Former Rubaiyat, LLC
Munger, LLC
Birmingham, Alabama
ADEM VCP Site #: 461-073-235
Fact Sheet

A Voluntary Cleanup Program (VCP) Cleanup Work Plan has been found to be technically adequate by the Alabama Department of Environmental Management for the Former Rubaiyat, LLC site. Munger, LLC currently owns the site located in Birmingham, Alabama. This fact sheet has been prepared to briefly advise the public of the principal legal and policy issues of the VCP.

I. VCP PROCESS

The VCP provides a mechanism for the implementation of a cleanup program that encourages applicants to voluntarily assess, remediate, and reuse rural and urban areas of actual or perceived contamination. The program does not relieve any "responsible person" of the liability for administrative, civil, or criminal fines or penalties which are otherwise authorized by law and imposed as a result of the illegal or unpermitted disposal of solid waste, hazardous waste, hazardous constituents, hazardous substances, petroleum products, and/or pollutants to the land, air, or waters of the State on an identified property. The program is designed to expedite the voluntary cleanup process and has been designed for entry at any stage of the cleanup process as long as all applicable criteria have been met up to the point of entry.

II. PROCEDURES FOR REACHING A FINAL DECISION

The Alabama Department of Environmental Management (ADEM) is proposing to issue Munger,LLC a final decision for the site remediation.

ADEM Admin Code R. 335-15-6-.02 requires that the public be given a 30-day comment period from the date of the notice. The comment period will begin on August 26, 2020, which is the date of publication of the public notice in major local newspaper(s) of general circulation, and will end on September xx, 2020.

All persons wishing to comment on any of the conditions of the VCP Remediation should submit their comments in writing to the Alabama Department of Environmental Management, Permits and Services Division, 1400 Coliseum Blvd. (Zip 36110). P.O. Box 301463 (Zip 36130-1463) Montgomery, Alabama, ATTENTION: Mr. Russell Kelly. Written comments on the VCP activities should be submitted to the Alabama Department of Environmental Management and be received by 5:00 p.m. on September 24, 2020.

ADEM will consider all written comments received during the comment period while making a final decision on this issue. When the Department makes its final

decision, notice will be given to the applicant and each person who has submitted written comments or requested notice of the final decision.

III. FACILITY DESIGN

Highland Technical Services, Inc. has completed Site Investigation activities under the VCP at the Former Rubaiyat, LLC site located at 1102 20th Street South, in Birmingham, Jefferson County, Alabama. The property consists of of one parcel totaling approximately 1.13 acres and is completely developed with two commercial use buildings. The southernmost building is currently used as an UPS store, which has operated at this location for 10 years. The northern building (Munger Building) is one and two story building completed in theh laste 1920s and contains retail establishments, resturamts, bars, and, commercial office on the second level. Engineering controls will be used to eliminate or minimize potential exposure associated with the future use and/or development.

IV. TECHNICAL CONTACT

Tynechia Marshall, Project Manager
Engineering Services Section
Industrial Hazardous Waste Branch
Land Division
Alabama Department of Environmental Management
1400 Coliseum Boulevard (Zip 36110)
P.O. Box 301463 (Zip 36130-1463)
Montgomery, Alabama
(334) 271-7919

August 5, 2020

Alabama Department of
Environmental Management
P.O. Box 301463
Montgomery, Alabama 36130-1463

Attention: Ms. Tynechia Marshall
Redevelopment Section

RE: Voluntary Clean-up Program Assessment Report and
Corrective Action Plan
Munger, LLC
Former Rubaiyat, LLC Site
1102 20th Street South
Birmingham, Alabama 35205
ADEM VCP No.: 461-073-235

Dear Ms. Marshall:

On behalf of Munger, LLC, Highland Technical Services, Inc. (HTSI) is submitting the attached revised cover page for the above-referenced report. Please discard the cover page in the original submittal and insert the revision to allow this report to be used as the combined Assessment Report and Corrective Action Plan (CAP) for the forthcoming Public Notice.

As you are aware the corrective action recommendation for this property was for the development of an Environmental Covenant including the following restrictions:

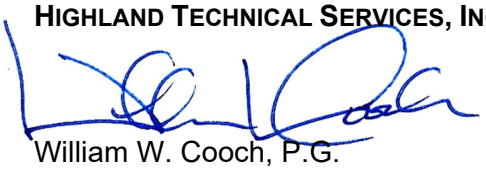
- The use of groundwater for potable or irrigation purposes shall not take place.
- Use of the property shall be limited to commercial use on the ground floor, and there shall be no use restriction on higher floors.
- Disturbance or excavation to the existing building slab and/or subsurface soils shall be in compliance with an ADEM-approved soil management plan.

The copy of the Environmental Covenant signed by the applicant (property owner) was submitted to the Department under separate cover and is awaiting signature by the Chief of the Land Division.

It is our understanding that submitting the above-refenced report as the CAP for public notice, Munger, LLC will not be assessed any additional fees by the Department other than those that may be required for the issuance of a Conditional Letter of Concurrence, if not already paid.

Highland Technical Services, Inc. and Munger, LLC appreciate your consideration in this matter. If you have any questions concerning this submittal or require any additional information, please contact our office at (205) 985-4874.

Sincerely,
HIGHLAND TECHNICAL SERVICES, INC.



William W. Cooch, P.G.
Principal Geologist

attachment: Revised VCP Assessment Report and Corrective Action Plan Cover

cc: Daniel Samford- Munger, LLC
Joel Kuehnert - Bradley

VOLUNTARY CLEAN-UP PROGRAM ASSESSMENT REPORT AND CORRECTIVE ACTION PLAN

FORMER RUBAIYAT, LLC SITE
1102 20TH STREET SOUTH
BIRMINGHAM, JEFFERSON COUNTY, ALABAMA 35205
ADEM VCP SITE NO.: 461-073-235

BIRMINGHAM, JEFFERSON COUNTY, ALABAMA
PROJECT NO.: 19-132114.01

PREPARED FOR:

MUNGER, LLC
P.O. BOX 130715
BIRMINGHAM, ALABAMA 35213

JANUARY 16, 2020

PREPARED BY:

HIGHLAND TECHNICAL SERVICES, INC.
528 MINERAL TRACE
BIRMINGHAM, ALABAMA 35244
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David Wall, REM
Senior Project Scientist

William W. Cooch, P.G.
Principal Geologist

OWNER CERTIFICATION

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

Daniel Samford, Manager
Munger, LLC

1-20-20
Date

GEOLOGIST CERTIFICATION

I certify under penalty of law that I am a Registered Professional Geologist, licensed to practice in the State of Alabama and experienced in conducting hydro-geological investigations. The information submitted herein, to the best of my knowledge and belief is true, accurate and complete.

William W. Cooch, P.G.
Principal Geologist
Highland Technical Services, Inc.

1/16/2020
Date

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FIGURES

APPENDICES

1.0 INTRODUCTION

On behalf of Munger, LLC, Highland Technical Services, Inc. (HTSI) is submitting this report of assessment activities in order to address potential environmental impacts to an approximately 1.13-acre commercial use property located at 1102 20th Street South in Birmingham, Jefferson County, Alabama. A Voluntary Clean-up Program (VCP) application was prepared by HTSI in April 2019 and submitted to the Alabama Department of Environmental Management (ADEM) and was approved by the ADEM in a letter dated May 23, 2019.

Following acceptance into the VCP, HTSI prepared a VCP Assessment Plan (Plan) dated July 2, 2019 and submitted the Plan to ADEM. ADEM subsequently approved the VCP Assessment Plan in correspondence dated August 21, 2019. Results of the VCP Assessment activities are included herein.

2.0 GENERAL FACILITY DESCRIPTION

The Site consists of one parcel totaling approximately 1.13 acres and is completely developed with two commercial use buildings. The southernmost building is currently used as a UPS store which has operated at this location for approximately 10 years. The northern building (Munger Building) is a one and two story building completed in the late 1920s and contains retail establishments, restaurants, bars, and, commercial office space on the second level. Access to the second story commercial office space is provided along 20th Street and from the parking lot area to the west of the building. Parking is located to the rear of the buildings and is accessible via 11th Avenue South. According to the Jefferson County Tax Assessor's website, the Site is identified by parcel number 22-00-01-1-012-004.000.

The Site is specifically located in the Northwest ¼ of the Southwest ¼ of Section 6, Township 18 South, Range 2 West as indicated on the United States Geological Survey (USGS) *Birmingham North and Birmingham South, Alabama* Topographic Quadrangles. More specifically, the Site is located at Latitude: 33.5000320° and Longitude: -86.7964370°. The Site is illustrated in Figure 1. A Parcel and Surrounding Properties Map depicting the Site and surrounding area is included as Figure 2. A Site Layout showing the general details of the subject property is provided as Figure 3.

The general land use in the immediate vicinity of the Site is commercial and multi-family residential. The Site is bordered to the north by 11th Avenue South, followed by a commercial retail and restaurant establishments; to the east by 20th Street South followed by a commercial retail and restaurant establishments; to the south by an apartment complex; and, to the west by an alley followed by a church and commercial building containing restaurants, a health food store and a former dry cleaners. An Area Land Use Map is included as Figure 4 and includes land uses within a 500-foot radius of the Site boundary.

3.0 ENVIRONMENTAL SETTING

3.1 TOPOGRAPHY

The USGS 7.5-minute topographic maps titled "*Birmingham North, Alabama*" and "*Birmingham South, Alabama*", both dated 2014, were reviewed to determine the elevations of the Site and surrounding properties. According to the surface contours, the elevation of the Site is approximately 685 feet above mean sea level (ft-amsl).

3.2 SURFACE WATER

Based on interpretation of surface features, surface water from the Site would flow generally to the north from the subject property. According to topographic maps, surface water would drain to the north and northwest toward Village Creek located approximately 2.9 miles northwest of the Site.

3.3 SOILS

Review of the U.S. Department of Agriculture (USDA) Natural Resource Conservation Service Web Soil Survey of Jefferson County, Alabama indicates that the Site is primarily underlain by Urban land. Urban land consists of soils that have been altered either by grading or by spreading excavated subsoil over the surface layer and includes areas that are covered by commercial or residential buildings, streets, driveways, and parking areas.

3.4 SITE GEOLOGY AND HYDROGEOLOGY

According to *Special Map 220* published by the Alabama Geological Survey, the subject property is underlain by the Copper Ridge Dolomite Formation. This formation typically consists of light-gray finely to coarsely crystalline, thick-bedded siliceous dolomite; characterized by abundant stromatolitic chert. A Site Geologic Map is included as Figure 5.

According to the *Geohydrology and Susceptibility of Major Aquifers to Surface Contamination in Alabama;* Area 4, 2005 prepared by the USGS, the site is located in the Birmingham-Big Canoe Valley District. The Copper Ridge Dolomite Formation has an elaborate system of closely spaced and interconnected solution channels and ranges in thickness from 1,250 feet to 1,800 feet. Weathering results in a cherty soil that is porous and allows rapid infiltration of rainfall. The Site is located within the area of recharge for the Valley and Ridge Aquifer.

3.5 WATER SUPPLY WELLS

The public water supply at the Site is provided by the Birmingham Water Works Board (BWWB). The BWWB currently obtains its water from four sources, Inland Lake in Blount County, Lake Purdy in Shelby County, the Cahaba River and the Mulberry Fork of the Black Warrior River in Jefferson County. The BWWB is not currently using groundwater wells for public water supply. A review of Water-Resources Investigations Report 88-4133 Plate 1 does not indicate the presence of any public water supply wells or springs within a one (1) mile radius of the Site. Water supply wells were not observed by site reconnaissance within 1,000 feet of the Site.

3.6 FLOOD ZONES

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate (FIRM) Map for Jefferson County, Alabama and Incorporated Area Panel Number 01073C0393G, 2010, the Site is in Zone X which is designated as an "area determined to be outside the 0.2% chance floodplain."

3.7 RAINFALL

Rainfall information obtained from U.S. Climate Data indicated that the average annual precipitation for Birmingham is approximately 53.7 inches.

3.8 WIND DIRECTION

Wind information obtained from Weather Spark, indicated that the predominant wind direction in the Birmingham area is toward the north.

3.9 TEMPERATURE

According to Weather Spark, temperatures have ranged from an average high of 90 °F (32 °C) to an average low of 36 °F (2°C).

3.10 RECEPTORS

The surrounding property is predominately commercial in use with a mutli-family residential property located adjacent to and south of the Site. An institutional use property (church) is located to the southwest of the Site. No public or private drinking water wells are known to be operating within one mile of the property. It should be noted that the City of Birmingham has a city ordinance restricting groundwater use within the city. The ordinance states the following:

> *"It shall be unlawful to construct, maintain, use or permit to be used, any spring, well, cistern or other excavation as a source of domestic water supply for any dwelling, building*

or premises located within 100 feet of an approved public water supply main or pipe." (Code 1964, § 25-6; Code 1980, § 6-3-3)

4.0 GENERAL SITE HISTORY

HTSI completed a Phase I ESA and Additional Assessment Activities in October 2018, the findings of which are discussed in the following sections.

4.1 PHASE I ENVIRONMENTAL SITE ASSESSMENT – OCTOBER 2018

Based on available information the Site was commercially developed as early as the 1930s. The original Munger building (northernmost building) has undergone numerous renovations since this time and has been used by numerous tenants.

The Site was identified as having at least two dry cleaning facilities operating at the Site. Records for the dry cleaners were identified during the years including: 1930 (Five Points Hatters/Hat Cleaners and Blockers) and 1935 (Ladame Cleaners/Clothes Pressers). An additional historical dry cleaner was also listed at 1909 11th Avenue South operating from 1971 to 2008 as Crandall Dry Cleaners and Flamingo Dry Cleaners. The address 1909 11th Avenue South is located at the adjacent property to the west.

Additionally, a gas station located at 2000 Highlands Avenue South (adjacent to the property across 20th Street to the east) operated from the mid-1930s to 1986. The site reported a release incident in 1989 and was subsequently issued a letter of No Further Action (NFA). Historical documentation for the gas station on ADEM's e-file, indicated that Phase I and Phase II Environmental Site Assessments (ESAs) were conducted by Giles Engineering Associates, Inc. in June 2010 and August 2010, respectively. Data collected during the August 2010 Phase II investigation indicated volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs) were detected in soil above the Alabama Risk Based Corrective Action (ARBCA) Preliminary Screening Levels (PSLs) for protection of groundwater. Additionally, VOCs were detected in groundwater at concentrations exceeding the ARBCA PSLs for groundwater/tap water, specifically benzene, ethylbenzene, 1,3,5-trimethylbenzene, and 1,2,4-trimethylbenzene. In response to the Phase I/II ESA data, ADEM issued a letter dated January 24, 2011 requiring no further investigative or corrective actions.

4.2 LIMITED SUBSURFACE INVESTIGATION – OCTOBER 2018

A limited subsurface investigation was performed by HTSI at the site on October 15, 2018, and included the collection of four soil gas samples from four locations. Two samples were collected

within close proximity to the former locations of the dry cleaning operations on-site, and two samples were collected between the former dry cleaning operation located to the west and the Munger building. Each of the samples was collected approximately 2.5 feet below ground surface (ft-bgs). The location of the soil vapor sample points is provided in Figure 6.

Based on the review of the analytical data collected during the soil-gas sampling activities, the following VOCs were detected in one or more soil-gas samples: benzene, toluene, ethylbenzene, xylenes, tetrachloroethylene (PCE) and trichloroethene (TCE). HTSI input the highest detected concentrations into the EPA Vapor Intrusion Screening Level (VISL) calculator to determine what risk may be posed, if any. According to the VISL calculator the detected concentration of TCE in soil vapor sample SV-1 exceeded the indoor inhalation risk for residential scenario. However, under the commercial use scenario the concentration of TCE did not exceed the screening level.

The detected concentrations of VOCs (specifically TCE and PCE) within the soil vapor suggest that contaminates from former dry cleaning operations are present within soil and/or groundwater beneath the site. Additionally, the detections of benzene, toluene, ethylbenzene, and xylenes suggest that contamination from gasoline could be present within the soil and/or groundwater beneath the Site.

5.0 ASSESSMENT ACTIVITIES

The following activities were conducted in order to investigate possible impacts to soil and groundwater resulting from historical operations onsite and/or adjacent properties. Sample collection activities conducted as part of this Assessment were conducted in general accordance with the most recent edition of the Alabama Environmental Investigation and Remediation Guidance (AEIRG).

HTSI determined that the Site may have been impacted by potential onsite and offsite release sources including the following: 1) former dry cleaning facilities located at the Site; 2) former dry cleaning operations located on the adjacent property to the west; and, 3) former gas station adjacent to the Site across 20th Street to the east.

The scope of work for this project included:

Soil

- Installation of up to four (4) soil borings utilizing DPT methodology at proposed soil boring locations shown on Figure 6.
- Collection of up to three soil samples from four (4) soil borings and analyzed for the presence of VOCs, PAHs, resource conservation recovery act metals (RCRA) 8 Metals (total metals), and hexavalent chromium, if necessary.

Groundwater

- Installation of four (4) Type II groundwater monitoring wells at the four soil boring locations.
- Collection of groundwater samples from the newly installed monitoring wells and analyze for VOCs, PAHs, RCRA 8 Metals (dissolved metals), and hexavalent chromium, if necessary.

Prior to conducting any subsurface drilling, the Alabama 811 underground utility mark-out system was contacted to conduct a survey.

5.1 SOIL BORING AND SOIL SAMPLING SUMMARY

HTSI mobilized to the Site to conduct soil boring and monitoring well installation activities on October 1-2, 2019. Four soil borings (B-1 through B-4) were advanced to depths ranging from approximately 21 ft-bgs to approximately 28 ft-bgs. Table 5.1 below provides a summary of the depths of each boring/monitoring well in which soil samples were collected. Soil borings logs and monitoring well construction diagrams are provided in Appendix A.

TABLE 5.1- SOIL BORING/MONITORING WELL SUMMARY

Soil Boring I.D.	Monitoring Well I.D.	Soil Sample Interval (ft-bgs)			Soil Boring Depth (ft-bgs)
B-1	MW-1	0-1	7-8	20-21	24.5
B-2	MW-2	0-1	7-8	19-20	21.0
B-3	MW-3	0-1	7-8	26-27	28.0
B-4	MW-4	0-1	7-8	26-27	27.5

ft-bgs – feet below ground surface

This investigation resulted in the collection of 12 soil samples for laboratory analysis from a total of four (4) soil borings. Direct Push Technology (DPT) was employed for the collection of surface and subsurface soil samples. The soil samples were collected continuously in acetate sleeves for the purpose of logging subsurface materials. Subsurface materials encountered during drilling were logged in the field, in accordance with the Unified Soil Classification System (USCS), by a qualified geologist experienced in subsurface investigations. A portion of each sample was field-screened using a calibrated Photoionization detector (PID) to determine if VOCs were present in the sample.

Each of the four borings were advanced to refusal to the top of bedrock. One sample was collected from the first one foot layer of soil, a second sample from the interval exhibiting the highest field-screened VOC concentration, and a third sample from just above the soil/water interface. If all PID readings within the same boring were equal or zero; then the second sample was collected from the 4-8 ft-bgs interval. The sample intervals for each of the soil borings is presented in Table 5.1 above.

Each of the 12 soil samples collected were placed in laboratory provided containers, maintained at 4° Celsius, and delivered under proper chain of custody to Pace Analytical in Mt. Juliet, Tennessee for analysis. Each of the soil samples were analyzed for VOCs in accordance with EPA Method 8260B, PAHs in accordance with EPA method 8270C-SIM, RCRA metals in

accordance with EPA Method 6010B/7470, and hexavalent chromium in accordance with EPA Method 7199. Soil boring locations are shown on the Soil Boring/Monitoring Well Location Map (Figure 6).

5.1.1 Soil Analytical Summary

As discussed in the previous section, the 12 soil samples collected from the on Site soil borings were analyzed for VOCs, PAHs, RCRA metals, and hexavalent chromium. The soil laboratory analytical report for VOCs, PAHs, and RCRA metals is provided in Appendix B. A soil analytical summary table is provided as Table 1 in the Tables Section and includes a comparison of the detected concentrations to EPA Regional Screening Levels (RSLs) for industrial and residential soils.

VOC Summary

Based on a review of the analytical results, VOCs were detected in each of the 12 soil samples collected on-Site. However, only four of the samples [B-1(0-1), B-1(4-8), B-2(0-1), B-2(19-20), and B-3(0-1)] contained detectable concentrations of VOCs above the laboratory reporting detection limit (RDL) and/or contained detectable concentrations of constituents that were not also detected in the method blank and included ethylbenzene, isopropylbenzene, p-isopropyltoluene, n-propylbenzene, methyl tert butyl ether (MTBE), toluene, 1,2,4-trimethylbenzene, 1,2,3-trimethylbenzene, 1,3,5-trimethylbenzene, and xylenes. Acetone and methylene chloride were detected in each of the samples; however, acetone and methylene chloride, were detected in the laboratory method blank at similar concentrations to the detected concentrations within the samples. Therefore, the detections of these two constituents is likely attributed to laboratory contamination. It is also worth noting that acetone and methylene chloride, are common solvents used in laboratories for cleaning of laboratory equipment and are common laboratory contaminants.

PAH Summary

One or more PAHs were detected in three of the 12 soil samples collected and included B-1(20-21), B-4(0-1), and B-4(4-8). However, all of the detected concentrations were reported at concentrations less than the laboratory RDL but greater than the laboratory MDL.

Metals Summary

One or more metals including arsenic, barium, chromium, lead, and mercury were detected in each of the 12 soil samples collected from the Site above the laboratory RDL. Chromium was detected in each of the 12 soil samples; however, additional analysis for hexavalent chromium indicated that hexavalent chromium was not detected above the laboratory RDL in any of the 12 soil samples.

5.1.2 Soil Analytical Data Comparison to EPA Screening Levels

HTSI conducted a comparison of analytical results from soil samples collected during the October 2019 assessment activities to the EPA Industrial and Residential Regional Screening Levels (RSLs). None of the detected constituents in any of the soil samples exceeded EPA Industrial or Residential RSLs with the exception of arsenic, which was detected above the RSL in each of the 12 soil samples. The detected concentrations of arsenic above the EPA Residential RSLs in soils are illustrated in Figure 7.

