (ICP) (Continued)

| Lab Sample ID: MB 680-54324 Matrix: Water | 4/1 -A | | | | | | Client Samp | le ID: Method Prep Type: To | l Blank otal/NA | 4 |
|--|---------------|-----------|------|------|------|---|----------------|--------------------------------|--------------------|---|
| Analysis Batch: 544400 | МВ | мв | | | | | | Prep Batch: | 543244 | 5 |
| Analyte | Result | Qualifier | RL | MDL | Unit | D | Prepared | Analyzed | Dil Fac | |
| Calcium | 26.1 | J | 500 | 25 | ug/L | | 10/13/18 10:15 | 10/22/18 14:38 | 1 | 6 |
| Chromium | 1.6 | U | 10 | 1.6 | ug/L | | 10/13/18 10:15 | 10/22/18 14:38 | 1 | |
| Cobalt | 1.0 | U | 10 | 1.0 | ug/L | | 10/13/18 10:15 | 10/22/18 14:38 | 1 | |
| Copper | 1.8 | U | 20 | 1.8 | ug/L | | 10/13/18 10:15 | 10/22/18 14:38 | 1 | |
| Iron | 17 | U | 50 | 17 | ug/L | | 10/13/18 10:15 | 10/22/18 14:38 | 1 | |
| Lead | 3.9 | U | 10 | 3.9 | ug/L | | 10/13/18 10:15 | 10/22/18 14:38 | 1 | |
| Magnesium | 33 | U | 500 | 33 | ug/L | | 10/13/18 10:15 | 10/22/18 14:38 | 1 | |
| Manganese | 1.0 | U | 10 | 1.0 | ug/L | | 10/13/18 10:15 | 10/22/18 14:38 | 1 | - |
| Nickel | 2.1 | U | 40 | 2.1 | ug/L | | 10/13/18 10:15 | 10/22/18 14:38 | 1 | |
| Potassium | 17 | U | 1000 | 17 | ug/L | | 10/13/18 10:15 | 10/22/18 14:38 | 1 | |
| Selenium | 9.9 | U | 20 | 9.9 | ug/L | | 10/13/18 10:15 | 10/22/18 14:38 | 1 | |
| Silver | 0.605 | J | 10 | 0.60 | ug/L | | 10/13/18 10:15 | 10/22/18 14:38 | 1 | |
| Sodium | 480 | U | 1000 | 480 | ug/L | | 10/13/18 10:15 | 10/22/18 14:38 | 1 | |
| Thallium | 6.0 | U | 25 | 6.0 | ug/L | | 10/13/18 10:15 | 10/22/18 14:38 | 1 | |
| Vanadium | 1.0 | U | 10 | 1.0 | ug/L | | 10/13/18 10:15 | 10/22/18 14:38 | 1 | |
| Zinc | 7.0 | U | 20 | 7.0 | ug/L | | 10/13/18 10:15 | 10/22/18 14:38 | 1 | |

Lab Sample ID: LCS 680-543244/2-A Matrix: Water **Analysis Batc**

Analyte Aluminum Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Nickel Potassium Selenium Silver

Sodium

Thallium

Vanadium

Zinc

| D: LCS 680-543244/2-A | | | | Clie | nt Sar | nple ID | : Lab Control Sample Prep Type: Total/NA |
|-----------------------|-------|--------|-----------|------|--------|---------|---|
| :h: 544400 | Spike | LCS | LCS | | | | Prep Batch: 543244 %Rec. |
| | Added | Result | Qualifier | Unit | D | %Rec | Limits |
| | 5000 | 5040 | | ug/L | | 101 | 80 - 120 |
| | 50.0 | 50.4 | | ug/L | | 101 | 80 - 120 |
| | 100 | 107 | | ug/L | | 107 | 80 - 120 |
| | 100 | 102 | | ug/L | | 102 | 80 - 120 |
| | 50.0 | 52.1 | | ug/L | | 104 | 80 - 120 |
| | 50.0 | 51.5 | | ug/L | | 103 | 80 - 120 |
| | 5000 | 5100 | | ug/L | | 102 | 80 - 120 |
| | 100 | 104 | | ug/L | | 104 | 80 - 120 |
| | 50.0 | 51.4 | | ug/L | | 103 | 80 - 120 |
| | 100 | 104 | | ug/L | | 104 | 80 - 120 |
| | 5000 | 5030 | | ug/L | | 101 | 80 - 120 |
| | 500 | 507 | | ug/L | | 101 | 80 - 120 |
| | 5000 | 5040 | | ug/L | | 101 | 80 - 120 |
| | 500 | 525 | | ug/L | | 105 | 80 - 120 |
| | 100 | 103 | | ug/L | | 103 | 80 - 120 |
| | 8000 | 7440 | | ug/L | | 93 | 80 - 120 |
| | 100 | 101 | | ug/L | | 101 | 80 - 120 |
| | 50.0 | 52.3 | | ug/L | | 105 | 80 - 120 |