6.0 GROUNDWATER ASSESSMENT ACTIVITIES

6.1 MONITORING WELL INSTALLATION

On October 1-2, 2019, HTSI supervised the installation of four (4) Type II groundwater monitoring wells at the locations shown on Figure 6. Each of the Type II monitoring wells were installed to a depth that intersected the first saturated zone, which was the top of bedrock. The monitoring wells were installed in general accordance with the guidelines provided in the most recent edition of the AEIRG.

Three of the monitoring wells (MW-2, MW-3 and MW-4) were installed as 1.0-inch diameter wells using Schedule 40 PVC, 0.010 slotted pre-packed screens and riser casing to ground surface. Monitoring well MW-1 was installed with hollow-stem auger techniques and constructed with 2-inch diameter Schedule 40 PVC, 0.010 slotted screen and riser casing to ground surface. The 2-inch well was completed by installing a sand filter pack to a minimum two feet above the well screen.

A bentonite seal was installed two feet above the filter packs of each well. The remainder of the well annuli was grouted to the surface. The wells were completed with flush-mount bolt-down well vaults in concrete well pads. Subsurface materials encountered during drilling were logged in the field by a qualified geologist and are detailed in the boring logs provided as Appendix A.

Once completed, the monitoring wells were developed to remove the sediments from the well screens and filter packs and to re-establish the hydraulic flow conditions of the formation that may have been disturbed by the well construction activities. Water was removed from the wells until the following conditions were met: at least four well volumes had been removed from the well; and the pH, temperature, and conductivity of the groundwater stabilized such that the pH changed by less than 0.2 standard units (s.u.), temperature changed 1 degree Celsius or less, and specific conductivity changed by less than 10 percent in three consecutive readings.

6.2 GROUNDWATER SAMPLING

Groundwater samples were collected on October 8-9, 2019, from the four Site monitoring wells using low-flow sampling techniques to minimize the introduction of sediment into the groundwater samples and to minimize the purge water generated. Low-flow sampling was conducted using a peristaltic pump in which a tube was lowered to a depth that intersected the top of the screen

interval in each well, and the pump, positioned at the surface, drew water up through the tube. During sample collection, the intake and discharge controls of the pump were set to a flow rate that minimized drawdown of groundwater inside the well casing. Groundwater was pumped from each well at a rate approximately equal to the well recharge rate, and the water level was monitored every three to five minutes until an equilibrium flow rate from the aquifer into the well column is achieved. This was performed in an effort to collect samples most representative of formation water passing through the screened interval of the well.

Field indicator parameters including turbidity, temperature, pH, dissolved oxygen, oxidation-reduction potential, and specific conductivity were measured and recorded every three minutes until stabilization of these parameters was achieved in three consecutive readings, indicating that formation water had passed through the pump. Samples were collected after field indicator parameters had stabilized. The field data sheets that include the field indicator parameters and measurement time intervals are included in Appendix C. Field measurements collected during this monitoring event at the time of sampling are provided in the Monitoring Well Sampling Record included as Appendix D.

Static water level depth was measured in each of the monitoring wells with an electronic water level indicator from the top of the well casings prior to purging and sampling with water table elevations ranging from 661.08 ft-amsl in monitoring well MW-1 to 663.64 ft-amsl in monitoring well MW-3. The estimated groundwater flow direction at the Site is to the north with a calculated hydraulic gradient of approximately 0.017 feet per foot (ft/ft) using the inferred potentiometric groundwater elevations from monitoring wells MW-1 to MW-3. A Potentiometric Surface Map for the October 2019 monitoring event is included as Figure 8. Groundwater elevation data is summarized in the following Table 6.2.

TABLE 6.2 – GROUNDWATER ELEVATIONS – OCTOBER 8, 2019

WELL I.D.	TOP OF CASING ELEVATION (FT-AMSL)	TOTAL DEPTH (FT-BTOC)	DEPTH TO WATER (FT-BTOC)	GROUNDWATER ELEVATION (FT-AMSL)
MW-1	671.98	24.20	10.90	661.08
MW-2	676.36	20.81	12.77	663.59
MW-3	684.16	27.85	20.52	663.64
MW-4	683.40	27.15	20.15	663.25

ft-amsl – feet above mean seal level
ft-btoc – feet below top of casing

Upon collection of each groundwater sample, the sample container was labeled, wrapped in bubble-pack, and placed immediately in a cooler containing ice to reduce and maintain a sample temperature of 4°C. The samples were delivered via overnight courier to Pace Analytical and analyzed for VOCs in accordance with EPA Method 8260B, PAHs in accordance with EPA Method 8270C-SIM, RCRA metals in accordance with EPA Methods 6010B and 7470A, and hexavalent chromium in accordance with EPA Method 7199.

6.3 GROUNDWATER LABORATORY ANALYSIS

As discussed in the previous section, the four groundwater samples collected from the monitoring wells were analyzed for VOCs, PAHs, RCRA metals, and hexavalent chromium. The groundwater laboratory analytical report is provided in Appendix E. A groundwater analytical summary table is provided as Table 2 in the Tables Section.

VOC, PAHs and Metals Summary

Based on a review of the analytical results, no VOCs, PAHs, or metals were detected at concentrations above the laboratory RDL with the exception of three VOCs (chloroform, cis-1,2-dichloroethene, and vinyl chloride) and one metal (barium). Several constituents were detected at concentrations less than the laboratory RDL, but greater than the MDL, in one or more groundwater samples collected. However, these detections were all reported as extremely low concentrations and less than the laboratory RDL. Additionally, naphthalene, although detected, was also present within the laboratory method blank indicating that the detected naphthalene in the groundwater samples may be attributed to laboratory contamination. The detected concentrations of constituents above laboratory RDLs within groundwater are illustrated in Figure 9.

6.4 DETECTED GROUNDWATER CONCENTRATIONS COMPARED TO EPA SCREENING LEVELS

A comparison of the groundwater analytical results to the EPA Maximum Contaminant Levels (MCLs) screening levels or the EPA Tap Water screening level in absence of an EPA MCL was conducted, the results of which indicate that none of the detected concentrations of constituents above laboratory RDLs exceed their applicable screening level. Table 2 in the Tables Section includes a comparison of the detected concentrations to EPA screening levels.

7.0 MANAGEMENT AND DISPOSAL OF INVESTIGATIVE DERIVED WASTE (IDW)

Soil cuttings and solid debris generated during the assessment activities were stored on-Site pending the completion of assessment activities. Water collected from monitoring well development, decontamination, and low-flow sampling activities was placed in a tote for subsequent disposal at an approved recycling facility.

8.0 VAPOR INTRUSION SCREENING LEVEL COMPARISON

As previously discussed in Section 4.2 of this report. HTSI completed soil-gas sampling activities at the site in October 2018 which indicated detectable concentrations of one or more VOCs in each of the four samples collected. Additionally, TCE in soil vapor sample SV-1 exceeded the indoor inhalation risk for residential scenario. In an effort to determine if concentrations of constituents exceeded the current May 2019 EPA VISLs, HTSI input the highest detected concentrations into the EPA Vapor Intrusion Screening Level (VISL) calculator to determine what risk may be posed, if any. Table 8.0 below presents a summary of the detected concentrations within the soil gas samples compared to the May 2019 EPA VISLs.

TABLE 8.0 – SUMMARY OF DETECTED CONSTITUENTS IN SOIL GAS COMPARED TO EPA VISLS

Sample ID	Commercial Screening Level	Residential Screening Level	SV-1	SV-2	SV-3	SV-4
Parameter	**Concentration (microgram per cubic meter)**					
Volatile Organic Compounds						
Benzene	52.4	12	9.6	--	4.1	--
Trichloroethene (TCE)	29.2	6.95	13	--	--	--
Toluene	73,000	17,740	51	4.5	12	18
Tetrachloroethylene (PCE)	584	139	--	--	13	--
Ethylbenzene	164	37.4	11	--	--	--
Xylenes	1,460	348	62	25	11	17

Notes

"--" Constituent not detected

13 – Concentration exceeds residential VISL

According to the EPA VISL calculator the detected concentration of TCE in soil vapor sample SV-1 exceeded the indoor inhalation risk for residential scenario. However, under the commercial

use scenario the concentration of TCE did not exceed the screening level. A copy of the May 2019 VISL calculator is provided in Appendix F.

The soil-gas data indicates that there is not a current threat to indoor inhalation from the detected VOCs as the site is currently commercial use.

9.0 CONCLUSIONS AND RECOMMENDATIONS

9.1 CONCLUSIONS

Based upon the results of the assessment activities completed at the subject property to date, HTSI has concluded the following:

- Twelve (12) soil samples were collected from four on-Site borings advanced and analyzed for VOCs, PAHs, RCRA metals, and hexavalent chromium. Laboratory analysis of soil samples collected as part of this assessment indicated that all COPCs were either undetected or less than EPA screening values for industrial and residential soil, with the exception of arsenic.

- Arsenic was detected in each of the 12 soil samples collected from the Site at a concentration greater than the EPA RSL for Industrial and Residential Soil and ranged in concentrations from 6.61 mg/kg to 32.6 mg/kg. However, based on the current use of the site as a commercial use site, which is completely covered with asphalt surface or building structures, exposure to arsenic within soils at the site is unlikely as the current exposure pathway is not completed for the commercial worker.

- Four monitoring wells (MW-1 through MW-4) were installed as part of this assessment. The general direction of groundwater flow is to the north with a calculated hydraulic gradient of approximately 0.017 ft/ft.

- Groundwater samples collected from on-Site monitoring wells MW-1 through MW-4 were analyzed for VOCs, PAHs, RCRA metals, and hexavalent chromium. Three VOCs (chloroform, cis-1,2-dichloroethene, and vinyl chloride) and one metal (barium) were detected above the laboratory RDL. However, none of these four detected constituents exceeded EPA screening levels.

9.2 RECOMMENDATIONS

HTSI is of the opinion that this area would be eligible for a Conditional Letter of Concurrence with use restrictions. This would include the condition that the use of groundwater for potable or irrigation purposes shall not take place. Additionally, as a precautionary measure due to the concentration of TCE detected in soil vapor sample SV-1 exceeding the indoor inhalation risk for the residential scenario, HTSI recommends that, residential use of the site be limited to the 2nd story of the buildings only with commercial use only for the ground floor of the building(s).

If ADEM is in agreement with these recommendations, Munger, LLC will prepare and submit an environmental covenant including the land use and institutional controls discussed above.

10.0 REFERENCES

ATC, Associates, Inc., Phase II Environmental Site Assessment Report, March 16, 2011.

Alabama Department of Environmental Management, *Alabama Risk-Based Corrective Action Guidance Manual,* February 2017.

Alabama Department of Environmental Management, Alabama Environmental Investigation and Remediation Guidance, Revision 4.0, February 2017.

Alabama Department of Environmental Management, Alabama Risk Based Corrective Action Guidance Manual, March 2002, February 2017 -Revision 3.0.

Alabama Department of Environmental Management, Review of Phase I and Phase II Site Assessments Letter, January 24, 2011

HTSI, Phase I Environmental Site Assessment and Additional Assessment Activities Report, HTSI Project No.: 18-132114.01 October 19, 2018.

Kopaska-Merkel, Dean, and Moore, 2005. United States Geological Survey of Alabama, Water Resources Investigations Report 88-4080: Hydrogeology and Vulnerability to Contamination of Major Aquifers in Alabama; Area 4

Geological Survey of Alabama, *Special Map 220, Geologic Map of Alabama*, 1988.

TABLES

Table 1 - Soil Analytical Summary of Detected Constituents[A]- Industrial & Residential Comparison
Munger Site
Birmingham, Alabama

Sample ID			B1 (0-1)		B1 (4-8)		B1 (20-21)		B2 (0-1)		B2 (4-8)		B2 (19-20)		B3 (0-1)		B3 (4-8)		B3 (26-27)		B4 (0-1)		B4 (4-8)		B4 (26-27)	
Date Collected			10/01/2019																		10/02/2019					
Analyte	**EPA RSL Industrial Soil May 2019**	**EPA Residential Soil May 2019**	**Concentration (milligrams per kilogram)**																							
Metals																										
ARSENIC	3	0.68	21.4		32.6		6.61		13.6		18.1		4.68		24.4		24.3		11.2		18.3		20.5		9.04	
BARIUM	22000	1500	7.36		8.53		9.28		7.36		8.19		13.7		24.2		11.9		11.7		7.27		9.83		19.5	
CHROMIUM	--	--	22.5		34.6		8.63		12.9		20.1		13.8		30.7		36.0		14.0		24.8		34.4		10.2	
LEAD	800	400	7.31		10.6		13.2		9.35		7.16		12.6		5.92		8.45		28.4		5.10		8.26		18.5	
MERCURY	4.6	1.1	0.0387		0.0475		0.168		<0.0300		0.0437		0.0987		0.0371		0.0539		0.116		0.0787		0.0688		0.166	
VOCs																										
ETHYLBENZENE	25	5.8	0.00355		<0.0192		<0.00250		<0.0433		<0.00515		<0.00313		<0.00250		<0.00250		<0.00343		<0.00250		<0.00308		<0.00580	
ISOPROPYLBENZENE	990	190	0.00341		<0.0192		<0.00250		<0.0433		<0.00515		<0.00313		<0.00250		<0.00250		<0.00343		<0.00250		<0.00308		<0.00580	
P-ISOPROPYLTOLUENE	--	--	<0.00500		0.16		<0.00500		0.0968		<0.0103		0.00834		0.0125		<0.00500		<0.00685		<0.00500		<0.00615		<0.0116	
METHYL TERT-BUTYL ETHER	210	47	<0.00100	J4	0.00941		<0.00100		0.019		<0.00206		<0.00125		<0.00100		<0.00100		<0.00137		<0.00100		<0.00123		<0.00232	
N-PROPYLBENZENE	2400	380	0.0127		<0.0384		<0.00500		<0.0865		<0.0103		<0.00625		<0.00500		<0.00500		<0.00685		<0.00500		<0.00615		<0.0116	
TOLUENE	4700	490	<0.00500		0.0699		<0.00500		<0.0865		<0.0103		<0.00625		<0.00500		<0.00500		<0.00685		<0.00500		<0.00615		<0.0116	
1,2,4-TRIMETHYLBENZENE	180	30	0.0446		<0.0384		<0.00500		<0.0865		<0.0103		<0.00625		<0.00500		<0.00500		<0.00685		<0.00500		<0.00615		<0.0116	
1,2,3-TRIMETHYLBENZENE	200	34	0.0103		<0.0384		<0.00500		<0.0865		<0.0103		<0.00625		<0.00500		<0.00500		<0.00685		<0.00500		<0.00615		<0.0116	
1,3,5-TRIMETHYLBENZENE	150	27	0.00576		<0.0384		<0.00500		<0.0865		<0.0103		<0.00625		<0.00500		<0.00500		<0.00685		<0.00500		<0.00615		<0.0116	
XYLENES, TOTAL	250	58	0.00936		<0.0499		<0.00650		<0.112		<0.0134		<0.00813		<0.00650		<0.00650		<0.00890		<0.00650		<0.00800		<0.0151	
PAHs			No PAHs detected at or above the laboratory reporting detection limit																							

Notes:

A- Constituents detected at or above the laboratory reporting detection limit (RDL). Constituents detected less than the laboratory RDL are not reported in this Table.

J4 - The associated batch QC was outside the established quality control range for accuracy

- Concentration detected

- Concentration exceeds May 2019 EPA Industrial Soil Level

"--" No EPA screening level established

< - constituent not detected above laboratory minimum detection limit

Table 2 - Groundwater Analytical Summary- Detected Constituents[C]
Munger Site
Birmingham, Alabama

Sample ID		MW-1		MW-2		MW-3		MW-4	
Date Collected		10/08/2019						10/9/2019	
Analyte	**EPA Screening Level***	**Concentration (milligrams per liter)**							
Metals									
BARIUM,DISSOLVED	2[A]	0.00726		0.0631		0.0491		0.0329	
VOCs									
CHLOROFORM	0.08[A]	<0.00500		<0.00500		<0.00500		0.000627	
CIS-1,2-DICHLOROETHENE	0.07[A]	0.00103		<0.00100		<0.00100		<0.00100	
VINYL CHLORIDE	0.002[A]	0.0016		<0.00100		<0.00100		<0.00100	
PAHs									
No PAHs detected at or above the laboratory reporting detection limit									

Notes

EPA - Environmental Protection Agency

* - EPA Tapwater Screening level, May 2019, unless otherwise noted

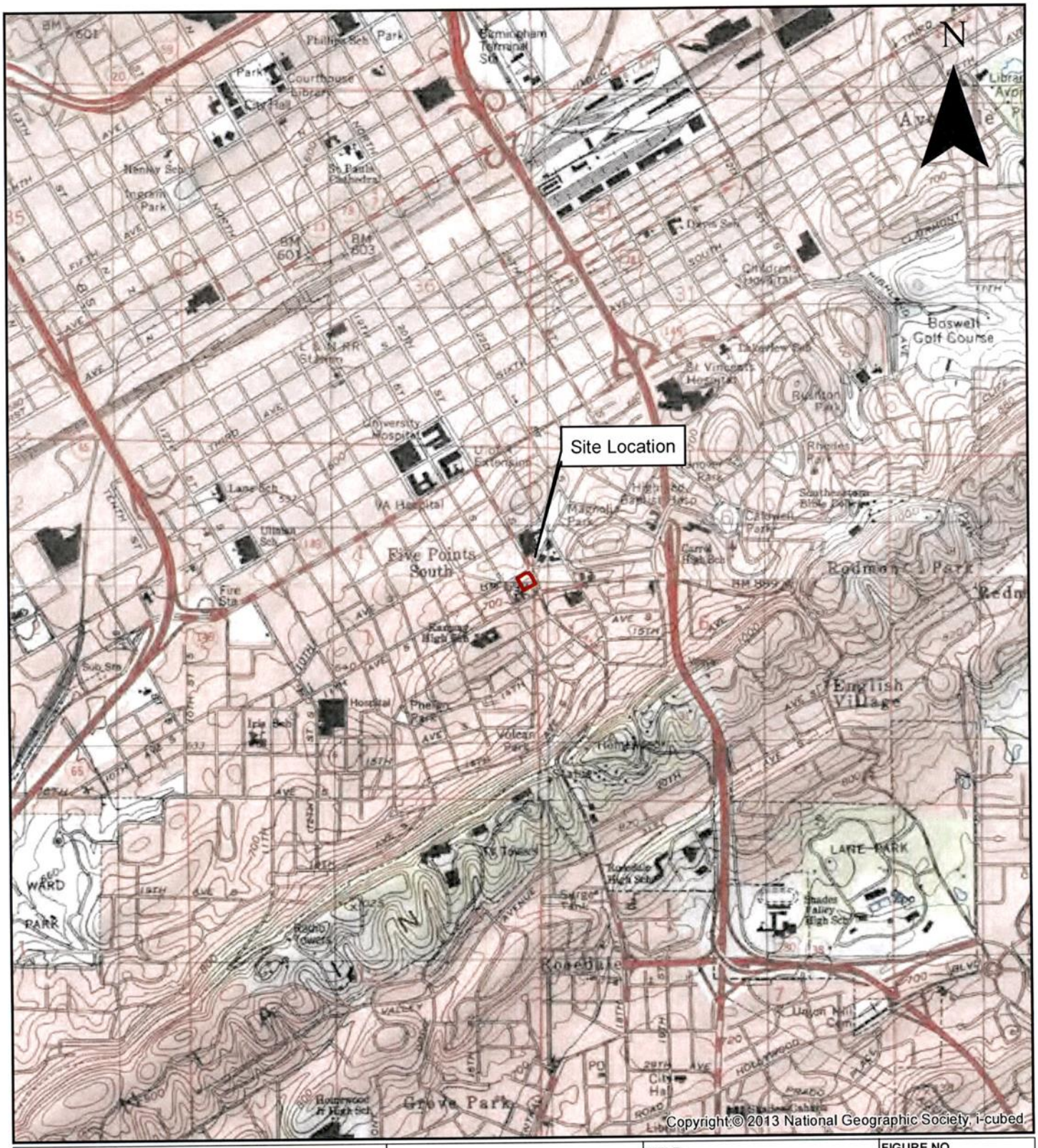
A - EPA Maximum Contaminant Level (MCL)

C- Constituents detected at or above the laboratory reporting detection limit (RDL). Constituents that were only detected less than the laboratory RDL are not reported in this Table.

- Concentration detected

< - Concentration not detected above laboratory reporting limit, value represents the laboratory reporting limit

FIGURES



Legend

Property Boundary

USGS Topo Map:
6700692 Birmingham South, Alabama

Highland Technical Services, Inc.