5090

38.8

101

104

ug/L

ug/L

ug/L

ug/L

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102

80-120 97 80-120

101 80-120

104 80-120

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5000

40.0

100

100

| | | ວດ | Samr | ole | Resi | ılts | | | | | | | | 1 |
|---|--------|-----------|---------|-------|--------|------|-------|---------|--------|---------|----------------------|----------------|------------------|---|
| Client: Georgia State University Project/Site: Monitoring Well Installatio | n | 40 | o ann | | | | | | Test | America | Job ID: 6 | 80-15 | 9059-1 | 2 |
| Method: 2320B-2011 - Alkalini | ty, To | otal | | | | | | | | | | | - 1 | |
| Lab Sample ID: MB 680-543500/8 | | | | | | | | | Clie | ent Sam | ple ID: M | ethod | Blank | |
| Matrix: Water Analysis Batch: 543500 | | | | | | | | | | | Prep Ty | pe: To | tal/NA | |
| Analysis Batem 640000 | MВ | МВ | | | | | | | | | | | | Э |
| Analyte | Result | Qualifier | | RL | I | MDL | Unit | | D P | repared | Analy: | zed | Dil Fac | 6 |
| Alkalinity | 5.0 | U | | 5.0 | | 5.0 | mg/L | | | | 10/15/18 | 11:33 | 1 | 0 |
| Bicarbonate Alkalinity as CaCO3 | 5.0 | U | | 5.0 | | 5.0 | mg/L | | | | 10/15/18 | 11:33 | 1 | |
| Carbonate Alkalinity as CaCO3 | 5.0 | U | | 5.0 | | 5.0 | mg/L | | | | 10/15/18 | 11:33 | 1 | |
| Hydroxide Alkalinity | 5.0 | U | | 5.0 | | 5.0 | mg/L | | | | 10/15/18 | 11:33 | 1 | • |
| Carbon Dioxide, Free | 5.0 | U | | 5.0 | | 5.0 | mg/L | | | | 10/15/18 | 11:33 | 1 | |
| Phenolphthalein Alkalinity | 5.0 | U | | 5.0 | | 5.0 | mg/L | | | | 10/15/18 | 11:33 | 1 | |
| Bicarbonate ion as HCO3 | 6.1 | U | | 6.1 | | 6.1 | mg/L | | | | 10/15/18 | 11:33 | 1 | 9 |
| Lab Sample ID: LCS 680-543500/9 | | | | | | | | Clie | ent Sa | mple ID | : Lab Cor | ntrol S | ample | |
| Analysis Patch: 542500 | | | | | | | | | | | гер ту | pe. 10 | | |
| Analysis Batch, 545500 | | | Spike | | 105 | LCS | | | | | %Rec | | | |
| Analyte | | | | | Result | Qual | ifior | Unit | п | % Rec | l imits | | | |
| Alkalinity | | | 250 | | 250 | | | mg/L | | 100 | 80 - 120 | | — í | |
| | | | | | | | | • | | | | | | |
| Lab Sample ID: LCSD 680-543500/3 | 5 | | | | | | C | lient S | ample | ID: Lab | Control | Samp | le Dup | |
| Matrix: Water | | | | | | | | | - T. | | Prep Ty | pe: To | tal/NA | |
| Analysis Batch: 543500 | | | | | | | | | | | | | | |
| | | | Spike | | LCSD | LCS | D | | | | %Rec. | | RPD | |
| Analyte | | | Added | | Result | Qual | ifier | Unit | D | %Rec | Limits | RPD | Limit | |
| Alkalinity | | | 250 | | 267 | | | mg/L | | 107 | 80 - 120 | 6 | 30 | |
| Method: 2540C-2011 - Total Di | ssolv | ved Soli | ids (Dr | ied a | at 18 | 0 °C |) | | | | | | | |
| Γ | | | (| | | | / | | | | | | | |
| Lab Sample ID: MB 680-542992/1 | | | | | | | | | Clie | ent Sam | iple ID: M | ethod | Blank | |
| Matrix: Water | | | | | | | | | | | Prep Ty | pe: To | tal/NA | |
| Analysis Batch: 542992 | | | | | | | | | | | | | | |
| | MВ | MB | | | | | | | | | | | | |
| Analyte | Result | Qualifier | | RL | | MDL | Unit | | D P | repared | Analy: | zed | Dil Fac | |
| Total Dissolved Solids | 10 | U | | 10 | | 10 | mg/L | | | | 10/11/18 | 07:03 | 1 | |
| Lab Sample ID: LCS 680-542992/2 Matrix: Water | | | | | | | | Clie | ent Sa | mple ID | : Lab Cor Prep Tv | ntrol S | ample tal/NA | |
| Analysis Batch: 542992 | | | | | | | | | | | | | | |
| | | | Spike | | LCS | LCS | | | _ | | %Rec. | | | |
| Analyte | | | Added | | Result | Qual | itier | Unit | D | % Rec | Limits | | | |
| I otal Dissolved Solids | | | 55.0 | | 63.0 | | | mg/L | | 114 | 80-120 | | | |
| Lab Sample ID: LCSD 680-542992/3 Matrix: Water | 3 | | | | | | C | lient S | ample | ID: Lab | Control Prep Ty | Samp pe: To | le Dup tal/NA | |
| Analysis Batch: 542992 | | | | | | | | | | | | | | |
| | | | Spike | | LCSD | LCS | D | | | | %Rec. | | RPD | |
| Analyte | | | Added | | Result | Qual | ifier | Unit | D | %Rec | Limits | RPD | Limit | |
| Total Dissolved Solids | | | 55.0 | | 58.0 | | | mg/L | | 105 | 80 - 120 | 8 | 25 | |