528 MINERAL TRACE
HOOVER, AL 35244
(205) 985-4874

TITLE:
Site Location

VCP Assessment
Munger Building

1102 20th Street South
Birmingham, Alabama

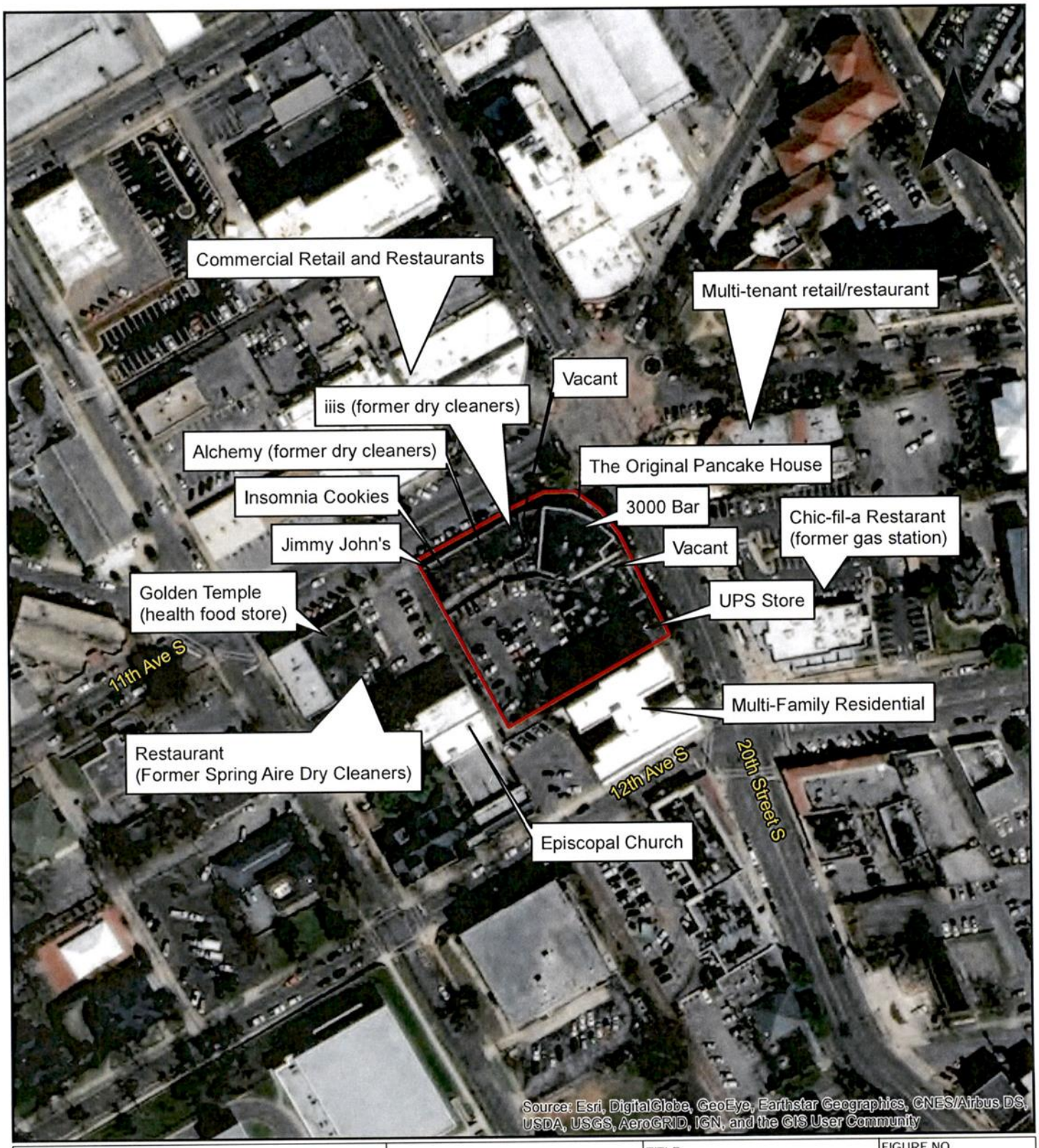
SCALE: 0 1,000 2,000
1 inch = 2,000 feet

FIGURE NO.
1

PROJECT NO.
19-132114.01

DRAWN BY
DW

DATE DRAWN
06/10/2019



Legend

Property Boundary

Highland Technical Services, Inc.

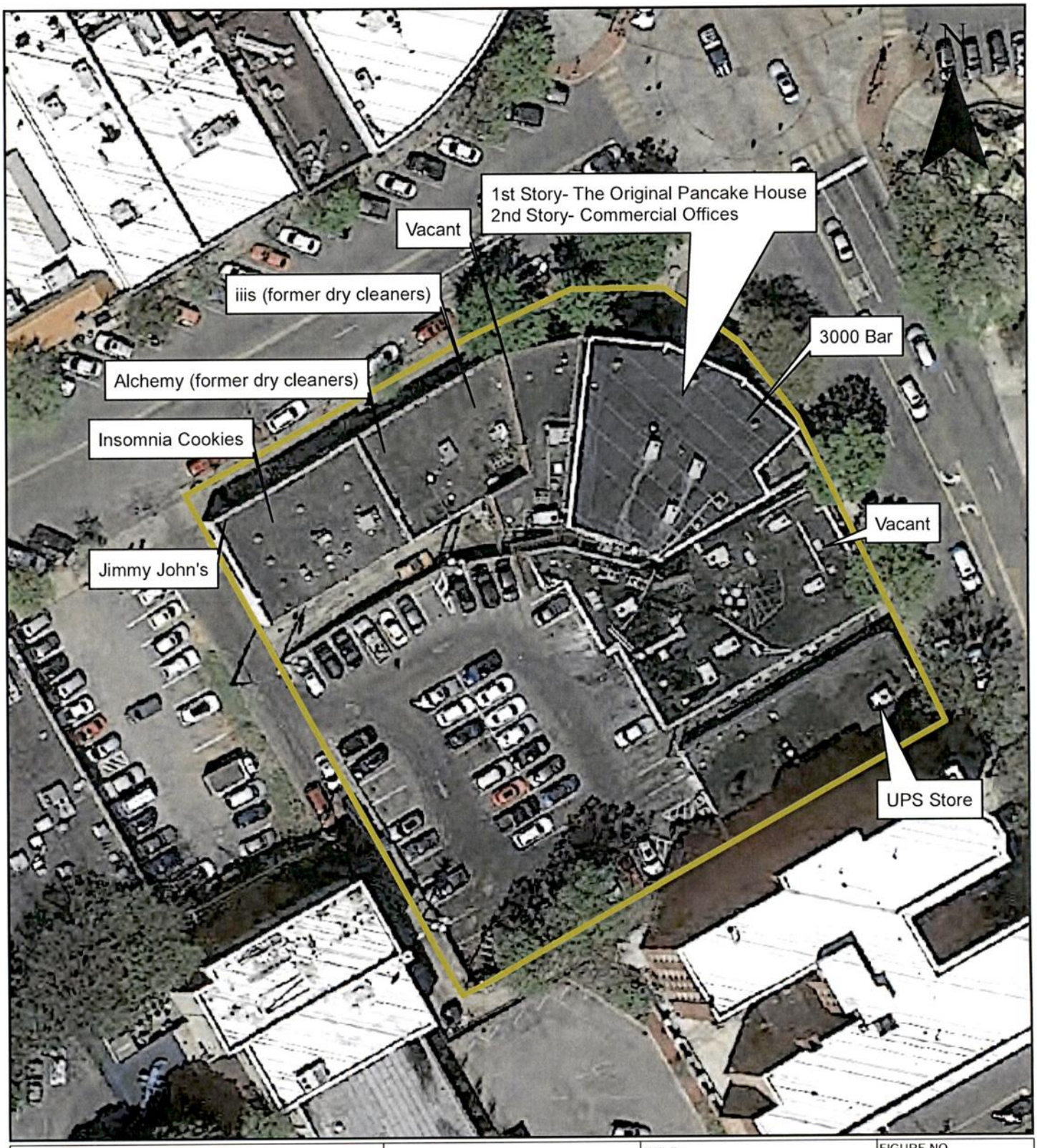
528 MINERAL TRACE
HOOVER, AL 35244
(205) 985-4874

TITLE:
Parcel & Surrounding Properties Map

VCP Assessment
Munger Building
1102 20th Street South
Birmingham, Alabama

SCALE: 0 75 150
1 inch = 150 feet

FIGURE NO.	2
PROJECT NO.	19-132114.01
DRAWN BY	DW
DATE DRAWN	06/10/2019



Legend

Property Boundary

Highland Technical Services, Inc.

528 MINERAL TRACE
HOOVER, AL 35244
(205) 985-4874

TITLE: Site Layout

VCP Assessment
Munger Building
1102 20th Street South
Birmingham, Alabama

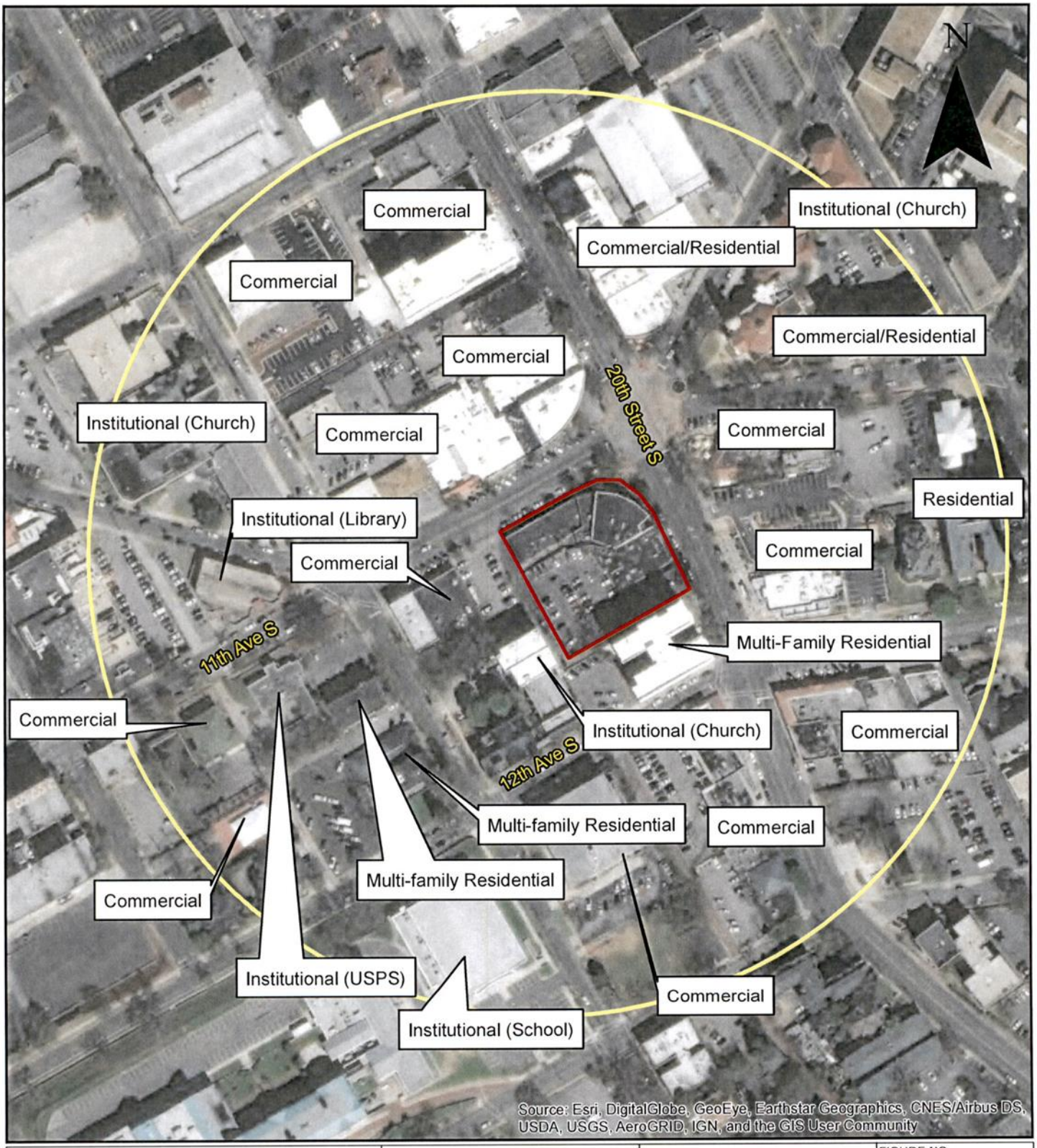
SCALE: 0 25 50
1 inch = 50 feet

FIGURE NO. 3

PROJECT NO. 19-132114.01

DRAWN BY DW

DATE DRAWN 06/10/2019



Legend

- Approximate 500 foot radius
- Property Boundary

Highland Technical Services, Inc.

528 MINERAL TRACE
HOOVER, AL 35244
(205) 985-4874

TITLE: Area Land Use

VCP Assessment
Munger Building

1102 20th Street South
Birmingham, Alabama

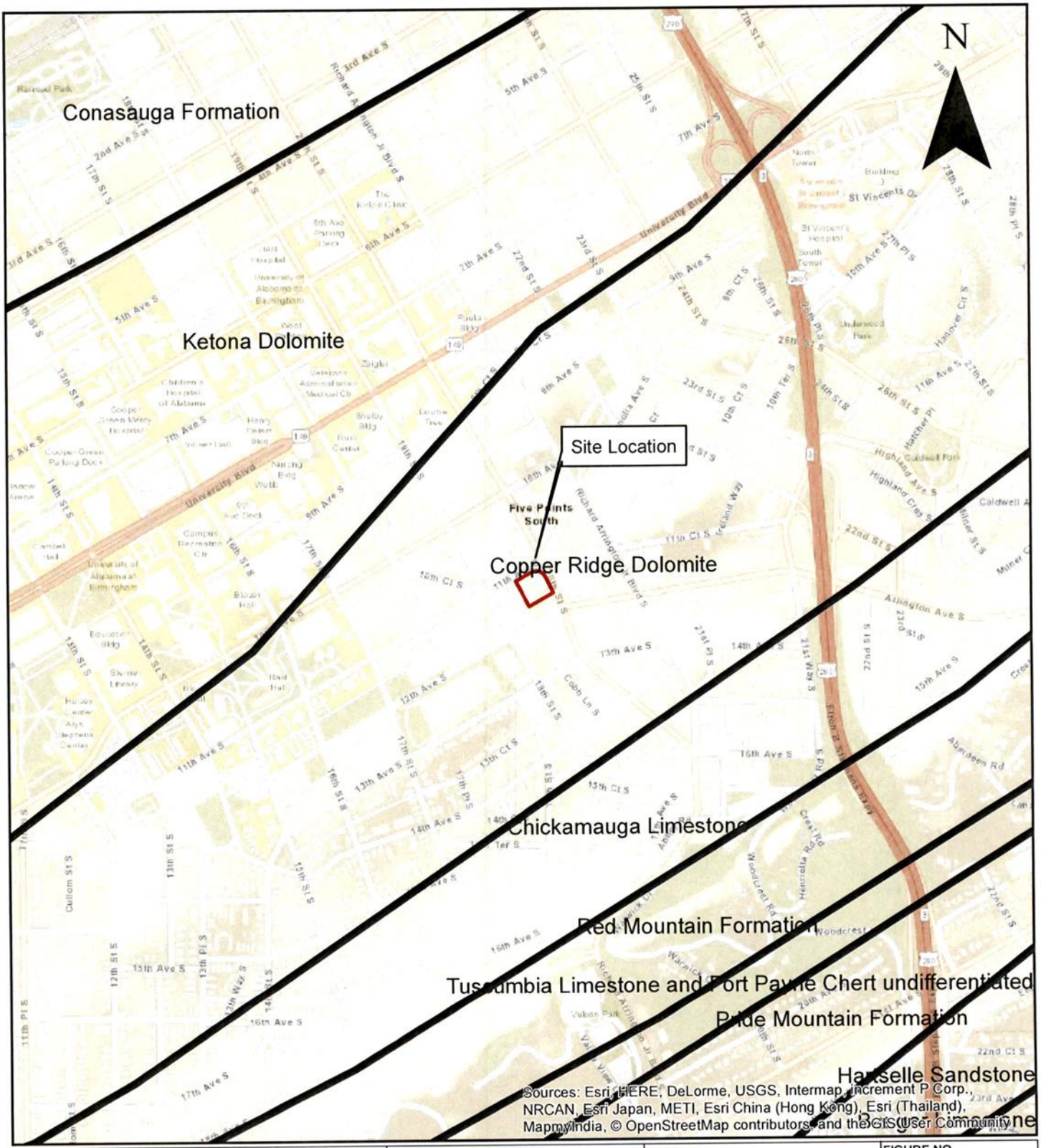
SCALE: 0 100 200
1 inch = 200 feet

FIGURE NO. 4

PROJECT NO. 19-132114.01

DRAWN BY DW

DATE DRAWN 06/10/2019



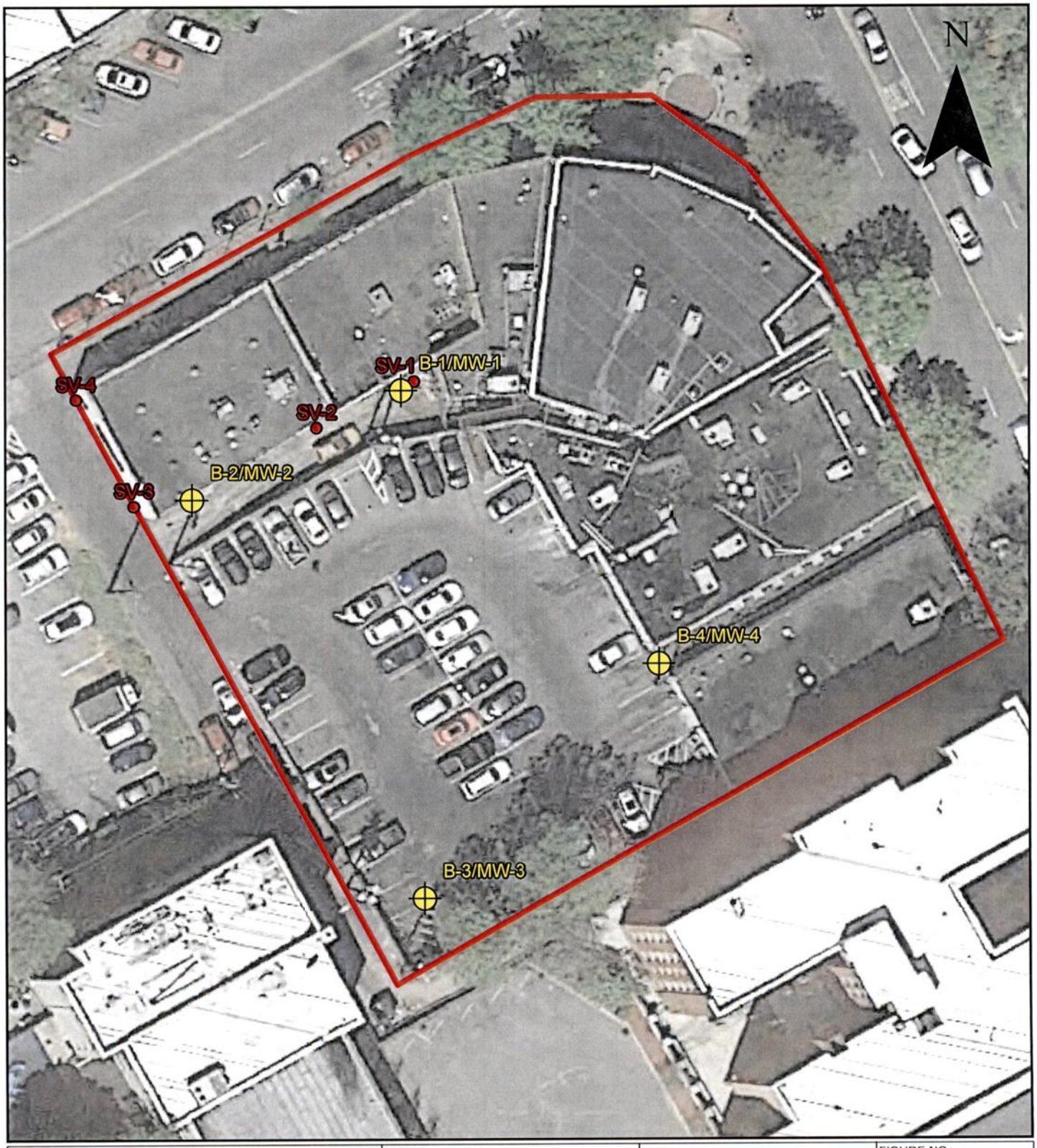
Legend

Property Boundary

Highland Technical Services, Inc.

528 MINERAL TRACE
HOOVER, AL 35244
(205) 985-4874

TITLE:	Geologic Map VCP Assessment Munger Building 1102 20th Street South Birmingham, Alabama
FIGURE NO.	5
PROJECT NO.	19-132114.01
DRAWN BY	DW
SCALE:	0 500 1,000 1 inch = 1,000 feet
DATE DRAWN	06/10/2019



Legend

- Soil Boring/Monitoring Well
- Former Vapor Sample Point (Oct 2018)
- Property Boundary

Highland Technical Services, Inc.

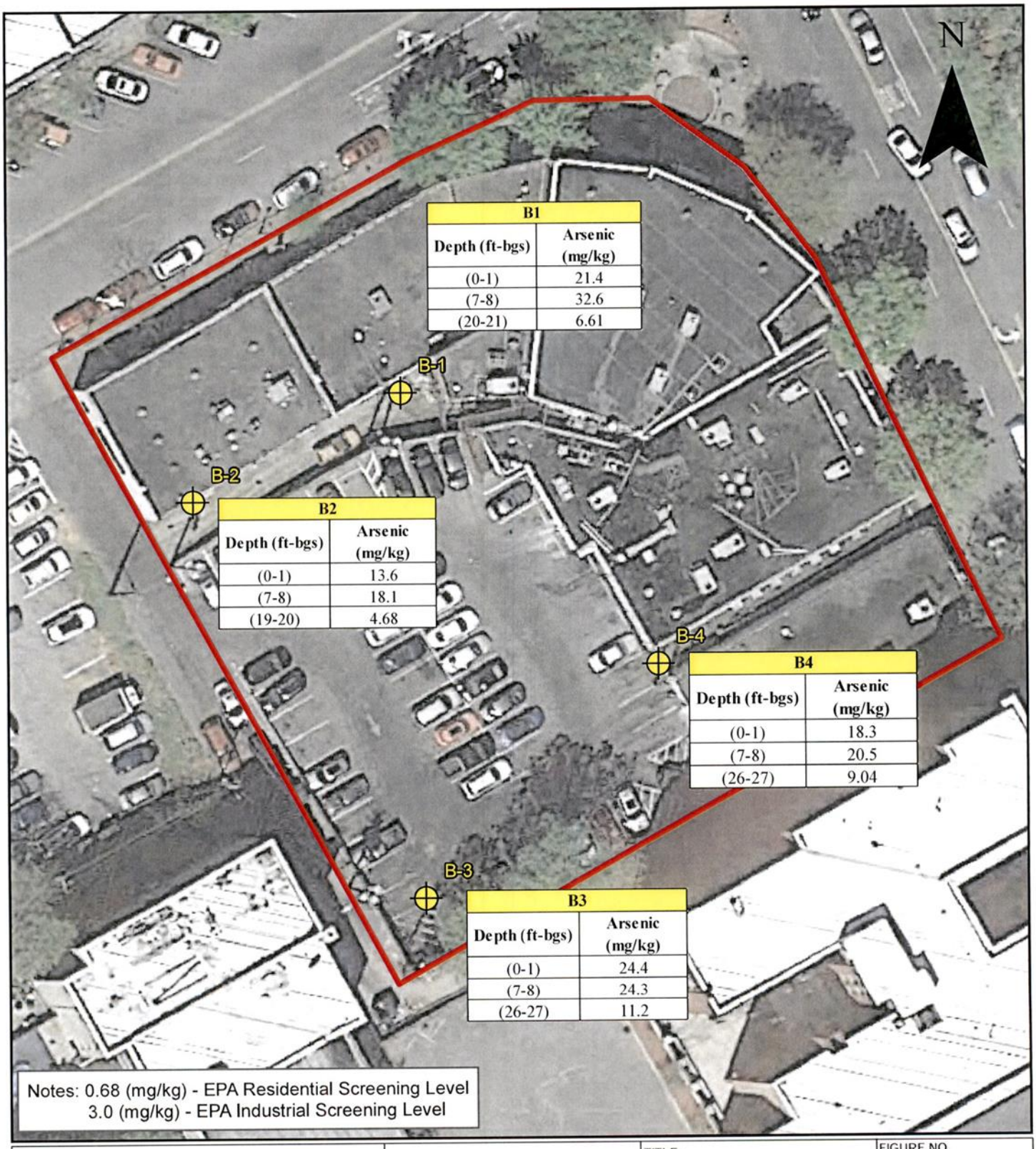
528 MINERAL TRACE
HOOVER, AL 35244
(205) 985-4874

TITLE:
Soil Boring/Monitoring Well Location

VCP Assessment
Munger Building
1102 20th Street South
Birmingham, Alabama

SCALE: 0 20 40
1 inch = 40 feet

FIGURE NO.	6
PROJECT NO.	19-132114.01
DRAWN BY	DW
DATE DRAWN	11/12/2019



Legend

- Soil Boring
- Property Boundary

mg/kg - milligrams per kilogram

Highland Technical Services, Inc.
528 MINERAL TRACE
HOOVER, AL 35244
(205) 985-4874

TITLE: Constituents in Soil Exceeding EPA RSL

VCP Assessment
Munger Building
1102 20th Street South
Birmingham, Alabama

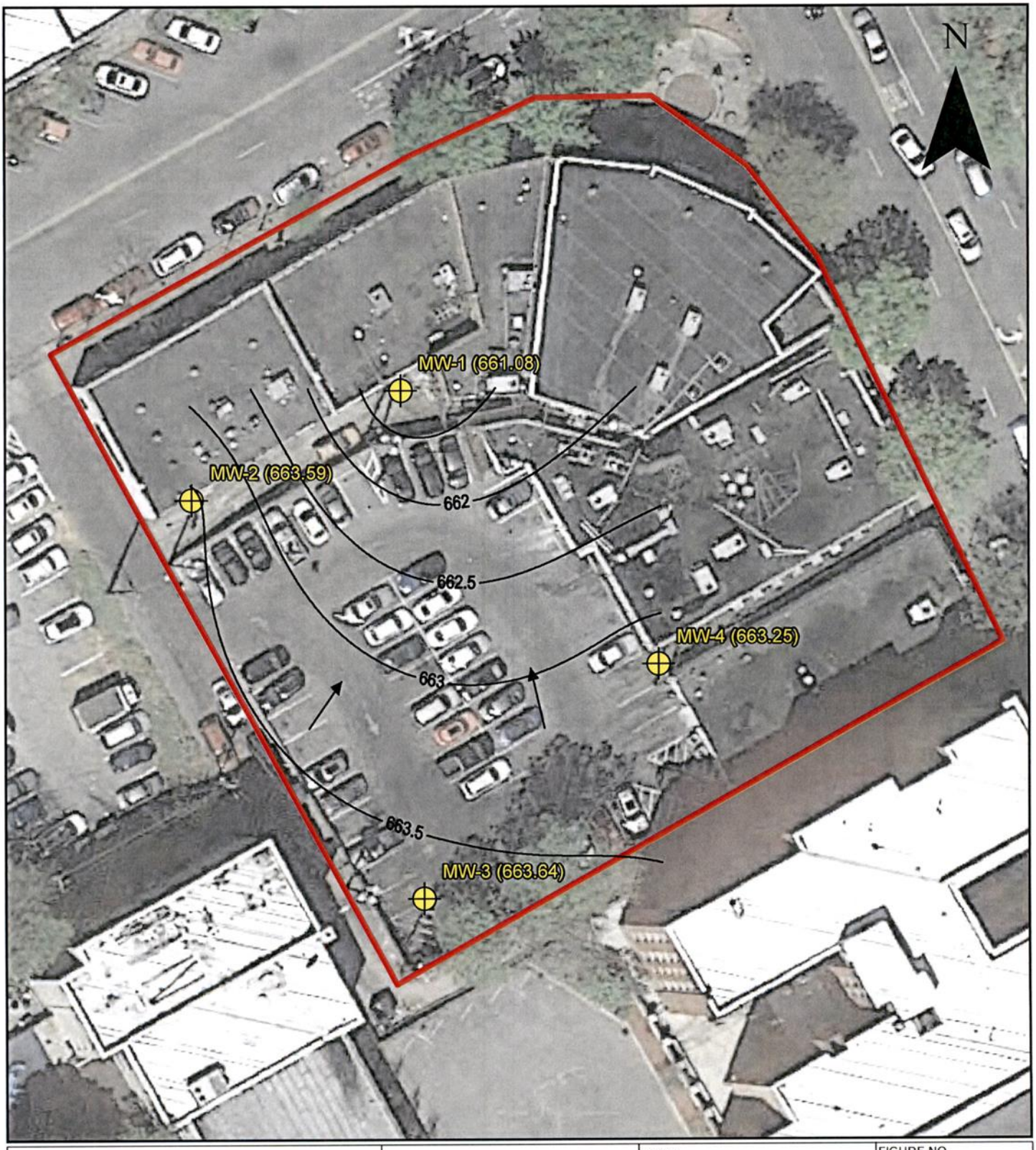
SCALE: 0 20 40
1 inch = 40 feet

FIGURE NO. 7

PROJECT NO. 19-132114.01

DRAWN BY DW

DATE DRAWN 11/12/2019



Legend

- Potentiometric Contour Line
- Monitoring Well
- Property Boundary
- Groundwater Flow
- (661.08) Groundwater Elevation

Highland Technical Services, Inc.

528 MINERAL TRACE
HOOVER, AL 35244
(205) 985-4874

TITLE:

Potentiometric Contour

VCP Assessment
Munger Building
1102 20th Street South
Birmingham, Alabama

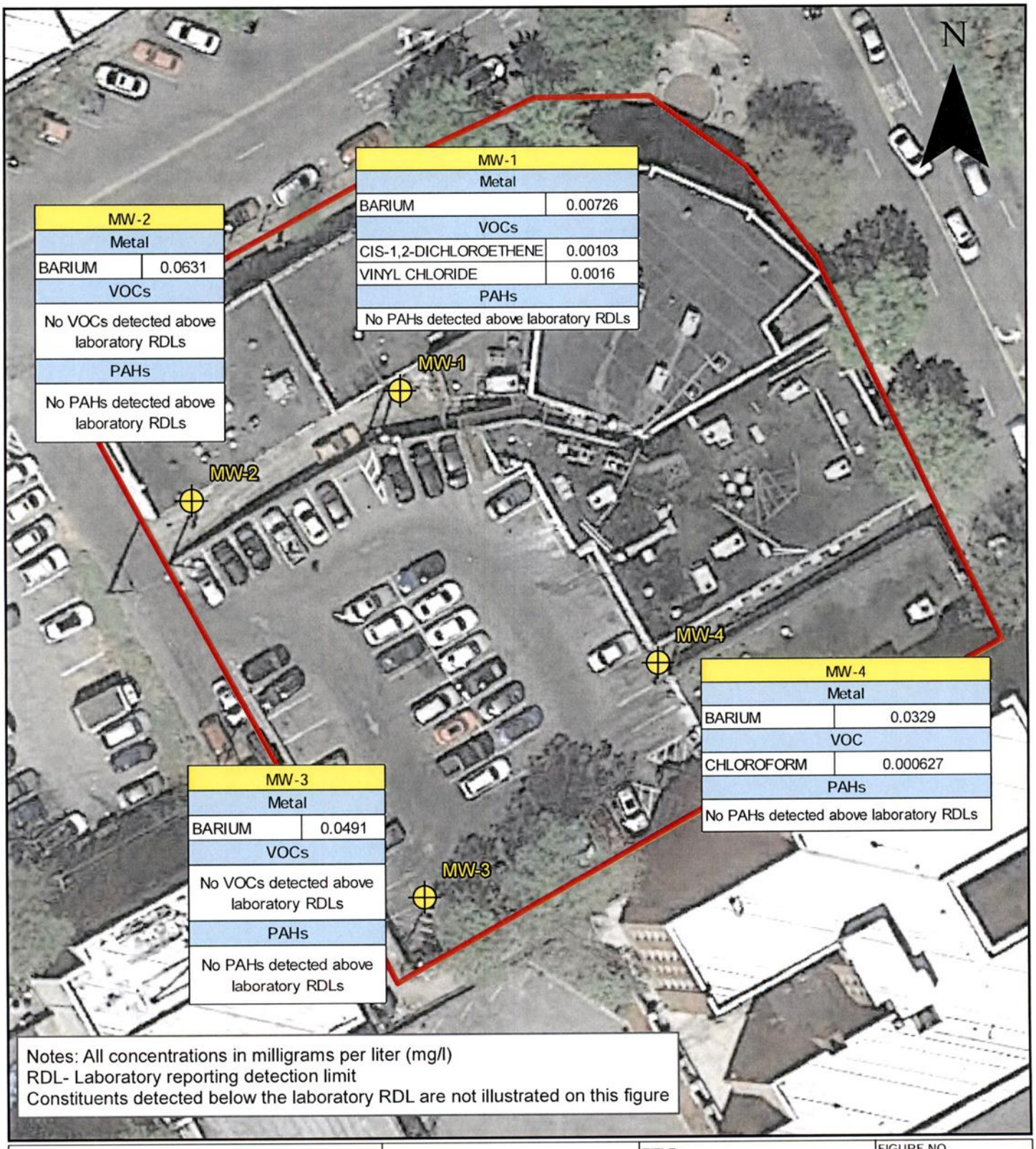
SCALE: 0 20 40
1 inch = 40 feet

FIGURE NO.
8

PROJECT NO.
19-132114.01

DRAWN BY
DW

DATE DRAWN
11/12/2019



Legend

- Monitoring Well
- Property Boundary

Highland Technical Services, Inc.

528 MINERAL TRACE
HOOVER, AL 35244
(205) 985-4874

TITLE: Detected Constituents in Groundwater

VCP Assessment
Munger Building
1102 20th Street South
Birmingham, Alabama

SCALE: 0 20 40
1 inch = 40 feet

FIGURE NO.	9
PROJECT NO.	19-132114.01
DRAWN BY	DW
DATE DRAWN	11/12/2019

APPENDIX A

Highland Technical Services, Inc.

VCP Assistance
Munger Site
11th Avenue South
Birmingham, Jefferson County, Alabama

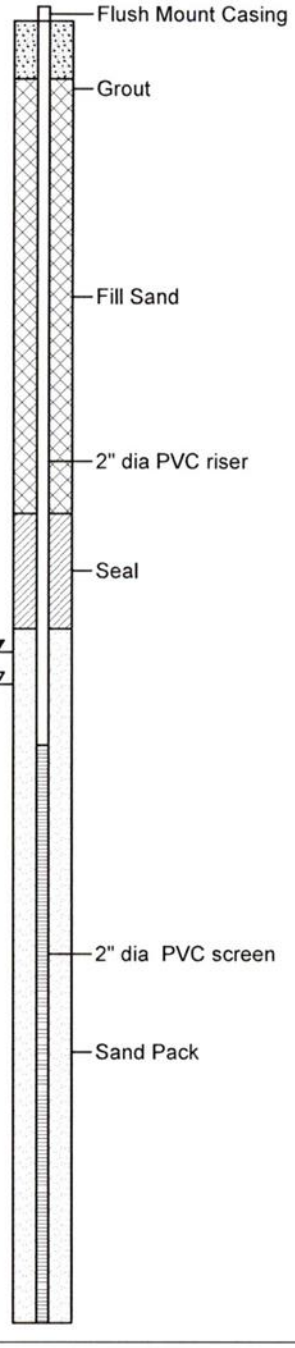
Log for MW-1

Date Started	: 10/1/19	Drilling Company	: Premier
Date Completed	: 10/1/19	Driller	: Sammy McDaniel
Hole Diameter	: 3"	Latitude	: 33.500097
Drilling Method	: Auger	Longitude	: -86.796636
Sampling Method	: Direct Push	Logged By	: Adam Hughes

Water Levels
▼ After Drilling
▽ First Saturation

Depth in Feet (bgs)	Surf. Elev. 300	USCS	GRAPHIC	DESCRIPTION	Water Encountered	Sample Locations	Depth in Feet (bgs)	REMARKS
0	300			Dark reddish-brown, firm, nonplastic, dry gravelly clay. Gravel potential backfill. No odor or evident contamination. PID all 0.			0	
5	295			Same as above, softening with depth. Less gravel with depth. PID all 0.			5	
10	290			Dark reddish brown clay, firm, damp, slightly plastic. Deeper red in color than above layers. Concentrations of gravel absent. PID all 0.	▼ 10/8/2019 1330 ▽ 10/2/2019 0802		10	
15	285			Same as above further softening with depth. No evidence of contamination. PID all 0.			15	
20				Potential GW interface at 20-21' BGS. Wet, soft, pale red and mottled sandy clay.			20	

MW-1
671.98 FT AMSL



10-25-2019 \\HTSI-FILE\Projects\2019\Munger LLC\Borings\Munger MW-1.bor

Highland Technical Services, Inc.

VCP Assistance
Munger Site
11th Avenue South
Birmingham, Jefferson County, Alabama

Log for MW-2

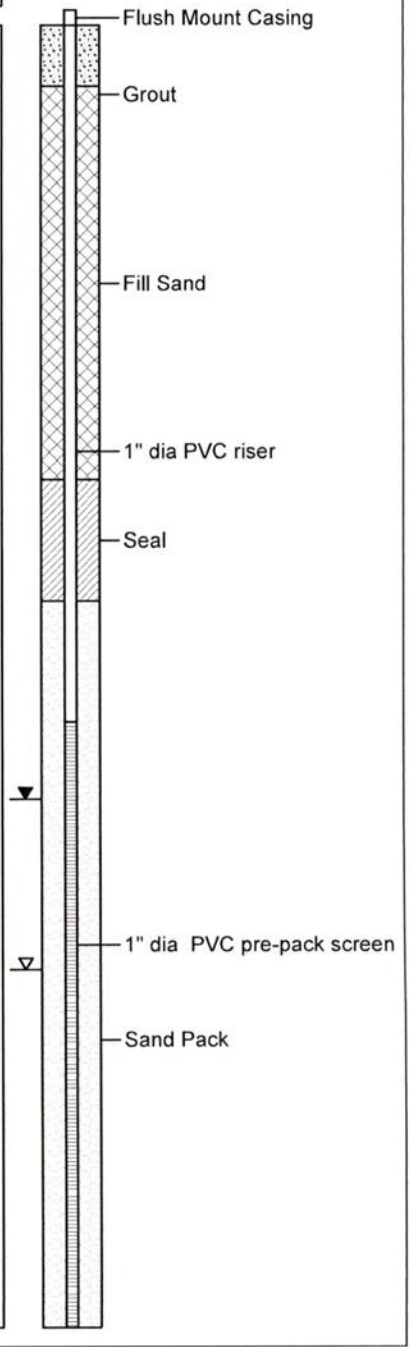
Date Started	: 10/1/19	Drilling Company	: Premier
Date Completed	: 10/2/19	Driller	: Sammy McDaniel
Hole Diameter	: 3"	Latitude	: 33.500008
Drilling Method	: Auger	Longitude	: -86.796857
Sampling Method	: Direct Push	Logged By	: Adam Hughes

Water Levels
▼ After Drilling
▽ First Saturation

Depth in Feet (bgs)	Surf. Elev. 300	USCS	GRAPHIC	DESCRIPTION	Water Encountered	Sample Locations
0	300			Dark reddish-brown, firm, nonplastic, dry gravelly clay. Gravel potential backfill. No odor or evident contamination. PID all 0.		
5	295			Same as above, softening with depth. Less gravel with depth. PID all 0.		
10	290			Dark reddish brown clay, firm, damp, slightly plastic. Deeper red in color than above layers. Concentrations of gravel absent. PID all 0.	▼	
15	285			Same as above further softening with depth. No evidence of contamination. PID all 0.	▽	
20				Potential GW interface at 19-20' BGS. Wet, soft, pale red and mottled sandy clay. PID all 0.		

Depth in Feet (bgs)	REMARKS
0	
10	10/8/2019 1432
15	10/2/2019 0806
20	

MW-2
676.36 FT AMSL



Highland Technical Services, Inc.

VCP Assistance
Munger Site
11th Avenue South
Birmingham, Jefferson County, Alabama

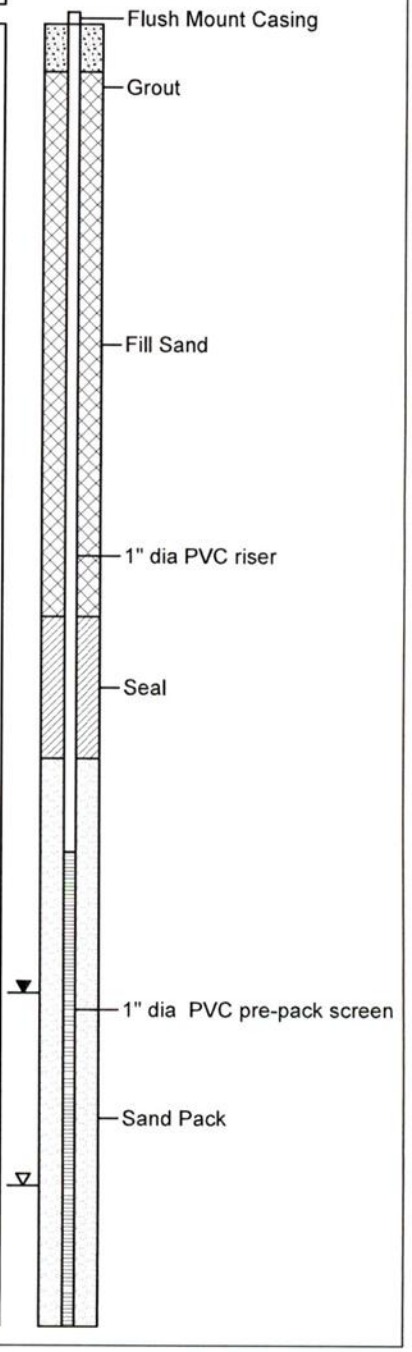
Log for MW-3

Date Started	: 10/1/19	Drilling Company	: Premier
Date Completed	: 10/2/19	Driller	: Sammy McDaniel
Hole Diameter	: 3"	Latitude	: 33.499679
Drilling Method	: Auger	Longitude	: -86.796615
Sampling Method	: Direct Push	Logged By	: Adam Hughes

Water Levels
▼ After Drilling
▽ First Saturation

Depth in Feet (bgs)	Surf. Elev. 300	USCS	GRAPHIC	DESCRIPTION	Water Encountered	Sample Locations	Depth in Feet (bgs)	REMARKS
0	300			Dark reddish-brown, firm, nonplastic, dry gravelly clay. Gravel potential backfill. No odor or evident contamination. PID all 0.			0	
5	295			Same as above, softening with depth. Less gravel with depth. PID all 0.			5	
10	290			Dark reddish brown clay, firm, damp, slightly plastic. Deeper red in color than above layers. Concentrations of gravel absent. PID all 0.			10	
15	285			Same as above further softening with depth. No evidence of contamination. PID all 0.			15	
20	280			Same as above. Damp soft reddish brown clay. PID all 0.	▼		20	10/8/2019 1535
25				Potential GW interface at 26-27' BGS. Wet, soft, pale red and mottled sandy clay. PID all 0.	▽		25	10/2/2019 0811

MW-3
684.16 FT AMSL



10-25-2019 \\HTSI-FILE\Projects\2019\Munger LLC\Borings\Munger MW-3.bor

Highland Technical Services, Inc.

VCP Assistance
Munger Site
11th Avenue South
Birmingham, Jefferson County, Alabama

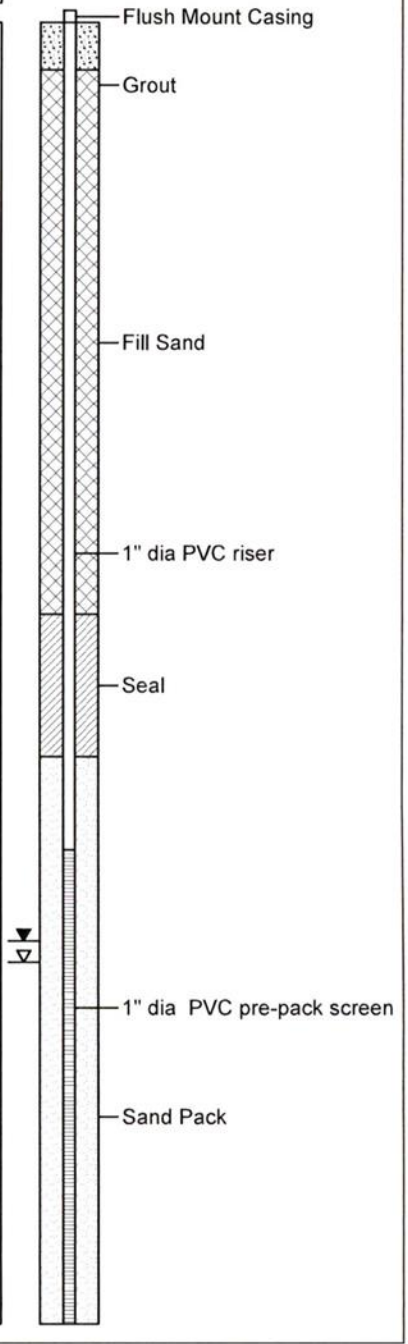
Log for MW-4

Date Started	: 10/1/19	Drilling Company	: Premier
Date Completed	: 10/2/19	Driller	: Sammy McDaniel
Hole Diameter	: 3"	Latitude	: 33.499871
Drilling Method	: Auger	Longitude	: -86.796382
Sampling Method	: Direct Push	Logged By	: Adam Hughes

Water Levels
▼ After Drilling
▽ First Saturation

Depth in Feet (bgs)	Surf. Elev. 300	USCS	GRAPHIC	DESCRIPTION	Water Encountered	Sample Locations	Depth in Feet (bgs)	REMARKS
0	300			Dark reddish-brown, firm, nonplastic, dry gravelly clay. Gravel potential backfill. No odor or evident contamination. PID all 0.		☒	0	
5	295			Same as above, softening with depth. Less gravel with depth. PID all 0.		☒	5	
10	290			Dark reddish brown clay, firm, damp, slightly plastic. Deeper red in color than above layers. Concentrations of gravel absent. PID all 0.			10	
15	285			Same as above further softening with depth. No evidence of contamination. PID all 0.			15	
20	280			Same as above. Damp soft reddish brown clay. PID all 0.	▼ ▽		20	10/8/2019 1635 10/2/2019 1451
25				Potential GW interface at 26-27' BGS. Wet, soft, pale red and mottled sandy clay. PID all 0.		☒	25	

MW-4
683.4 FT AMSL



10-25-2019 \\HTSI-FILE\Projects\2019\Munger LLC\Borings\Munger MW-4.bor

APPENDIX B

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

October 13, 2019

Highland Technical Services, Inc.