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Client: Georgia State University Project/Site: Monitoring Well Installation

| Project/Site: Monitorin | ng Well Installation | | i e | SLAMENCA JOD ID. | 2000-109009-1 |
|-------------------------|------------------------|-----------|--------|------------------|---------------------------------------|
| HPLC/IC | | | | | 3 |
| Analysis Batch: 544 | 217 | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-159059-1 | RW - 01 | Total/NA | Water | 9056A | · · · · · · · · · · · · · · · · · · · |
| MB 680-544217/65 | Method Blank | Total/NA | Water | 9056A | |
| LCS 680-544217/66 | Lab Control Sample | Total/NA | Water | 9056A | |
| LCSD 680-544217/67 | Lab Control Sample Dup | Total/NA | Water | 9056A | |
| 680-159059-1 DU | RW - 01 | Total/NA | Water | 9056A | 7 |
| Metals | | | | | 8 |
| Prep Batch: 543244 | | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-159059-1 | RW - 01 | Total/NA | Water | 3010A | |
| MB 680-543244/1-A | Method Blank | Total/NA | Water | 3010A | |
| LCS 680-543244/2-A | Lab Control Sample | Total/NA | Water | 3010A | |
| Analysis Batch: 544 | 400 | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-159059-1 | RW - 01 | Total/NA | Water | 6010C | 543244 |
| MB 680-543244/1-A | Method Blank | Total/NA | Water | 6010C | 543244 |
| LCS 680-543244/2-A | Lab Control Sample | Total/NA | Water | 6010C | 543244 |
| Analysis Batch: 544 | 401 | | | | |
| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
| 680-159059-1 | RW - 01 | Total/NA | Water | 2340B-2011 | |
| MB 680-544401/1 | Method Blank | Total/NA | Water | 2340B-2011 | |

General Chemistry

Analysis Batch: 542992

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|-------------------|------------------------|-----------|--------|------------|------------|
| 680-159059-1 | RW - 01 | Total/NA | Water | 2540C-2011 | |
| MB 680-542992/1 | Method Blank | Total/NA | Water | 2540C-2011 | |
| LCS 680-542992/2 | Lab Control Sample | Total/NA | Water | 2540C-2011 | |
| LCSD 680-542992/3 | Lab Control Sample Dup | Total/NA | Water | 2540C-2011 | |