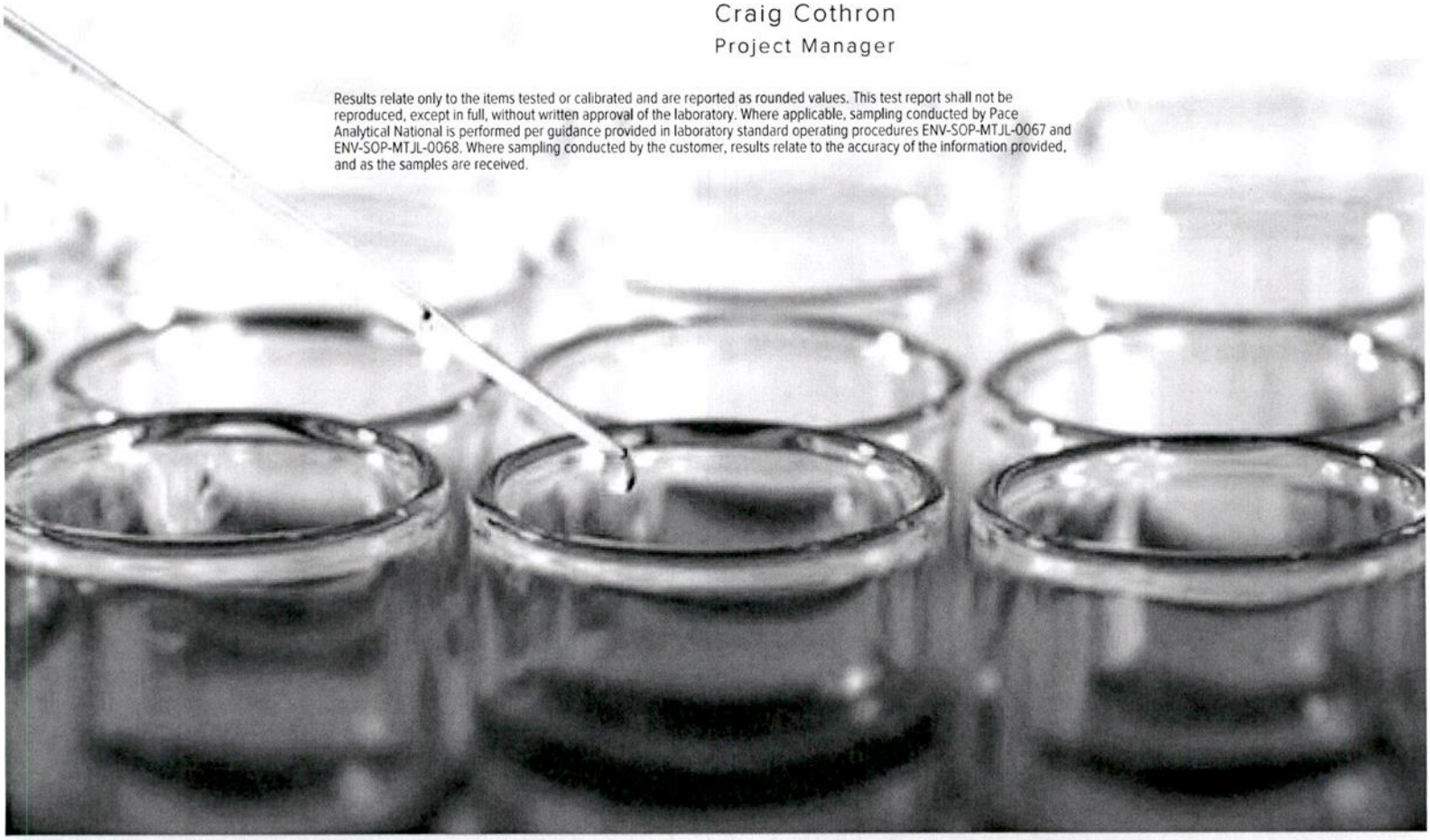
Sample Delivery Group:	L1146108
Samples Received:	10/03/2019
Project Number:	19-132114.01
Description:	Munger Site - Birmingham, AL

Report To:

Mr. David Wall
528 Mineral Trace
Hoover, AL 35244

Entire Report Reviewed By:

Craig Cothron
Project Manager



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B1 (0-1) L1146108-01 Solid

Collected by: Adam Hughes | Collected date/time: 10/01/19 09:15 | Received date/time: 10/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 7199	WG1359111	1	10/10/19 16:52	10/10/19 21:00	GB	Mt. Juliet, TN
Mercury by Method 7471A	WG1358737	1	10/08/19 12:50	10/08/19 20:50	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1359813	1	10/09/19 10:48	10/09/19 15:06	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1360539	1	10/01/19 09:15	10/11/19 20:24	ADM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1359597	1	10/09/19 06:59	10/09/19 15:08	LEA	Mt. Juliet, TN

B1 (4-8) L1146108-02 Solid

Collected by: Adam Hughes | Collected date/time: 10/01/19 09:20 | Received date/time: 10/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 7199	WG1359111	1	10/10/19 16:52	10/10/19 21:13	GB	Mt. Juliet, TN
Mercury by Method 7471A	WG1358737	1	10/08/19 12:50	10/08/19 20:53	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1359813	1	10/09/19 10:48	10/09/19 15:09	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1360540	7.68	10/01/19 09:20	10/10/19 23:22	ADM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1359597	1	10/09/19 06:59	10/09/19 15:28	LEA	Mt. Juliet, TN

B1 (20-21) L1146108-03 Solid

Collected by: Adam Hughes | Collected date/time: 10/01/19 09:40 | Received date/time: 10/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 7199	WG1359111	1	10/10/19 16:52	10/10/19 21:39	GB	Mt. Juliet, TN
Mercury by Method 7471A	WG1358737	1	10/08/19 12:50	10/08/19 21:00	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1359813	1	10/09/19 10:48	10/09/19 15:11	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1360540	1	10/01/19 09:40	10/10/19 20:38	ADM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1359597	1	10/09/19 06:59	10/09/19 15:49	LEA	Mt. Juliet, TN

B2 (0-1) L1146108-04 Solid

Collected by: Adam Hughes | Collected date/time: 10/01/19 13:30 | Received date/time: 10/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 7199	WG1359111	1	10/10/19 16:52	10/10/19 21:54	GB	Mt. Juliet, TN
Mercury by Method 7471A	WG1358737	1	10/08/19 12:50	10/08/19 21:03	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1359813	1	10/09/19 10:48	10/09/19 15:14	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1360540	17.3	10/01/19 13:30	10/10/19 23:42	ADM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1359597	1	10/09/19 06:59	10/09/19 16:10	LEA	Mt. Juliet, TN

B2 (4-8) L1146108-05 Solid

Collected by: Adam Hughes | Collected date/time: 10/01/19 13:32 | Received date/time: 10/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 7199	WG1359111	1	10/10/19 16:52	10/10/19 21:59	GB	Mt. Juliet, TN
Mercury by Method 7471A	WG1358737	1	10/08/19 12:50	10/08/19 21:06	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1359813	1	10/09/19 10:48	10/09/19 15:16	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1360540	2.06	10/01/19 13:32	10/10/19 22:41	ADM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1359597	1	10/09/19 06:59	10/09/19 16:30	LEA	Mt. Juliet, TN

B2 (19-20) L1146108-06 Solid

Collected by: Adam Hughes | Collected date/time: 10/01/19 13:45 | Received date/time: 10/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 7199	WG1359111	1	10/10/19 16:52	10/10/19 22:05	GB	Mt. Juliet, TN
Mercury by Method 7471A	WG1358737	1	10/08/19 12:50	10/08/19 21:08	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1359813	1	10/09/19 10:48	10/09/19 15:27	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1360540	1.25	10/01/19 13:45	10/10/19 20:58	ADM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1359597	1	10/09/19 06:59	10/09/19 16:51	LEA	Mt. Juliet, TN

B3 (0-1) L1146108-07 Solid

Collected by: Adam Hughes | Collected date/time: 10/01/19 15:13 | Received date/time: 10/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 7199	WG1359111	1	10/10/19 16:52	10/10/19 22:10	GB	Mt. Juliet, TN
Mercury by Method 7471A	WG1358737	1	10/08/19 12:50	10/08/19 21:11	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1359813	1	10/09/19 10:48	10/09/19 15:30	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1360540	1	10/01/19 15:13	10/10/19 21:19	ADM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1359597	1	10/09/19 06:59	10/09/19 17:12	LEA	Mt. Juliet, TN

B3 (4-8) L1146108-08 Solid

Collected by: Adam Hughes | Collected date/time: 10/01/19 15:16 | Received date/time: 10/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 7199	WG1359111	1	10/10/19 16:52	10/10/19 22:15	GB	Mt. Juliet, TN
Mercury by Method 7471A	WG1358737	1	10/08/19 12:50	10/08/19 21:13	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1359813	1	10/09/19 10:48	10/09/19 15:32	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1360540	1	10/01/19 15:16	10/10/19 21:39	ADM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1359597	1	10/09/19 06:59	10/09/19 17:32	LEA	Mt. Juliet, TN

B3 (26-27) L1146108-09 Solid

Collected by: Adam Hughes | Collected date/time: 10/01/19 15:55 | Received date/time: 10/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 7199	WG1359111	1	10/10/19 16:52	10/10/19 22:20	GB	Mt. Juliet, TN
Mercury by Method 7471A	WG1358737	1	10/08/19 12:50	10/08/19 21:16	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1359813	1	10/09/19 10:48	10/09/19 15:35	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1360540	1.37	10/01/19 15:55	10/10/19 22:00	ADM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1359597	1	10/09/19 06:59	10/09/19 17:53	LEA	Mt. Juliet, TN

B4 (0-1) L1146108-10 Solid

Collected by: Adam Hughes | Collected date/time: 10/02/19 10:07 | Received date/time: 10/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 7199	WG1359111	1	10/10/19 16:52	10/10/19 22:25	GB	Mt. Juliet, TN
Mercury by Method 7471A	WG1358737	1	10/08/19 12:50	10/08/19 21:18	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1359813	1	10/09/19 10:48	10/09/19 15:38	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1360540	1	10/02/19 10:07	10/10/19 19:57	ADM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1359597	1	10/09/19 06:59	10/09/19 18:14	LEA	Mt. Juliet, TN

B4 (4-8) L1146108-11 Solid

Collected by: Adam Hughes | Collected date/time: 10/02/19 10:09 | Received date/time: 10/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 7199	WG1359111	1	10/10/19 16:52	10/10/19 22:31	GB	Mt. Juliet, TN
Mercury by Method 7471A	WG1358737	1	10/08/19 12:50	10/08/19 21:21	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1359813	1	10/09/19 10:48	10/09/19 15:40	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1360540	1.23	10/02/19 10:09	10/10/19 20:18	ADM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1359597	1	10/09/19 06:59	10/09/19 18:34	LEA	Mt. Juliet, TN

B4 (26-27) L1146108-12 Solid

Collected by: Adam Hughes | Collected date/time: 10/02/19 10:29 | Received date/time: 10/03/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 7199	WG1359111	1	10/10/19 16:52	10/10/19 22:36	GB	Mt. Juliet, TN
Mercury by Method 7471A	WG1358737	1	10/08/19 12:50	10/08/19 21:24	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1359813	1	10/09/19 10:48	10/09/19 15:43	EL	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1360540	2.32	10/02/19 10:29	10/10/19 23:02	ADM	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1359597	1	10/09/19 06:59	10/09/19 19:57	LEA	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Craig Cothron
Project Manager

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	10/10/2019 21:00	WG1359111

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0387		0.00280	0.0300	1	10/08/2019 20:50	WG1358737

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	21.4		0.460	2.00	1	10/09/2019 15:06	WG1359813
Barium	7.36		0.170	0.500	1	10/09/2019 15:06	WG1359813
Cadmium	U		0.0700	0.500	1	10/09/2019 15:06	WG1359813
Chromium	22.5		0.140	1.00	1	10/09/2019 15:06	WG1359813
Lead	7.31		0.190	0.500	1	10/09/2019 15:06	WG1359813
Selenium	U		0.620	2.00	1	10/09/2019 15:06	WG1359813
Silver	U		0.120	1.00	1	10/09/2019 15:06	WG1359813

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	0.0190	J	0.0137	0.0250	1	10/11/2019 20:24	WG1360539
Acrylonitrile	U		0.00190	0.0125	1	10/11/2019 20:24	WG1360539
Benzene	0.000457	J	0.000400	0.00100	1	10/11/2019 20:24	WG1360539
Bromobenzene	U		0.00105	0.0125	1	10/11/2019 20:24	WG1360539
Bromodichloromethane	U		0.000788	0.00250	1	10/11/2019 20:24	WG1360539
Bromoform	U		0.00598	0.0250	1	10/11/2019 20:24	WG1360539
Bromomethane	U		0.00370	0.0125	1	10/11/2019 20:24	WG1360539
n-Butylbenzene	U		0.00384	0.0125	1	10/11/2019 20:24	WG1360539
sec-Butylbenzene	0.00285	J	0.00253	0.0125	1	10/11/2019 20:24	WG1360539
tert-Butylbenzene	U		0.00155	0.00500	1	10/11/2019 20:24	WG1360539
Carbon tetrachloride	U		0.00108	0.00500	1	10/11/2019 20:24	WG1360539
Chlorobenzene	U		0.000573	0.00250	1	10/11/2019 20:24	WG1360539
Chlorodibromomethane	U		0.000450	0.00250	1	10/11/2019 20:24	WG1360539
Chloroethane	U		0.00108	0.00500	1	10/11/2019 20:24	WG1360539
Chloroform	0.00120	B J	0.000415	0.00250	1	10/11/2019 20:24	WG1360539
Chloromethane	U		0.00139	0.0125	1	10/11/2019 20:24	WG1360539
2-Chlorotoluene	U		0.000920	0.00250	1	10/11/2019 20:24	WG1360539
4-Chlorotoluene	U		0.00113	0.00500	1	10/11/2019 20:24	WG1360539
1,2-Dibromo-3-Chloropropane	U		0.00510	0.0250	1	10/11/2019 20:24	WG1360539
1,2-Dibromoethane	U		0.000525	0.00250	1	10/11/2019 20:24	WG1360539
Dibromomethane	U	J4	0.00100	0.00500	1	10/11/2019 20:24	WG1360539
1,2-Dichlorobenzene	U		0.00145	0.00500	1	10/11/2019 20:24	WG1360539
1,3-Dichlorobenzene	U		0.00170	0.00500	1	10/11/2019 20:24	WG1360539
1,4-Dichlorobenzene	U		0.00197	0.00500	1	10/11/2019 20:24	WG1360539
Dichlorodifluoromethane	U		0.000818	0.00250	1	10/11/2019 20:24	WG1360539
1,1-Dichloroethane	U		0.000575	0.00250	1	10/11/2019 20:24	WG1360539
1,2-Dichloroethane	U		0.000475	0.00250	1	10/11/2019 20:24	WG1360539
1,1-Dichloroethene	U		0.000500	0.00250	1	10/11/2019 20:24	WG1360539
cis-1,2-Dichloroethene	U		0.000690	0.00250	1	10/11/2019 20:24	WG1360539
trans-1,2-Dichloroethene	U		0.00143	0.00500	1	10/11/2019 20:24	WG1360539
1,2-Dichloropropane	U		0.00127	0.00500	1	10/11/2019 20:24	WG1360539
1,1-Dichloropropene	U		0.000700	0.00250	1	10/11/2019 20:24	WG1360539
1,3-Dichloropropane	U		0.00175	0.00500	1	10/11/2019 20:24	WG1360539

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
cis-1,3-Dichloropropene	U		0.000678	0.00250	1	10/11/2019 20:24	WG1360539
trans-1,3-Dichloropropene	U		0.00153	0.00500	1	10/11/2019 20:24	WG1360539
2,2-Dichloropropane	U		0.000793	0.00250	1	10/11/2019 20:24	WG1360539
Di-isopropyl ether	U		0.000350	0.00100	1	10/11/2019 20:24	WG1360539
Ethylbenzene	0.00355		0.000530	0.00250	1	10/11/2019 20:24	WG1360539
Hexachloro-1,3-butadiene	U		0.0127	0.0250	1	10/11/2019 20:24	WG1360539
Isopropylbenzene	0.00341		0.000863	0.00250	1	10/11/2019 20:24	WG1360539
p-Isopropyltoluene	U		0.00233	0.00500	1	10/11/2019 20:24	WG1360539
2-Butanone (MEK)	U		0.0125	0.0250	1	10/11/2019 20:24	WG1360539
Methylene Chloride	U		0.00664	0.0250	1	10/11/2019 20:24	WG1360539
4-Methyl-2-pentanone (MIBK)	U		0.0100	0.0250	1	10/11/2019 20:24	WG1360539
Methyl tert-butyl ether	U	J4	0.000295	0.00100	1	10/11/2019 20:24	WG1360539
Naphthalene	U	J4	0.00312	0.0125	1	10/11/2019 20:24	WG1360539
n-Propylbenzene	0.0127		0.00118	0.00500	1	10/11/2019 20:24	WG1360539
Styrene	U		0.00273	0.0125	1	10/11/2019 20:24	WG1360539
1,1,1,2-Tetrachloroethane	U		0.000500	0.00250	1	10/11/2019 20:24	WG1360539
1,1,2,2-Tetrachloroethane	U		0.000390	0.00250	1	10/11/2019 20:24	WG1360539
1,1,2-Trichlorotrifluoroethane	U		0.000675	0.00250	1	10/11/2019 20:24	WG1360539
Tetrachloroethene	U		0.000700	0.00250	1	10/11/2019 20:24	WG1360539
Toluene	0.00163	J	0.00125	0.00500	1	10/11/2019 20:24	WG1360539
1,2,3-Trichlorobenzene	U	J4	0.000625	0.00250	1	10/11/2019 20:24	WG1360539
1,2,4-Trichlorobenzene	U		0.00482	0.0125	1	10/11/2019 20:24	WG1360539
1,1,1-Trichloroethane	U		0.000275	0.00250	1	10/11/2019 20:24	WG1360539
1,1,2-Trichloroethane	U		0.000883	0.00250	1	10/11/2019 20:24	WG1360539
Trichloroethene	U		0.000400	0.00100	1	10/11/2019 20:24	WG1360539
Trichlorofluoromethane	U		0.000500	0.00250	1	10/11/2019 20:24	WG1360539
1,2,3-Trichloropropane	U		0.00510	0.0125	1	10/11/2019 20:24	WG1360539
1,2,4-Trimethylbenzene	0.0446		0.00116	0.00500	1	10/11/2019 20:24	WG1360539
1,2,3-Trimethylbenzene	0.0103		0.00115	0.00500	1	10/11/2019 20:24	WG1360539
1,3,5-Trimethylbenzene	0.00576		0.00108	0.00500	1	10/11/2019 20:24	WG1360539
Vinyl chloride	U		0.000683	0.00250	1	10/11/2019 20:24	WG1360539
Xylenes, Total	0.00936		0.00478	0.00650	1	10/11/2019 20:24	WG1360539
(S) Toluene-d8	*106*			*75.0-131*		*10/11/2019 20:24*	WG1360539
(S) 4-Bromofluorobenzene	*95.9*			*67.0-138*		*10/11/2019 20:24*	WG1360539
(S) 1,2-Dichloroethane-d4	*106*			*70.0-130*		*10/11/2019 20:24*	WG1360539

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.000600	0.00600	1	10/09/2019 15:08	WG1359597
Acenaphthene	U		0.000600	0.00600	1	10/09/2019 15:08	WG1359597
Acenaphthylene	U		0.000600	0.00600	1	10/09/2019 15:08	WG1359597
Benzo(a)anthracene	U		0.000600	0.00600	1	10/09/2019 15:08	WG1359597
Benzo(a)pyrene	U		0.000600	0.00600	1	10/09/2019 15:08	WG1359597
Benzo(b)fluoranthene	U		0.000600	0.00600	1	10/09/2019 15:08	WG1359597
Benzo(g,h,i)perylene	U		0.000600	0.00600	1	10/09/2019 15:08	WG1359597
Benzo(k)fluoranthene	U		0.000600	0.00600	1	10/09/2019 15:08	WG1359597
Chrysene	U		0.000600	0.00600	1	10/09/2019 15:08	WG1359597
Dibenz(a,h)anthracene	U		0.000600	0.00600	1	10/09/2019 15:08	WG1359597
Fluoranthene	U		0.000600	0.00600	1	10/09/2019 15:08	WG1359597
Fluorene	U		0.000600	0.00600	1	10/09/2019 15:08	WG1359597
Indeno(1,2,3-cd)pyrene	U		0.000600	0.00600	1	10/09/2019 15:08	WG1359597
Naphthalene	U		0.00200	0.0200	1	10/09/2019 15:08	WG1359597
Phenanthrene	U		0.000600	0.00600	1	10/09/2019 15:08	WG1359597
Pyrene	U		0.000600	0.00600	1	10/09/2019 15:08	WG1359597
1-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 15:08	WG1359597

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
2-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 15:08	WG1359597
2-Chloronaphthalene	U		0.00200	0.0200	1	10/09/2019 15:08	WG1359597
(S) p-Terphenyl-d14	*68.3*			*23.0-120*		*10/09/2019 15:08*	WG1359597
(S) Nitrobenzene-d5	*102*			*14.0-149*		*10/09/2019 15:08*	WG1359597
(S) 2-Fluorobiphenyl	*74.9*			*34.0-125*		*10/09/2019 15:08*	WG1359597

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	10/10/2019 21:13	WG1359111

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0475		0.00280	0.0300	1	10/08/2019 20:53	WG1358737

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	32.6		0.460	2.00	1	10/09/2019 15:09	WG1359813
Barium	8.53		0.170	0.500	1	10/09/2019 15:09	WG1359813
Cadmium	U		0.0700	0.500	1	10/09/2019 15:09	WG1359813
Chromium	34.6		0.140	1.00	1	10/09/2019 15:09	WG1359813
Lead	10.6		0.190	0.500	1	10/09/2019 15:09	WG1359813
Selenium	0.792	J	0.620	2.00	1	10/09/2019 15:09	WG1359813
Silver	U		0.120	1.00	1	10/09/2019 15:09	WG1359813

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	0.156	B J	0.105	0.192	7.68	10/10/2019 23:22	WG1360540
Acrylonitrile	U		0.0146	0.0960	7.68	10/10/2019 23:22	WG1360540
Benzene	U		0.00307	0.00768	7.68	10/10/2019 23:22	WG1360540
Bromobenzene	U		0.00806	0.0960	7.68	10/10/2019 23:22	WG1360540
Bromodichloromethane	U		0.00605	0.0192	7.68	10/10/2019 23:22	WG1360540
Bromoform	U		0.0459	0.192	7.68	10/10/2019 23:22	WG1360540
Bromomethane	U		0.0284	0.0960	7.68	10/10/2019 23:22	WG1360540
n-Butylbenzene	U		0.0295	0.0960	7.68	10/10/2019 23:22	WG1360540
sec-Butylbenzene	U		0.0194	0.0960	7.68	10/10/2019 23:22	WG1360540
tert-Butylbenzene	U		0.0119	0.0384	7.68	10/10/2019 23:22	WG1360540
Carbon tetrachloride	U		0.00829	0.0384	7.68	10/10/2019 23:22	WG1360540
Chlorobenzene	U		0.00440	0.0192	7.68	10/10/2019 23:22	WG1360540
Chlorodibromomethane	U		0.00346	0.0192	7.68	10/10/2019 23:22	WG1360540
Chloroethane	U		0.00829	0.0384	7.68	10/10/2019 23:22	WG1360540
Chloroform	0.00595	J	0.00319	0.0192	7.68	10/10/2019 23:22	WG1360540
Chloromethane	U		0.0107	0.0960	7.68	10/10/2019 23:22	WG1360540
2-Chlorotoluene	U		0.00707	0.0192	7.68	10/10/2019 23:22	WG1360540
4-Chlorotoluene	U		0.00868	0.0384	7.68	10/10/2019 23:22	WG1360540
1,2-Dibromo-3-Chloropropane	U		0.0392	0.192	7.68	10/10/2019 23:22	WG1360540
1,2-Dibromoethane	U		0.00403	0.0192	7.68	10/10/2019 23:22	WG1360540
Dibromomethane	U		0.00768	0.0384	7.68	10/10/2019 23:22	WG1360540
1,2-Dichlorobenzene	U		0.0111	0.0384	7.68	10/10/2019 23:22	WG1360540
1,3-Dichlorobenzene	U		0.0131	0.0384	7.68	10/10/2019 23:22	WG1360540
1,4-Dichlorobenzene	U		0.0151	0.0384	7.68	10/10/2019 23:22	WG1360540
Dichlorodifluoromethane	U		0.00628	0.0192	7.68	10/10/2019 23:22	WG1360540
1,1-Dichloroethane	U		0.00442	0.0192	7.68	10/10/2019 23:22	WG1360540
1,2-Dichloroethane	U		0.00365	0.0192	7.68	10/10/2019 23:22	WG1360540
1,1-Dichloroethene	U		0.00384	0.0192	7.68	10/10/2019 23:22	WG1360540
cis-1,2-Dichloroethene	U		0.00530	0.0192	7.68	10/10/2019 23:22	WG1360540
trans-1,2-Dichloroethene	U		0.0110	0.0384	7.68	10/10/2019 23:22	WG1360540
1,2-Dichloropropane	U		0.00975	0.0384	7.68	10/10/2019 23:22	WG1360540
1,1-Dichloropropene	U		0.00538	0.0192	7.68	10/10/2019 23:22	WG1360540
1,3-Dichloropropane	U		0.0134	0.0384	7.68	10/10/2019 23:22	WG1360540

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
cis-1,3-Dichloropropene	U		0.00521	0.0192	7.68	10/10/2019 23:22	WG1360540
trans-1,3-Dichloropropene	U		0.0118	0.0384	7.68	10/10/2019 23:22	WG1360540
2,2-Dichloropropane	U		0.00609	0.0192	7.68	10/10/2019 23:22	WG1360540
Di-isopropyl ether	U		0.00269	0.00768	7.68	10/10/2019 23:22	WG1360540
Ethylbenzene	U		0.00407	0.0192	7.68	10/10/2019 23:22	WG1360540
Hexachloro-1,3-butadiene	U		0.0975	0.192	7.68	10/10/2019 23:22	WG1360540
Isopropylbenzene	U		0.00663	0.0192	7.68	10/10/2019 23:22	WG1360540
p-Isopropyltoluene	0.160		0.0179	0.0384	7.68	10/10/2019 23:22	WG1360540
2-Butanone (MEK)	U		0.0960	0.192	7.68	10/10/2019 23:22	WG1360540
Methylene Chloride	0.0601	B J	0.0510	0.192	7.68	10/10/2019 23:22	WG1360540
4-Methyl-2-pentanone (MIBK)	U		0.0768	0.192	7.68	10/10/2019 23:22	WG1360540
Methyl tert-butyl ether	0.00941		0.00227	0.00768	7.68	10/10/2019 23:22	WG1360540
Naphthalene	U		0.0240	0.0960	7.68	10/10/2019 23:22	WG1360540
n-Propylbenzene	U		0.00906	0.0384	7.68	10/10/2019 23:22	WG1360540
Styrene	0.0244	J	0.0210	0.0960	7.68	10/10/2019 23:22	WG1360540
1,1,1,2-Tetrachloroethane	U		0.00384	0.0192	7.68	10/10/2019 23:22	WG1360540
1,1,2,2-Tetrachloroethane	U		0.00300	0.0192	7.68	10/10/2019 23:22	WG1360540
1,1,2-Trichlorotrifluoroethane	U		0.00518	0.0192	7.68	10/10/2019 23:22	WG1360540
Tetrachloroethene	U		0.00538	0.0192	7.68	10/10/2019 23:22	WG1360540
Toluene	0.0699		0.00960	0.0384	7.68	10/10/2019 23:22	WG1360540
1,2,3-Trichlorobenzene	U		0.00480	0.0192	7.68	10/10/2019 23:22	WG1360540
1,2,4-Trichlorobenzene	U		0.0370	0.0960	7.68	10/10/2019 23:22	WG1360540
1,1,1-Trichloroethane	U		0.00211	0.0192	7.68	10/10/2019 23:22	WG1360540
1,1,2-Trichloroethane	U		0.00678	0.0192	7.68	10/10/2019 23:22	WG1360540
Trichloroethene	U		0.00307	0.00768	7.68	10/10/2019 23:22	WG1360540
Trichlorofluoromethane	U		0.00384	0.0192	7.68	10/10/2019 23:22	WG1360540
1,2,3-Trichloropropane	U		0.0392	0.0960	7.68	10/10/2019 23:22	WG1360540
1,2,4-Trimethylbenzene	0.0348	J	0.00891	0.0384	7.68	10/10/2019 23:22	WG1360540
1,2,3-Trimethylbenzene	0.0134	J	0.00883	0.0384	7.68	10/10/2019 23:22	WG1360540
1,3,5-Trimethylbenzene	U		0.00829	0.0384	7.68	10/10/2019 23:22	WG1360540
Vinyl chloride	U	J4	0.00525	0.0192	7.68	10/10/2019 23:22	WG1360540
Xylenes, Total	U		0.0367	0.0499	7.68	10/10/2019 23:22	WG1360540
(S) Toluene-d8	*107*			*75.0-131*		*10/10/2019 23:22*	WG1360540
(S) 4-Bromofluorobenzene	*97.8*			*67.0-138*		*10/10/2019 23:22*	WG1360540
(S) 1,2-Dichloroethane-d4	*115*			*70.0-130*		*10/10/2019 23:22*	WG1360540

Sample Narrative:

L1146108-02 WG1360540: Lowest possible dilution due to limited sample volume.

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.000600	0.00600	1	10/09/2019 15:28	WG1359597
Acenaphthene	U		0.000600	0.00600	1	10/09/2019 15:28	WG1359597
Acenaphthylene	U		0.000600	0.00600	1	10/09/2019 15:28	WG1359597
Benzo(a)anthracene	U		0.000600	0.00600	1	10/09/2019 15:28	WG1359597
Benzo(a)pyrene	U		0.000600	0.00600	1	10/09/2019 15:28	WG1359597
Benzo(b)fluoranthene	U		0.000600	0.00600	1	10/09/2019 15:28	WG1359597
Benzo(g,h,i)perylene	U		0.000600	0.00600	1	10/09/2019 15:28	WG1359597
Benzo(k)fluoranthene	U		0.000600	0.00600	1	10/09/2019 15:28	WG1359597
Chrysene	U		0.000600	0.00600	1	10/09/2019 15:28	WG1359597
Dibenz(a,h)anthracene	U		0.000600	0.00600	1	10/09/2019 15:28	WG1359597
Fluoranthene	U		0.000600	0.00600	1	10/09/2019 15:28	WG1359597
Fluorene	U		0.000600	0.00600	1	10/09/2019 15:28	WG1359597
Indeno(1,2,3-cd)pyrene	U		0.000600	0.00600	1	10/09/2019 15:28	WG1359597
Naphthalene	U		0.00200	0.0200	1	10/09/2019 15:28	WG1359597

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Phenanthrene	U		0.000600	0.00600	1	10/09/2019 15:28	WG1359597
Pyrene	U		0.000600	0.00600	1	10/09/2019 15:28	WG1359597
1-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 15:28	WG1359597
2-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 15:28	WG1359597
2-Chloronaphthalene	U		0.00200	0.0200	1	10/09/2019 15:28	WG1359597
(S) p-Terphenyl-d14	*74.8*			*23.0-120*		*10/09/2019 15:28*	WG1359597
(S) Nitrobenzene-d5	*109*			*14.0-149*		*10/09/2019 15:28*	WG1359597
(S) 2-Fluorobiphenyl	*80.3*			*34.0-125*		*10/09/2019 15:28*	WG1359597

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	10/10/2019 21:39	WG1359111

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.168		0.00280	0.0300	1	10/08/2019 21:00	WG1358737

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	6.61		0.460	2.00	1	10/09/2019 15:11	WG1359813
Barium	9.28		0.170	0.500	1	10/09/2019 15:11	WG1359813
Cadmium	U		0.0700	0.500	1	10/09/2019 15:11	WG1359813
Chromium	8.63		0.140	1.00	1	10/09/2019 15:11	WG1359813
Lead	13.2		0.190	0.500	1	10/09/2019 15:11	WG1359813
Selenium	0.911	J	0.620	2.00	1	10/09/2019 15:11	WG1359813
Silver	U		0.120	1.00	1	10/09/2019 15:11	WG1359813

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	0.0537	B	0.0137	0.0250	1	10/10/2019 20:38	WG1360540
Acrylonitrile	U		0.00190	0.0125	1	10/10/2019 20:38	WG1360540
Benzene	U		0.000400	0.00100	1	10/10/2019 20:38	WG1360540
Bromobenzene	U		0.00105	0.0125	1	10/10/2019 20:38	WG1360540
Bromodichloromethane	U		0.000788	0.00250	1	10/10/2019 20:38	WG1360540
Bromoform	U		0.00598	0.0250	1	10/10/2019 20:38	WG1360540
Bromomethane	U		0.00370	0.0125	1	10/10/2019 20:38	WG1360540
n-Butylbenzene	U		0.00384	0.0125	1	10/10/2019 20:38	WG1360540
sec-Butylbenzene	U		0.00253	0.0125	1	10/10/2019 20:38	WG1360540
tert-Butylbenzene	U		0.00155	0.00500	1	10/10/2019 20:38	WG1360540
Carbon tetrachloride	U		0.00108	0.00500	1	10/10/2019 20:38	WG1360540
Chlorobenzene	U		0.000573	0.00250	1	10/10/2019 20:38	WG1360540
Chlorodibromomethane	U		0.000450	0.00250	1	10/10/2019 20:38	WG1360540
Chloroethane	U		0.00108	0.00500	1	10/10/2019 20:38	WG1360540
Chloroform	0.00132	J	0.000415	0.00250	1	10/10/2019 20:38	WG1360540
Chloromethane	U		0.00139	0.0125	1	10/10/2019 20:38	WG1360540
2-Chlorotoluene	U		0.000920	0.00250	1	10/10/2019 20:38	WG1360540
4-Chlorotoluene	U		0.00113	0.00500	1	10/10/2019 20:38	WG1360540
1,2-Dibromo-3-Chloropropane	U		0.00510	0.0250	1	10/10/2019 20:38	WG1360540
1,2-Dibromoethane	U		0.000525	0.00250	1	10/10/2019 20:38	WG1360540
Dibromomethane	U		0.00100	0.00500	1	10/10/2019 20:38	WG1360540
1,2-Dichlorobenzene	U		0.00145	0.00500	1	10/10/2019 20:38	WG1360540
1,3-Dichlorobenzene	U		0.00170	0.00500	1	10/10/2019 20:38	WG1360540
1,4-Dichlorobenzene	U		0.00197	0.00500	1	10/10/2019 20:38	WG1360540
Dichlorodifluoromethane	U		0.000818	0.00250	1	10/10/2019 20:38	WG1360540
1,1-Dichloroethane	U		0.000575	0.00250	1	10/10/2019 20:38	WG1360540
1,2-Dichloroethane	U		0.000475	0.00250	1	10/10/2019 20:38	WG1360540
1,1-Dichloroethene	U		0.000500	0.00250	1	10/10/2019 20:38	WG1360540
cis-1,2-Dichloroethene	U		0.000690	0.00250	1	10/10/2019 20:38	WG1360540
trans-1,2-Dichloroethene	U		0.00143	0.00500	1	10/10/2019 20:38	WG1360540
1,2-Dichloropropane	U		0.00127	0.00500	1	10/10/2019 20:38	WG1360540
1,1-Dichloropropene	U		0.000700	0.00250	1	10/10/2019 20:38	WG1360540
1,3-Dichloropropane	U		0.00175	0.00500	1	10/10/2019 20:38	WG1360540

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
cis-1,3-Dichloropropene	U		0.000678	0.00250	1	10/10/2019 20:38	WG1360540
trans-1,3-Dichloropropene	U		0.00153	0.00500	1	10/10/2019 20:38	WG1360540
2,2-Dichloropropane	U		0.000793	0.00250	1	10/10/2019 20:38	WG1360540
Di-isopropyl ether	U		0.000350	0.00100	1	10/10/2019 20:38	WG1360540
Ethylbenzene	U		0.000530	0.00250	1	10/10/2019 20:38	WG1360540
Hexachloro-1,3-butadiene	U		0.0127	0.0250	1	10/10/2019 20:38	WG1360540
Isopropylbenzene	U		0.000863	0.00250	1	10/10/2019 20:38	WG1360540
p-Isopropyltoluene	U		0.00233	0.00500	1	10/10/2019 20:38	WG1360540
2-Butanone (MEK)	0.0142	J	0.0125	0.0250	1	10/10/2019 20:38	WG1360540
Methylene Chloride	0.00910	B J	0.00664	0.0250	1	10/10/2019 20:38	WG1360540
4-Methyl-2-pentanone (MIBK)	U		0.0100	0.0250	1	10/10/2019 20:38	WG1360540
Methyl tert-butyl ether	U		0.000295	0.00100	1	10/10/2019 20:38	WG1360540
Naphthalene	U		0.00312	0.0125	1	10/10/2019 20:38	WG1360540
n-Propylbenzene	U		0.00118	0.00500	1	10/10/2019 20:38	WG1360540
Styrene	U		0.00273	0.0125	1	10/10/2019 20:38	WG1360540
1,1,1,2-Tetrachloroethane	U		0.000500	0.00250	1	10/10/2019 20:38	WG1360540
1,1,2,2-Tetrachloroethane	U		0.000390	0.00250	1	10/10/2019 20:38	WG1360540
1,1,2-Trichlorotrifluoroethane	U		0.000675	0.00250	1	10/10/2019 20:38	WG1360540
Tetrachloroethene	U		0.000700	0.00250	1	10/10/2019 20:38	WG1360540
Toluene	0.00180	J	0.00125	0.00500	1	10/10/2019 20:38	WG1360540
1,2,3-Trichlorobenzene	U		0.000625	0.00250	1	10/10/2019 20:38	WG1360540
1,2,4-Trichlorobenzene	U		0.00482	0.0125	1	10/10/2019 20:38	WG1360540
1,1,1-Trichloroethane	U		0.000275	0.00250	1	10/10/2019 20:38	WG1360540
1,1,2-Trichloroethane	U		0.000883	0.00250	1	10/10/2019 20:38	WG1360540
Trichloroethene	U		0.000400	0.00100	1	10/10/2019 20:38	WG1360540
Trichlorofluoromethane	U		0.000500	0.00250	1	10/10/2019 20:38	WG1360540
1,2,3-Trichloropropane	U		0.00510	0.0125	1	10/10/2019 20:38	WG1360540
1,2,4-Trimethylbenzene	0.00360	J	0.00116	0.00500	1	10/10/2019 20:38	WG1360540
1,2,3-Trimethylbenzene	U		0.00115	0.00500	1	10/10/2019 20:38	WG1360540
1,3,5-Trimethylbenzene	U		0.00108	0.00500	1	10/10/2019 20:38	WG1360540
Vinyl chloride	U	J4	0.000683	0.00250	1	10/10/2019 20:38	WG1360540
Xylenes, Total	U		0.00478	0.00650	1	10/10/2019 20:38	WG1360540
(S) Toluene-d8	*106*			*75.0-131*		*10/10/2019 20:38*	WG1360540
(S) 4-Bromofluorobenzene	*98.8*			*67.0-138*		*10/10/2019 20:38*	WG1360540
(S) 1,2-Dichloroethane-d4	*118*			*70.0-130*		*10/10/2019 20:38*	WG1360540

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.000600	0.00600	1	10/09/2019 15:49	WG1359597
Acenaphthene	U		0.000600	0.00600	1	10/09/2019 15:49	WG1359597
Acenaphthylene	U		0.000600	0.00600	1	10/09/2019 15:49	WG1359597
Benzo(a)anthracene	U		0.000600	0.00600	1	10/09/2019 15:49	WG1359597
Benzo(a)pyrene	U		0.000600	0.00600	1	10/09/2019 15:49	WG1359597
Benzo(b)fluoranthene	U		0.000600	0.00600	1	10/09/2019 15:49	WG1359597
Benzo(g,h,i)perylene	U		0.000600	0.00600	1	10/09/2019 15:49	WG1359597
Benzo(k)fluoranthene	U		0.000600	0.00600	1	10/09/2019 15:49	WG1359597
Chrysene	U		0.000600	0.00600	1	10/09/2019 15:49	WG1359597
Dibenz(a,h)anthracene	U		0.000600	0.00600	1	10/09/2019 15:49	WG1359597
Fluoranthene	U		0.000600	0.00600	1	10/09/2019 15:49	WG1359597
Fluorene	U		0.000600	0.00600	1	10/09/2019 15:49	WG1359597
Indeno(1,2,3-cd)pyrene	U		0.000600	0.00600	1	10/09/2019 15:49	WG1359597
Naphthalene	U		0.00200	0.0200	1	10/09/2019 15:49	WG1359597
Phenanthrene	0.000625	J	0.000600	0.00600	1	10/09/2019 15:49	WG1359597
Pyrene	U		0.000600	0.00600	1	10/09/2019 15:49	WG1359597
1-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 15:49	WG1359597

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
2-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 15:49	WG1359597
2-Chloronaphthalene	U		0.00200	0.0200	1	10/09/2019 15:49	WG1359597
(S) p-Terphenyl-d14	*76.8*			*23.0-120*		*10/09/2019 15:49*	WG1359597
(S) Nitrobenzene-d5	*159*	J1		*14.0-149*		*10/09/2019 15:49*	WG1359597
(S) 2-Fluorobiphenyl	*80.0*			*34.0-125*		*10/09/2019 15:49*	WG1359597

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	10/10/2019 21:54	WG1359111

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0288	J	0.00280	0.0300	1	10/08/2019 21:03	WG1358737

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	13.6		0.460	2.00	1	10/09/2019 15:14	WG1359813
Barium	7.36		0.170	0.500	1	10/09/2019 15:14	WG1359813
Cadmium	U		0.0700	0.500	1	10/09/2019 15:14	WG1359813
Chromium	12.9		0.140	1.00	1	10/09/2019 15:14	WG1359813
Lead	9.35		0.190	0.500	1	10/09/2019 15:14	WG1359813
Selenium	0.940	J	0.620	2.00	1	10/09/2019 15:14	WG1359813
Silver	U		0.120	1.00	1	10/09/2019 15:14	WG1359813