Analysis Batch: 543500

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|--------------------|------------------------|-----------|--------|------------|------------|
| 680-159059-1 | RW - 01 | Total/NA | Water | 2320B-2011 | |
| MB 680-543500/8 | Method Blank | Total/NA | Water | 2320B-2011 | |
| LCS 680-543500/9 | Lab Control Sample | Total/NA | Water | 2320B-2011 | |
| LCSD 680-543500/35 | Lab Control Sample Dup | Total/NA | Water | 2320B-2011 | |

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Lab Chronicle

Client: Georgia State University Project/Site: Monitoring Well Installation

TestAmerica Job ID: 680-159059-1

| lient Sam ate Collecte ate Receive | ple ID: RW - d: 10/07/18 14 d: 10/10/18 09: | • 01 :00 :40 | | | | | La | b Sample II | D: 680- Ma | 159059-1 trix: Water |
|--|---|---------------------------|-----|---------------|-------------------|-----------------|-----------------|-------------------------|---------------|-------------------------|
| Prep Type | Batch Type | Batch Method | Run | Dil Factor | Initial Amount | Final Amount | Batch Number | Prepared or Analyzed | Analyst | Lab |
| Total/NA | Analysis Instrument | 9056A ID: CICK | | 1 | 5 mL | 5 mL | 544217 | 10/21/18 00:40 | UI | TAL SAV |
| Total/NA | Analysis Instrument | 2340B-2011 ID: NOEQUIP | | 1 | | | 544401 | 10/22/18 15:22 | BCB | TAL SAV |
| Total/NA | Prep | 3010A | | | 50 mL | 50 mL | 543244 | 10/13/18 10:15 | AJR | TAL SAV |
| Total/NA | Analysis Instrument | 6010C ID: ICPE | | 1 | | | 544400 | 10/22/18 14:46 | BCB | TAL SAV |
| Total/NA | Analysis Instrument | 2320B-2011 ID: MANTECH | | 1 | | | 543500 | 10/15/18 11:51 | BTD | TAL SAV |
| Total/NA | Analysis Instrument | 2540C-2011 ID: NOEQUIP | | 1 | 200 mL | 200 mL | 542992 | 10/11/18 07:03 | BTD | TAL SAV |

Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

TestAmerica Savannah

| | Accreditatio | on/Certificatio | n Summary | | 1 |
|--|---|-----------------|-----------------------|-------------------------------|---|
| Client: Georgia State Project/Site: Monitorir | University ng Well Installation | | Tes | tAmerica Job ID: 680-159059-1 | 2 |
| Laboratory: Test The accreditations/certifica | America Savannah tions listed below are applicable to this r | eport. | | | |
| Authority | Program | EPA Region | Identification Number | Expiration Date | |
| Georgia | State Program | 4 | N/A | 06-30-19 | 5 |
| | | | | | 6 |
| | | | | | |
| | | | | | 8 |
| | | | | | 9 |
| | | | | | |
| | | | | | |

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Method Summary

| | | lai y | | |
|--------------------------------|--|---|--------------------|---|
| Client: Georg Project/Site: | jia State University Monitoring Well Installation | TestAmerica Jo | b ID: 680-159059-1 | |
| Method | Method Description | Protocol | Laboratory | |
| 9056A | Anions, Ion Chromatography | SW846 | TAL SAV | |
| 2340B-2011 | Total Hardness (as CaCO3) by calculation | SM | TAL SAV | |
| 6010C | Metals (ICP) | SW846 | TAL SAV | |
| 2320B-2011 | Alkalinity, Total | SM | TAL SAV | |
| 2540C-2011 | Total Dissolved Solids (Dried at 180 °C) | SM | TAL SAV | |
| 3010A | Preparation, Total Metals | SW846 | TAL SAV | |
| Protocol Re | ferences: | | | |
| SM = "St SW846 = | andard Methods For The Examination Of Water And Wastewater" "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", | Third Edition, November 1986 And Its Update | es. 8 | |
| Laboratory | References: | | 9 | |
| TAL SAV | ′ = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, | TEL (912)354-7858 | | |
| | | | 1 | U |
| | | | | |
| | | | | |

Laboratory References:

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| annan, GA 31404 ne (912) 354-7858 Fax (912) 352-0165 | | | | | | 5 | A MARKEN LINE | THE REPORT OF A DESCRIPTION OF A DESCRIP |
|--|---|---|---|--------------------------------------|---------------------|--------------------------------|---|--|
| ant Information | Sampier | Cor | om. ner, Keaton | | | Carrier Tracking No(s) | COC No 680-97206-386 | 96.1 |
| r Contact 3rian Meyer | Phone | E-M kea | in conner@ | estamerica | inc.com | | Page: Page 1 of 1 | |
| aany. rgia State University | | | | | Analysis Rec | juested | # qof | |
| ss t of GeoSciences 24 Peachtree Center Avenue Suite 34 | Due Date Requested: 10 | | | | | | Preservation Co | des: |
| nta .2p .2p | TAT Requested (days): | | | | | | A - NOL B - NaOH C - Zn Acetate D - Nitre Acid E - NaHSO4 | M - FIEXANE N - None D - ASNaO2 P - Na2O4S Q - Na2SO3 |
| e 391-3339(Tel) | PO# Purchase Order not required | | (C | | | | F - MeOH G - Amchlor H - Ascorbic Acid | R - Na2S2O3 S - H2SO4 T - TSP Dodecahvdratt |
| r yer2@gsu.edu | WO# | | No) | qe | | | b J - Di Water | U - Acetone V - MCAA |
| et Name itoring Well Installation | Project # 68019780 SSOW# | | 3D - Chlor (Yes or mple (Ye | 122 herdo | 000 00000 | | containe L-EDA Other: | W - PH 4-5 Z - other (specify) |
| ule Identification | Sample Date Time G | Type (www.itr. 5-scill Comp, Comstend. | sertorm MS/MS/ Pertorm MS/MSI SM/SM maaroo SMS/SM maaroo | 23208 - Alkalinity 8010C, SM23408 | | | Total Number of | netructions (Moto- |
| | XX | Preservation Code: | XX | NON | | | X | insu uctions/mote. |
| RW-01 | 00:11 &1/2/01 | C Water | | - | | | 7 | |
| | | | | | | | | |
| | | | | | | 680-15 | 9059 Chain of Custody | |
| sible Hazard Identification | oison B | iological | Sample | Disposal (| A fee may be | assessed if samples a | re retained longer than | 1 month) Months |
| verable Requested: I, II, III, IV, Other (specify) | | | Special | nstructions | /QC Requireme | nts: | D DEEDE | CITICAL |
| ty Kit Relinquished by: | Date: | | Time: | | | Method of Shipment | | |
| quished by | Date/Time. 1 c/ 8 / 1 8 14 Date/Time. | H: UC COMPANY | C Rece | ved by | 3 10 | Date/Time 10/0 Date/Time | 040 20-40 | Company TOSAV Company |
| quished by | Date/Time: | Company | Recei | ved by | | Date/Time | | Company |
| dy Seals Intact Custody Seal No. | | | Coole | r Temperature | a(s) °C and Other F | temarks 2115 | 110 | |

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10/22/2018
Login Sample Receipt Checklist

| Login Sample Receipt Checklist | | | |
|---|--------|---|----|
| | | | |
| Client: Georgia State University | | Job Number: 680-159059-1 | |
| Login Number: 159059 | | List Source: TestAmerica Savannah | |
| List Number: 1 Creator: Nobles, Terry G | | | 5 |
| Question | Answer | Comment | |
| Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td> <td></td> | N/A | | |
| The cooler's custody seal, if present, is intact. | True | | |
| Sample custody seals, if present, are intact. | True | | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | | 9 |
| Samples were received on ice. | True | | |
| Cooler Temperature is acceptable. | False | Cooler temperature outside required temperature criteria. | |
| Cooler Temperature is recorded. | True | | |
| COC is present. | True | | |
| COC is filled out in ink and legible. | True | | 12 |
| COC is filled out with all pertinent information. | True | | |
| Is the Field Sampler's name present on COC? | N/A | | |
| There are no discrepancies between the containers received and the COC. | True | | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | | |
| Sample containers have legible labels. | True | | |
| Containers are not broken or leaking. | True | | |
| Sample collection date/times are provided. | True | | |
| Appropriate sample containers are used. | True | | |
| Sample bottles are completely filled. | True | | |
| Sample Preservation Verified. | True | | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | | |
| Containers requiring zero headspace have no headspace or bubble is <6mm (1/4"). | N/A | | |
| Multiphasic samples are not present. | True | | |
| Samples do not require splitting or compositing. | True | | |

Residual Chlorine Checked.

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N/A













































Appendix D: GPR Profiles