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	0.525	B	0.237	0.433	17.3	10/10/2019 23:42	WG1360540
Acrylonitrile	U		0.0329	0.216	17.3	10/10/2019 23:42	WG1360540
Benzene	U		0.00692	0.0173	17.3	10/10/2019 23:42	WG1360540
Bromobenzene	U		0.0182	0.216	17.3	10/10/2019 23:42	WG1360540
Bromodichloromethane	U		0.0136	0.0433	17.3	10/10/2019 23:42	WG1360540
Bromoform	U		0.103	0.433	17.3	10/10/2019 23:42	WG1360540
Bromomethane	U		0.0640	0.216	17.3	10/10/2019 23:42	WG1360540
n-Butylbenzene	U		0.0664	0.216	17.3	10/10/2019 23:42	WG1360540
sec-Butylbenzene	U		0.0438	0.216	17.3	10/10/2019 23:42	WG1360540
tert-Butylbenzene	U		0.0268	0.0865	17.3	10/10/2019 23:42	WG1360540
Carbon tetrachloride	U		0.0187	0.0865	17.3	10/10/2019 23:42	WG1360540
Chlorobenzene	U		0.00991	0.0433	17.3	10/10/2019 23:42	WG1360540
Chlorodibromomethane	U		0.00779	0.0433	17.3	10/10/2019 23:42	WG1360540
Chloroethane	U		0.0187	0.0865	17.3	10/10/2019 23:42	WG1360540
Chloroform	U		0.00718	0.0433	17.3	10/10/2019 23:42	WG1360540
Chloromethane	U		0.0240	0.216	17.3	10/10/2019 23:42	WG1360540
2-Chlorotoluene	U		0.0159	0.0433	17.3	10/10/2019 23:42	WG1360540
4-Chlorotoluene	U		0.0195	0.0865	17.3	10/10/2019 23:42	WG1360540
1,2-Dibromo-3-Chloropropane	U		0.0882	0.433	17.3	10/10/2019 23:42	WG1360540
1,2-Dibromoethane	U		0.00908	0.0433	17.3	10/10/2019 23:42	WG1360540
Dibromomethane	U		0.0173	0.0865	17.3	10/10/2019 23:42	WG1360540
1,2-Dichlorobenzene	U		0.0251	0.0865	17.3	10/10/2019 23:42	WG1360540
1,3-Dichlorobenzene	U		0.0294	0.0865	17.3	10/10/2019 23:42	WG1360540
1,4-Dichlorobenzene	U		0.0341	0.0865	17.3	10/10/2019 23:42	WG1360540
Dichlorodifluoromethane	U		0.0142	0.0433	17.3	10/10/2019 23:42	WG1360540
1,1-Dichloroethane	U		0.00995	0.0433	17.3	10/10/2019 23:42	WG1360540
1,2-Dichloroethane	U		0.00822	0.0433	17.3	10/10/2019 23:42	WG1360540
1,1-Dichloroethene	U		0.00865	0.0433	17.3	10/10/2019 23:42	WG1360540
cis-1,2-Dichloroethene	U		0.0119	0.0433	17.3	10/10/2019 23:42	WG1360540
trans-1,2-Dichloroethene	U		0.0247	0.0865	17.3	10/10/2019 23:42	WG1360540
1,2-Dichloropropane	U		0.0220	0.0865	17.3	10/10/2019 23:42	WG1360540
1,1-Dichloropropene	U		0.0121	0.0433	17.3	10/10/2019 23:42	WG1360540
1,3-Dichloropropane	U		0.0303	0.0865	17.3	10/10/2019 23:42	WG1360540

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
cis-1,3-Dichloropropene	U		0.0117	0.0433	17.3	10/10/2019 23:42	WG1360540
trans-1,3-Dichloropropene	U		0.0265	0.0865	17.3	10/10/2019 23:42	WG1360540
2,2-Dichloropropane	U		0.0137	0.0433	17.3	10/10/2019 23:42	WG1360540
Di-isopropyl ether	U		0.00606	0.0173	17.3	10/10/2019 23:42	WG1360540
Ethylbenzene	U		0.00917	0.0433	17.3	10/10/2019 23:42	WG1360540
Hexachloro-1,3-butadiene	U		0.220	0.433	17.3	10/10/2019 23:42	WG1360540
Isopropylbenzene	U		0.0149	0.0433	17.3	10/10/2019 23:42	WG1360540
p-Isopropyltoluene	0.0968		0.0403	0.0865	17.3	10/10/2019 23:42	WG1360540
2-Butanone (MEK)	U		0.216	0.433	17.3	10/10/2019 23:42	WG1360540
Methylene Chloride	0.126	B J	0.115	0.433	17.3	10/10/2019 23:42	WG1360540
4-Methyl-2-pentanone (MIBK)	U		0.173	0.433	17.3	10/10/2019 23:42	WG1360540
Methyl tert-butyl ether	0.0190		0.00510	0.0173	17.3	10/10/2019 23:42	WG1360540
Naphthalene	U		0.0540	0.216	17.3	10/10/2019 23:42	WG1360540
n-Propylbenzene	U		0.0204	0.0865	17.3	10/10/2019 23:42	WG1360540
Styrene	U		0.0472	0.216	17.3	10/10/2019 23:42	WG1360540
1,1,1,2-Tetrachloroethane	U		0.00865	0.0433	17.3	10/10/2019 23:42	WG1360540
1,1,2,2-Tetrachloroethane	U		0.00675	0.0433	17.3	10/10/2019 23:42	WG1360540
1,1,2-Trichlorotrifluoroethane	U		0.0117	0.0433	17.3	10/10/2019 23:42	WG1360540
Tetrachloroethene	U		0.0121	0.0433	17.3	10/10/2019 23:42	WG1360540
Toluene	0.0393	J	0.0216	0.0865	17.3	10/10/2019 23:42	WG1360540
1,2,3-Trichlorobenzene	U		0.0108	0.0433	17.3	10/10/2019 23:42	WG1360540
1,2,4-Trichlorobenzene	U		0.0834	0.216	17.3	10/10/2019 23:42	WG1360540
1,1,1-Trichloroethane	U		0.00476	0.0433	17.3	10/10/2019 23:42	WG1360540
1,1,2-Trichloroethane	U		0.0153	0.0433	17.3	10/10/2019 23:42	WG1360540
Trichloroethene	U		0.00692	0.0173	17.3	10/10/2019 23:42	WG1360540
Trichlorofluoromethane	U		0.00865	0.0433	17.3	10/10/2019 23:42	WG1360540
1,2,3-Trichloropropane	U		0.0882	0.216	17.3	10/10/2019 23:42	WG1360540
1,2,4-Trimethylbenzene	U		0.0201	0.0865	17.3	10/10/2019 23:42	WG1360540
1,2,3-Trimethylbenzene	U		0.0199	0.0865	17.3	10/10/2019 23:42	WG1360540
1,3,5-Trimethylbenzene	U		0.0187	0.0865	17.3	10/10/2019 23:42	WG1360540
Vinyl chloride	U	J4	0.0118	0.0433	17.3	10/10/2019 23:42	WG1360540
Xylenes, Total	U		0.0827	0.112	17.3	10/10/2019 23:42	WG1360540
(S) Toluene-d8	*108*			*75.0-131*		*10/10/2019 23:42*	WG1360540
(S) 4-Bromofluorobenzene	*97.6*			*67.0-138*		*10/10/2019 23:42*	WG1360540
(S) 1,2-Dichloroethane-d4	*119*			*70.0-130*		*10/10/2019 23:42*	WG1360540

Sample Narrative:

L1146108-04 WG1360540: Lowest possible dilution due to limited sample volume.

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.000600	0.00600	1	10/09/2019 16:10	WG1359597
Acenaphthene	U		0.000600	0.00600	1	10/09/2019 16:10	WG1359597
Acenaphthylene	U		0.000600	0.00600	1	10/09/2019 16:10	WG1359597
Benzo(a)anthracene	U		0.000600	0.00600	1	10/09/2019 16:10	WG1359597
Benzo(a)pyrene	U		0.000600	0.00600	1	10/09/2019 16:10	WG1359597
Benzo(b)fluoranthene	U		0.000600	0.00600	1	10/09/2019 16:10	WG1359597
Benzo(g,h,i)perylene	U		0.000600	0.00600	1	10/09/2019 16:10	WG1359597
Benzo(k)fluoranthene	U		0.000600	0.00600	1	10/09/2019 16:10	WG1359597
Chrysene	U		0.000600	0.00600	1	10/09/2019 16:10	WG1359597
Dibenz(a,h)anthracene	U		0.000600	0.00600	1	10/09/2019 16:10	WG1359597
Fluoranthene	U		0.000600	0.00600	1	10/09/2019 16:10	WG1359597
Fluorene	U		0.000600	0.00600	1	10/09/2019 16:10	WG1359597
Indeno(1,2,3-cd)pyrene	U		0.000600	0.00600	1	10/09/2019 16:10	WG1359597
Naphthalene	U		0.00200	0.0200	1	10/09/2019 16:10	WG1359597

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Phenanthrene	U		0.000600	0.00600	1	10/09/2019 16:10	WG1359597
Pyrene	U		0.000600	0.00600	1	10/09/2019 16:10	WG1359597
1-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 16:10	WG1359597
2-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 16:10	WG1359597
2-Chloronaphthalene	U		0.00200	0.0200	1	10/09/2019 16:10	WG1359597
(S) p-Terphenyl-d14	*74.7*			*23.0-120*		*10/09/2019 16:10*	WG1359597
(S) Nitrobenzene-d5	*115*			*14.0-149*		*10/09/2019 16:10*	WG1359597
(S) 2-Fluorobiphenyl	*83.6*			*34.0-125*		*10/09/2019 16:10*	WG1359597

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	10/10/2019 21:59	WG1359111

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0437		0.00280	0.0300	1	10/08/2019 21:06	WG1358737

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	18.1		0.460	2.00	1	10/09/2019 15:16	WG1359813
Barium	8.19		0.170	0.500	1	10/09/2019 15:16	WG1359813
Cadmium	U		0.0700	0.500	1	10/09/2019 15:16	WG1359813
Chromium	20.1		0.140	1.00	1	10/09/2019 15:16	WG1359813
Lead	7.16		0.190	0.500	1	10/09/2019 15:16	WG1359813
Selenium	U		0.620	2.00	1	10/09/2019 15:16	WG1359813
Silver	U		0.120	1.00	1	10/09/2019 15:16	WG1359813

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	0.0551	B	0.0282	0.0515	2.06	10/10/2019 22:41	WG1360540
Acrylonitrile	U		0.00391	0.0258	2.06	10/10/2019 22:41	WG1360540
Benzene	U		0.000824	0.00206	2.06	10/10/2019 22:41	WG1360540
Bromobenzene	U		0.00216	0.0258	2.06	10/10/2019 22:41	WG1360540
Bromodichloromethane	U		0.00162	0.00515	2.06	10/10/2019 22:41	WG1360540
Bromoform	U		0.0123	0.0515	2.06	10/10/2019 22:41	WG1360540
Bromomethane	U		0.00762	0.0258	2.06	10/10/2019 22:41	WG1360540
n-Butylbenzene	U		0.00791	0.0258	2.06	10/10/2019 22:41	WG1360540
sec-Butylbenzene	U		0.00521	0.0258	2.06	10/10/2019 22:41	WG1360540
tert-Butylbenzene	U		0.00319	0.0103	2.06	10/10/2019 22:41	WG1360540
Carbon tetrachloride	U		0.00222	0.0103	2.06	10/10/2019 22:41	WG1360540
Chlorobenzene	U		0.00118	0.00515	2.06	10/10/2019 22:41	WG1360540
Chlorodibromomethane	U		0.000927	0.00515	2.06	10/10/2019 22:41	WG1360540
Chloroethane	U		0.00222	0.0103	2.06	10/10/2019 22:41	WG1360540
Chloroform	U		0.000855	0.00515	2.06	10/10/2019 22:41	WG1360540
Chloromethane	U		0.00286	0.0258	2.06	10/10/2019 22:41	WG1360540
2-Chlorotoluene	U		0.00190	0.00515	2.06	10/10/2019 22:41	WG1360540
4-Chlorotoluene	U		0.00233	0.0103	2.06	10/10/2019 22:41	WG1360540
1,2-Dibromo-3-Chloropropane	U		0.0105	0.0515	2.06	10/10/2019 22:41	WG1360540
1,2-Dibromoethane	U		0.00108	0.00515	2.06	10/10/2019 22:41	WG1360540
Dibromomethane	U		0.00206	0.0103	2.06	10/10/2019 22:41	WG1360540
1,2-Dichlorobenzene	U		0.00299	0.0103	2.06	10/10/2019 22:41	WG1360540
1,3-Dichlorobenzene	U		0.00350	0.0103	2.06	10/10/2019 22:41	WG1360540
1,4-Dichlorobenzene	U		0.00406	0.0103	2.06	10/10/2019 22:41	WG1360540
Dichlorodifluoromethane	U		0.00169	0.00515	2.06	10/10/2019 22:41	WG1360540
1,1-Dichloroethane	U		0.00118	0.00515	2.06	10/10/2019 22:41	WG1360540
1,2-Dichloroethane	U		0.000979	0.00515	2.06	10/10/2019 22:41	WG1360540
1,1-Dichloroethene	U		0.00103	0.00515	2.06	10/10/2019 22:41	WG1360540
cis-1,2-Dichloroethene	U		0.00142	0.00515	2.06	10/10/2019 22:41	WG1360540
trans-1,2-Dichloroethene	U		0.00295	0.0103	2.06	10/10/2019 22:41	WG1360540
1,2-Dichloropropane	U		0.00262	0.0103	2.06	10/10/2019 22:41	WG1360540
1,1-Dichloropropene	U		0.00144	0.00515	2.06	10/10/2019 22:41	WG1360540
1,3-Dichloropropane	U		0.00361	0.0103	2.06	10/10/2019 22:41	WG1360540

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
cis-1,3-Dichloropropene	U		0.00140	0.00515	2.06	10/10/2019 22:41	WG1360540
trans-1,3-Dichloropropene	U		0.00315	0.0103	2.06	10/10/2019 22:41	WG1360540
2,2-Dichloropropane	U		0.00163	0.00515	2.06	10/10/2019 22:41	WG1360540
Di-isopropyl ether	U		0.000721	0.00206	2.06	10/10/2019 22:41	WG1360540
Ethylbenzene	U		0.00109	0.00515	2.06	10/10/2019 22:41	WG1360540
Hexachloro-1,3-butadiene	U		0.0262	0.0515	2.06	10/10/2019 22:41	WG1360540
Isopropylbenzene	U		0.00178	0.00515	2.06	10/10/2019 22:41	WG1360540
p-Isopropyltoluene	U		0.00480	0.0103	2.06	10/10/2019 22:41	WG1360540
2-Butanone (MEK)	U		0.0258	0.0515	2.06	10/10/2019 22:41	WG1360540
Methylene Chloride	0.0157	B J	0.0137	0.0515	2.06	10/10/2019 22:41	WG1360540
4-Methyl-2-pentanone (MIBK)	U		0.0206	0.0515	2.06	10/10/2019 22:41	WG1360540
Methyl tert-butyl ether	U		0.000608	0.00206	2.06	10/10/2019 22:41	WG1360540
Naphthalene	U		0.00643	0.0258	2.06	10/10/2019 22:41	WG1360540
n-Propylbenzene	U		0.00243	0.0103	2.06	10/10/2019 22:41	WG1360540
Styrene	U		0.00562	0.0258	2.06	10/10/2019 22:41	WG1360540
1,1,1,2-Tetrachloroethane	U		0.00103	0.00515	2.06	10/10/2019 22:41	WG1360540
1,1,2,2-Tetrachloroethane	U		0.000803	0.00515	2.06	10/10/2019 22:41	WG1360540
1,1,2-Trichlorotrifluoroethane	U		0.00139	0.00515	2.06	10/10/2019 22:41	WG1360540
Tetrachloroethene	U		0.00144	0.00515	2.06	10/10/2019 22:41	WG1360540
Toluene	U		0.00258	0.0103	2.06	10/10/2019 22:41	WG1360540
1,2,3-Trichlorobenzene	U		0.00129	0.00515	2.06	10/10/2019 22:41	WG1360540
1,2,4-Trichlorobenzene	U		0.00993	0.0258	2.06	10/10/2019 22:41	WG1360540
1,1,1-Trichloroethane	U		0.000567	0.00515	2.06	10/10/2019 22:41	WG1360540
1,1,2-Trichloroethane	U		0.00182	0.00515	2.06	10/10/2019 22:41	WG1360540
Trichloroethene	U		0.000824	0.00206	2.06	10/10/2019 22:41	WG1360540
Trichlorofluoromethane	U		0.00103	0.00515	2.06	10/10/2019 22:41	WG1360540
1,2,3-Trichloropropane	U		0.0105	0.0258	2.06	10/10/2019 22:41	WG1360540
1,2,4-Trimethylbenzene	0.00273	J	0.00239	0.0103	2.06	10/10/2019 22:41	WG1360540
1,2,3-Trimethylbenzene	U		0.00237	0.0103	2.06	10/10/2019 22:41	WG1360540
1,3,5-Trimethylbenzene	U		0.00222	0.0103	2.06	10/10/2019 22:41	WG1360540
Vinyl chloride	U	J4	0.00141	0.00515	2.06	10/10/2019 22:41	WG1360540
Xylenes, Total	U		0.00985	0.0134	2.06	10/10/2019 22:41	WG1360540
(S) Toluene-d8	*106*			*75.0-131*		*10/10/2019 22:41*	WG1360540
(S) 4-Bromofluorobenzene	*99.7*			*67.0-138*		*10/10/2019 22:41*	WG1360540
(S) 1,2-Dichloroethane-d4	*118*			*70.0-130*		*10/10/2019 22:41*	WG1360540

Sample Narrative:

L1146108-05 WG1360540: Lowest possible dilution due to limited sample volume.

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.000600	0.00600	1	10/09/2019 16:30	WG1359597
Acenaphthene	U		0.000600	0.00600	1	10/09/2019 16:30	WG1359597
Acenaphthylene	U		0.000600	0.00600	1	10/09/2019 16:30	WG1359597
Benzo(a)anthracene	U		0.000600	0.00600	1	10/09/2019 16:30	WG1359597
Benzo(a)pyrene	U		0.000600	0.00600	1	10/09/2019 16:30	WG1359597
Benzo(b)fluoranthene	U		0.000600	0.00600	1	10/09/2019 16:30	WG1359597
Benzo(g,h,i)perylene	U		0.000600	0.00600	1	10/09/2019 16:30	WG1359597
Benzo(k)fluoranthene	U		0.000600	0.00600	1	10/09/2019 16:30	WG1359597
Chrysene	U		0.000600	0.00600	1	10/09/2019 16:30	WG1359597
Dibenz(a,h)anthracene	U		0.000600	0.00600	1	10/09/2019 16:30	WG1359597
Fluoranthene	U		0.000600	0.00600	1	10/09/2019 16:30	WG1359597
Fluorene	U		0.000600	0.00600	1	10/09/2019 16:30	WG1359597
Indeno(1,2,3-cd)pyrene	U		0.000600	0.00600	1	10/09/2019 16:30	WG1359597
Naphthalene	U		0.00200	0.0200	1	10/09/2019 16:30	WG1359597

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Phenanthrene	U		0.000600	0.00600	1	10/09/2019 16:30	WG1359597
Pyrene	U		0.000600	0.00600	1	10/09/2019 16:30	WG1359597
1-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 16:30	WG1359597
2-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 16:30	WG1359597
2-Chloronaphthalene	U		0.00200	0.0200	1	10/09/2019 16:30	WG1359597
(S) p-Terphenyl-d14	*61.7*			*23.0-120*		*10/09/2019 16:30*	WG1359597
(S) Nitrobenzene-d5	*103*			*14.0-149*		*10/09/2019 16:30*	WG1359597
(S) 2-Fluorobiphenyl	*73.5*			*34.0-125*		*10/09/2019 16:30*	WG1359597

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	10/10/2019 22:05	WG1359111

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0987		0.00280	0.0300	1	10/08/2019 21:08	WG1358737

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.68		0.460	2.00	1	10/09/2019 15:27	WG1359813
Barium	13.7		0.170	0.500	1	10/09/2019 15:27	WG1359813
Cadmium	U		0.0700	0.500	1	10/09/2019 15:27	WG1359813
Chromium	13.8		0.140	1.00	1	10/09/2019 15:27	WG1359813
Lead	12.6		0.190	0.500	1	10/09/2019 15:27	WG1359813
Selenium	U		0.620	2.00	1	10/09/2019 15:27	WG1359813
Silver	U		0.120	1.00	1	10/09/2019 15:27	WG1359813

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	0.0421	B	0.0171	0.0313	1.25	10/10/2019 20:58	WG1360540
Acrylonitrile	U		0.00238	0.0156	1.25	10/10/2019 20:58	WG1360540
Benzene	U		0.000500	0.00125	1.25	10/10/2019 20:58	WG1360540
Bromobenzene	U		0.00131	0.0156	1.25	10/10/2019 20:58	WG1360540
Bromodichloromethane	U		0.000985	0.00313	1.25	10/10/2019 20:58	WG1360540
Bromoform	U		0.00748	0.0313	1.25	10/10/2019 20:58	WG1360540
Bromomethane	U		0.00463	0.0156	1.25	10/10/2019 20:58	WG1360540
n-Butylbenzene	U		0.00480	0.0156	1.25	10/10/2019 20:58	WG1360540
sec-Butylbenzene	U		0.00316	0.0156	1.25	10/10/2019 20:58	WG1360540
tert-Butylbenzene	U		0.00194	0.00625	1.25	10/10/2019 20:58	WG1360540
Carbon tetrachloride	U		0.00135	0.00625	1.25	10/10/2019 20:58	WG1360540
Chlorobenzene	U		0.000716	0.00313	1.25	10/10/2019 20:58	WG1360540
Chlorodibromomethane	U		0.000563	0.00313	1.25	10/10/2019 20:58	WG1360540
Chloroethane	U		0.00135	0.00625	1.25	10/10/2019 20:58	WG1360540
Chloroform	U		0.000519	0.00313	1.25	10/10/2019 20:58	WG1360540
Chloromethane	U		0.00174	0.0156	1.25	10/10/2019 20:58	WG1360540
2-Chlorotoluene	U		0.00115	0.00313	1.25	10/10/2019 20:58	WG1360540
4-Chlorotoluene	U		0.00141	0.00625	1.25	10/10/2019 20:58	WG1360540
1,2-Dibromo-3-Chloropropane	U		0.00638	0.0313	1.25	10/10/2019 20:58	WG1360540
1,2-Dibromoethane	U		0.000656	0.00313	1.25	10/10/2019 20:58	WG1360540
Dibromomethane	U		0.00125	0.00625	1.25	10/10/2019 20:58	WG1360540
1,2-Dichlorobenzene	U		0.00181	0.00625	1.25	10/10/2019 20:58	WG1360540
1,3-Dichlorobenzene	U		0.00212	0.00625	1.25	10/10/2019 20:58	WG1360540
1,4-Dichlorobenzene	U		0.00246	0.00625	1.25	10/10/2019 20:58	WG1360540
Dichlorodifluoromethane	U		0.00102	0.00313	1.25	10/10/2019 20:58	WG1360540
1,1-Dichloroethane	U		0.000719	0.00313	1.25	10/10/2019 20:58	WG1360540
1,2-Dichloroethane	U		0.000594	0.00313	1.25	10/10/2019 20:58	WG1360540
1,1-Dichloroethene	U		0.000625	0.00313	1.25	10/10/2019 20:58	WG1360540
cis-1,2-Dichloroethene	U		0.000863	0.00313	1.25	10/10/2019 20:58	WG1360540
trans-1,2-Dichloroethene	U		0.00179	0.00625	1.25	10/10/2019 20:58	WG1360540
1,2-Dichloropropane	U		0.00159	0.00625	1.25	10/10/2019 20:58	WG1360540
1,1-Dichloropropene	U		0.000875	0.00313	1.25	10/10/2019 20:58	WG1360540
1,3-Dichloropropane	U		0.00219	0.00625	1.25	10/10/2019 20:58	WG1360540

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
cis-1,3-Dichloropropene	U		0.000848	0.00313	1.25	10/10/2019 20:58	WG1360540
trans-1,3-Dichloropropene	U		0.00191	0.00625	1.25	10/10/2019 20:58	WG1360540
2,2-Dichloropropane	U		0.000991	0.00313	1.25	10/10/2019 20:58	WG1360540
Di-isopropyl ether	U		0.000438	0.00125	1.25	10/10/2019 20:58	WG1360540
Ethylbenzene	U		0.000663	0.00313	1.25	10/10/2019 20:58	WG1360540
Hexachloro-1,3-butadiene	U		0.0159	0.0313	1.25	10/10/2019 20:58	WG1360540
Isopropylbenzene	U		0.00108	0.00313	1.25	10/10/2019 20:58	WG1360540
p-Isopropyltoluene	0.00834		0.00291	0.00625	1.25	10/10/2019 20:58	WG1360540
2-Butanone (MEK)	U		0.0156	0.0313	1.25	10/10/2019 20:58	WG1360540
Methylene Chloride	0.0110	B J	0.00830	0.0313	1.25	10/10/2019 20:58	WG1360540
4-Methyl-2-pentanone (MIBK)	U		0.0125	0.0313	1.25	10/10/2019 20:58	WG1360540
Methyl tert-butyl ether	U		0.000369	0.00125	1.25	10/10/2019 20:58	WG1360540
Naphthalene	U		0.00390	0.0156	1.25	10/10/2019 20:58	WG1360540
n-Propylbenzene	U		0.00148	0.00625	1.25	10/10/2019 20:58	WG1360540
Styrene	U		0.00341	0.0156	1.25	10/10/2019 20:58	WG1360540
1,1,1,2-Tetrachloroethane	U		0.000625	0.00313	1.25	10/10/2019 20:58	WG1360540
1,1,2,2-Tetrachloroethane	U		0.000488	0.00313	1.25	10/10/2019 20:58	WG1360540
1,1,2-Trichlorotrifluoroethane	U		0.000844	0.00313	1.25	10/10/2019 20:58	WG1360540
Tetrachloroethene	U		0.000875	0.00313	1.25	10/10/2019 20:58	WG1360540
Toluene	0.00563	J	0.00156	0.00625	1.25	10/10/2019 20:58	WG1360540
1,2,3-Trichlorobenzene	U		0.000781	0.00313	1.25	10/10/2019 20:58	WG1360540
1,2,4-Trichlorobenzene	U		0.00602	0.0156	1.25	10/10/2019 20:58	WG1360540
1,1,1-Trichloroethane	U		0.000344	0.00313	1.25	10/10/2019 20:58	WG1360540
1,1,2-Trichloroethane	U		0.00110	0.00313	1.25	10/10/2019 20:58	WG1360540
Trichloroethene	U		0.000500	0.00125	1.25	10/10/2019 20:58	WG1360540
Trichlorofluoromethane	U		0.000625	0.00313	1.25	10/10/2019 20:58	WG1360540
1,2,3-Trichloropropane	U		0.00638	0.0156	1.25	10/10/2019 20:58	WG1360540
1,2,4-Trimethylbenzene	0.00159	J	0.00145	0.00625	1.25	10/10/2019 20:58	WG1360540
1,2,3-Trimethylbenzene	U		0.00144	0.00625	1.25	10/10/2019 20:58	WG1360540
1,3,5-Trimethylbenzene	U		0.00135	0.00625	1.25	10/10/2019 20:58	WG1360540
Vinyl chloride	U	J4	0.000854	0.00313	1.25	10/10/2019 20:58	WG1360540
Xylenes, Total	U		0.00598	0.00813	1.25	10/10/2019 20:58	WG1360540
(S) Toluene-d8	*107*			*75.0-131*		*10/10/2019 20:58*	WG1360540
(S) 4-Bromofluorobenzene	*99.7*			*67.0-138*		*10/10/2019 20:58*	WG1360540
(S) 1,2-Dichloroethane-d4	*120*			*70.0-130*		*10/10/2019 20:58*	WG1360540

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.000600	0.00600	1	10/09/2019 16:51	WG1359597
Acenaphthene	U		0.000600	0.00600	1	10/09/2019 16:51	WG1359597
Acenaphthylene	U		0.000600	0.00600	1	10/09/2019 16:51	WG1359597
Benzo(a)anthracene	U		0.000600	0.00600	1	10/09/2019 16:51	WG1359597
Benzo(a)pyrene	U		0.000600	0.00600	1	10/09/2019 16:51	WG1359597
Benzo(b)fluoranthene	U		0.000600	0.00600	1	10/09/2019 16:51	WG1359597
Benzo(g,h,i)perylene	U		0.000600	0.00600	1	10/09/2019 16:51	WG1359597
Benzo(k)fluoranthene	U		0.000600	0.00600	1	10/09/2019 16:51	WG1359597
Chrysene	U		0.000600	0.00600	1	10/09/2019 16:51	WG1359597
Dibenz(a,h)anthracene	U		0.000600	0.00600	1	10/09/2019 16:51	WG1359597
Fluoranthene	U		0.000600	0.00600	1	10/09/2019 16:51	WG1359597
Fluorene	U		0.000600	0.00600	1	10/09/2019 16:51	WG1359597
Indeno(1,2,3-cd)pyrene	U		0.000600	0.00600	1	10/09/2019 16:51	WG1359597
Naphthalene	U		0.00200	0.0200	1	10/09/2019 16:51	WG1359597
Phenanthrene	U		0.000600	0.00600	1	10/09/2019 16:51	WG1359597
Pyrene	U		0.000600	0.00600	1	10/09/2019 16:51	WG1359597
1-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 16:51	WG1359597

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
2-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 16:51	WG1359597
2-Chloronaphthalene	U		0.00200	0.0200	1	10/09/2019 16:51	WG1359597
(S) p-Terphenyl-d14	*71.2*			*23.0-120*		*10/09/2019 16:51*	WG1359597
(S) Nitrobenzene-d5	*112*			*14.0-149*		*10/09/2019 16:51*	WG1359597
(S) 2-Fluorobiphenyl	*79.2*			*34.0-125*		*10/09/2019 16:51*	WG1359597

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	10/10/2019 22:10	WG1359111

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0371		0.00280	0.0300	1	10/08/2019 21:11	WG1358737

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	24.4		0.460	2.00	1	10/09/2019 15:30	WG1359813
Barium	24.2		0.170	0.500	1	10/09/2019 15:30	WG1359813
Cadmium	U		0.0700	0.500	1	10/09/2019 15:30	WG1359813
Chromium	30.7		0.140	1.00	1	10/09/2019 15:30	WG1359813
Lead	5.92		0.190	0.500	1	10/09/2019 15:30	WG1359813
Selenium	U		0.620	2.00	1	10/09/2019 15:30	WG1359813
Silver	U		0.120	1.00	1	10/09/2019 15:30	WG1359813

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	0.0206	B J	0.0137	0.0250	1	10/10/2019 21:19	WG1360540
Acrylonitrile	U		0.00190	0.0125	1	10/10/2019 21:19	WG1360540
Benzene	U		0.000400	0.00100	1	10/10/2019 21:19	WG1360540
Bromobenzene	U		0.00105	0.0125	1	10/10/2019 21:19	WG1360540
Bromodichloromethane	U		0.000788	0.00250	1	10/10/2019 21:19	WG1360540
Bromoform	U		0.00598	0.0250	1	10/10/2019 21:19	WG1360540
Bromomethane	U		0.00370	0.0125	1	10/10/2019 21:19	WG1360540
n-Butylbenzene	U		0.00384	0.0125	1	10/10/2019 21:19	WG1360540
sec-Butylbenzene	U		0.00253	0.0125	1	10/10/2019 21:19	WG1360540
tert-Butylbenzene	U		0.00155	0.00500	1	10/10/2019 21:19	WG1360540
Carbon tetrachloride	U		0.00108	0.00500	1	10/10/2019 21:19	WG1360540
Chlorobenzene	U		0.000573	0.00250	1	10/10/2019 21:19	WG1360540
Chlorodibromomethane	U		0.000450	0.00250	1	10/10/2019 21:19	WG1360540
Chloroethane	U		0.00108	0.00500	1	10/10/2019 21:19	WG1360540
Chloroform	U		0.000415	0.00250	1	10/10/2019 21:19	WG1360540
Chloromethane	U		0.00139	0.0125	1	10/10/2019 21:19	WG1360540
2-Chlorotoluene	U		0.000920	0.00250	1	10/10/2019 21:19	WG1360540
4-Chlorotoluene	U		0.00113	0.00500	1	10/10/2019 21:19	WG1360540
1,2-Dibromo-3-Chloropropane	U		0.00510	0.0250	1	10/10/2019 21:19	WG1360540
1,2-Dibromoethane	U		0.000525	0.00250	1	10/10/2019 21:19	WG1360540
Dibromomethane	U		0.00100	0.00500	1	10/10/2019 21:19	WG1360540
1,2-Dichlorobenzene	U		0.00145	0.00500	1	10/10/2019 21:19	WG1360540
1,3-Dichlorobenzene	U		0.00170	0.00500	1	10/10/2019 21:19	WG1360540
1,4-Dichlorobenzene	U		0.00197	0.00500	1	10/10/2019 21:19	WG1360540
Dichlorodifluoromethane	U		0.000818	0.00250	1	10/10/2019 21:19	WG1360540
1,1-Dichloroethane	U		0.000575	0.00250	1	10/10/2019 21:19	WG1360540
1,2-Dichloroethane	U		0.000475	0.00250	1	10/10/2019 21:19	WG1360540
1,1-Dichloroethene	U		0.000500	0.00250	1	10/10/2019 21:19	WG1360540
cis-1,2-Dichloroethene	U		0.000690	0.00250	1	10/10/2019 21:19	WG1360540
trans-1,2-Dichloroethene	U		0.00143	0.00500	1	10/10/2019 21:19	WG1360540
1,2-Dichloropropane	U		0.00127	0.00500	1	10/10/2019 21:19	WG1360540
1,1-Dichloropropene	U		0.000700	0.00250	1	10/10/2019 21:19	WG1360540
1,3-Dichloropropane	U		0.00175	0.00500	1	10/10/2019 21:19	WG1360540

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
cis-1,3-Dichloropropene	U		0.000678	0.00250	1	10/10/2019 21:19	WG1360540
trans-1,3-Dichloropropene	U		0.00153	0.00500	1	10/10/2019 21:19	WG1360540
2,2-Dichloropropane	U		0.000793	0.00250	1	10/10/2019 21:19	WG1360540
Di-isopropyl ether	U		0.000350	0.00100	1	10/10/2019 21:19	WG1360540
Ethylbenzene	0.000882	J	0.000530	0.00250	1	10/10/2019 21:19	WG1360540
Hexachloro-1,3-butadiene	U		0.0127	0.0250	1	10/10/2019 21:19	WG1360540
Isopropylbenzene	U		0.000863	0.00250	1	10/10/2019 21:19	WG1360540
p-Isopropyltoluene	0.0125		0.00233	0.00500	1	10/10/2019 21:19	WG1360540
2-Butanone (MEK)	U		0.0125	0.0250	1	10/10/2019 21:19	WG1360540
Methylene Chloride	U		0.00664	0.0250	1	10/10/2019 21:19	WG1360540
4-Methyl-2-pentanone (MIBK)	U		0.0100	0.0250	1	10/10/2019 21:19	WG1360540
Methyl tert-butyl ether	U		0.000295	0.00100	1	10/10/2019 21:19	WG1360540
Naphthalene	U		0.00312	0.0125	1	10/10/2019 21:19	WG1360540
n-Propylbenzene	U		0.00118	0.00500	1	10/10/2019 21:19	WG1360540
Styrene	U		0.00273	0.0125	1	10/10/2019 21:19	WG1360540
1,1,1,2-Tetrachloroethane	U		0.000500	0.00250	1	10/10/2019 21:19	WG1360540
1,1,2,2-Tetrachloroethane	U		0.000390	0.00250	1	10/10/2019 21:19	WG1360540
1,1,2-Trichlorotrifluoroethane	U		0.000675	0.00250	1	10/10/2019 21:19	WG1360540
Tetrachloroethene	U		0.000700	0.00250	1	10/10/2019 21:19	WG1360540
Toluene	0.00490	J	0.00125	0.00500	1	10/10/2019 21:19	WG1360540
1,2,3-Trichlorobenzene	U		0.000625	0.00250	1	10/10/2019 21:19	WG1360540
1,2,4-Trichlorobenzene	U		0.00482	0.0125	1	10/10/2019 21:19	WG1360540
1,1,1-Trichloroethane	U		0.000275	0.00250	1	10/10/2019 21:19	WG1360540
1,1,2-Trichloroethane	U		0.000883	0.00250	1	10/10/2019 21:19	WG1360540
Trichloroethene	U		0.000400	0.00100	1	10/10/2019 21:19	WG1360540
Trichlorofluoromethane	U		0.000500	0.00250	1	10/10/2019 21:19	WG1360540
1,2,3-Trichloropropane	U		0.00510	0.0125	1	10/10/2019 21:19	WG1360540
1,2,4-Trimethylbenzene	U		0.00116	0.00500	1	10/10/2019 21:19	WG1360540
1,2,3-Trimethylbenzene	U		0.00115	0.00500	1	10/10/2019 21:19	WG1360540
1,3,5-Trimethylbenzene	U		0.00108	0.00500	1	10/10/2019 21:19	WG1360540
Vinyl chloride	U	J4	0.000683	0.00250	1	10/10/2019 21:19	WG1360540
Xylenes, Total	U		0.00478	0.00650	1	10/10/2019 21:19	WG1360540
(S) Toluene-d8	*108*			*75.0-131*		*10/10/2019 21:19*	WG1360540
(S) 4-Bromofluorobenzene	*97.4*			*67.0-138*		*10/10/2019 21:19*	WG1360540
(S) 1,2-Dichloroethane-d4	*112*			*70.0-130*		*10/10/2019 21:19*	WG1360540

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.000600	0.00600	1	10/09/2019 17:12	WG1359597
Acenaphthene	U		0.000600	0.00600	1	10/09/2019 17:12	WG1359597
Acenaphthylene	U		0.000600	0.00600	1	10/09/2019 17:12	WG1359597
Benzo(a)anthracene	U		0.000600	0.00600	1	10/09/2019 17:12	WG1359597
Benzo(a)pyrene	U		0.000600	0.00600	1	10/09/2019 17:12	WG1359597
Benzo(b)fluoranthene	U		0.000600	0.00600	1	10/09/2019 17:12	WG1359597
Benzo(g,h,i)perylene	U		0.000600	0.00600	1	10/09/2019 17:12	WG1359597
Benzo(k)fluoranthene	U		0.000600	0.00600	1	10/09/2019 17:12	WG1359597
Chrysene	U		0.000600	0.00600	1	10/09/2019 17:12	WG1359597
Dibenz(a,h)anthracene	U		0.000600	0.00600	1	10/09/2019 17:12	WG1359597
Fluoranthene	U		0.000600	0.00600	1	10/09/2019 17:12	WG1359597
Fluorene	U		0.000600	0.00600	1	10/09/2019 17:12	WG1359597
Indeno(1,2,3-cd)pyrene	U		0.000600	0.00600	1	10/09/2019 17:12	WG1359597
Naphthalene	U		0.00200	0.0200	1	10/09/2019 17:12	WG1359597
Phenanthrene	U		0.000600	0.00600	1	10/09/2019 17:12	WG1359597
Pyrene	U		0.000600	0.00600	1	10/09/2019 17:12	WG1359597
1-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 17:12	WG1359597

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
2-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 17:12	WG1359597
2-Chloronaphthalene	U		0.00200	0.0200	1	10/09/2019 17:12	WG1359597
(S) p-Terphenyl-d14	*78.0*			*23.0-120*		*10/09/2019 17:12*	WG1359597
(S) Nitrobenzene-d5	*96.9*			*14.0-149*		*10/09/2019 17:12*	WG1359597
(S) 2-Fluorobiphenyl	*62.9*			*34.0-125*		*10/09/2019 17:12*	WG1359597

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	10/10/2019 22:15	WG1359111

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0539		0.00280	0.0300	1	10/08/2019 21:13	WG1358737

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	24.3		0.460	2.00	1	10/09/2019 15:32	WG1359813
Barium	11.9		0.170	0.500	1	10/09/2019 15:32	WG1359813
Cadmium	U		0.0700	0.500	1	10/09/2019 15:32	WG1359813
Chromium	36.0		0.140	1.00	1	10/09/2019 15:32	WG1359813
Lead	8.45		0.190	0.500	1	10/09/2019 15:32	WG1359813
Selenium	0.795	J	0.620	2.00	1	10/09/2019 15:32	WG1359813
Silver	U		0.120	1.00	1	10/09/2019 15:32	WG1359813

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	0.0337	B	0.0137	0.0250	1	10/10/2019 21:39	WG1360540
Acrylonitrile	U		0.00190	0.0125	1	10/10/2019 21:39	WG1360540
Benzene	U		0.000400	0.00100	1	10/10/2019 21:39	WG1360540
Bromobenzene	U		0.00105	0.0125	1	10/10/2019 21:39	WG1360540
Bromodichloromethane	U		0.000788	0.00250	1	10/10/2019 21:39	WG1360540
Bromoform	U		0.00598	0.0250	1	10/10/2019 21:39	WG1360540
Bromomethane	U		0.00370	0.0125	1	10/10/2019 21:39	WG1360540
n-Butylbenzene	U		0.00384	0.0125	1	10/10/2019 21:39	WG1360540
sec-Butylbenzene	U		0.00253	0.0125	1	10/10/2019 21:39	WG1360540
tert-Butylbenzene	U		0.00155	0.00500	1	10/10/2019 21:39	WG1360540
Carbon tetrachloride	U		0.00108	0.00500	1	10/10/2019 21:39	WG1360540
Chlorobenzene	U		0.000573	0.00250	1	10/10/2019 21:39	WG1360540
Chlorodibromomethane	U		0.000450	0.00250	1	10/10/2019 21:39	WG1360540
Chloroethane	U		0.00108	0.00500	1	10/10/2019 21:39	WG1360540
Chloroform	U		0.000415	0.00250	1	10/10/2019 21:39	WG1360540
Chloromethane	U		0.00139	0.0125	1	10/10/2019 21:39	WG1360540
2-Chlorotoluene	U		0.000920	0.00250	1	10/10/2019 21:39	WG1360540
4-Chlorotoluene	U		0.00113	0.00500	1	10/10/2019 21:39	WG1360540
1,2-Dibromo-3-Chloropropane	U		0.00510	0.0250	1	10/10/2019 21:39	WG1360540
1,2-Dibromoethane	U		0.000525	0.00250	1	10/10/2019 21:39	WG1360540
Dibromomethane	U		0.00100	0.00500	1	10/10/2019 21:39	WG1360540
1,2-Dichlorobenzene	U		0.00145	0.00500	1	10/10/2019 21:39	WG1360540
1,3-Dichlorobenzene	U		0.00170	0.00500	1	10/10/2019 21:39	WG1360540
1,4-Dichlorobenzene	U		0.00197	0.00500	1	10/10/2019 21:39	WG1360540
Dichlorodifluoromethane	U		0.000818	0.00250	1	10/10/2019 21:39	WG1360540
1,1-Dichloroethane	U		0.000575	0.00250	1	10/10/2019 21:39	WG1360540
1,2-Dichloroethane	U		0.000475	0.00250	1	10/10/2019 21:39	WG1360540
1,1-Dichloroethene	U		0.000500	0.00250	1	10/10/2019 21:39	WG1360540
cis-1,2-Dichloroethene	U		0.000690	0.00250	1	10/10/2019 21:39	WG1360540
trans-1,2-Dichloroethene	U		0.00143	0.00500	1	10/10/2019 21:39	WG1360540
1,2-Dichloropropane	U		0.00127	0.00500	1	10/10/2019 21:39	WG1360540
1,1-Dichloropropene	U		0.000700	0.00250	1	10/10/2019 21:39	WG1360540
1,3-Dichloropropane	U		0.00175	0.00500	1	10/10/2019 21:39	WG1360540

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
cis-1,3-Dichloropropene	U		0.000678	0.00250	1	10/10/2019 21:39	WG1360540
trans-1,3-Dichloropropene	U		0.00153	0.00500	1	10/10/2019 21:39	WG1360540
2,2-Dichloropropane	U		0.000793	0.00250	1	10/10/2019 21:39	WG1360540
Di-isopropyl ether	U		0.000350	0.00100	1	10/10/2019 21:39	WG1360540
Ethylbenzene	U		0.000530	0.00250	1	10/10/2019 21:39	WG1360540
Hexachloro-1,3-butadiene	U		0.0127	0.0250	1	10/10/2019 21:39	WG1360540
Isopropylbenzene	U		0.000863	0.00250	1	10/10/2019 21:39	WG1360540
p-Isopropyltoluene	U		0.00233	0.00500	1	10/10/2019 21:39	WG1360540
2-Butanone (MEK)	U		0.0125	0.0250	1	10/10/2019 21:39	WG1360540
Methylene Chloride	0.0101	B J	0.00664	0.0250	1	10/10/2019 21:39	WG1360540
4-Methyl-2-pentanone (MIBK)	U		0.0100	0.0250	1	10/10/2019 21:39	WG1360540
Methyl tert-butyl ether	U		0.000295	0.00100	1	10/10/2019 21:39	WG1360540
Naphthalene	U		0.00312	0.0125	1	10/10/2019 21:39	WG1360540
n-Propylbenzene	U		0.00118	0.00500	1	10/10/2019 21:39	WG1360540
Styrene	U		0.00273	0.0125	1	10/10/2019 21:39	WG1360540
1,1,1,2-Tetrachloroethane	U		0.000500	0.00250	1	10/10/2019 21:39	WG1360540
1,1,2,2-Tetrachloroethane	U		0.000390	0.00250	1	10/10/2019 21:39	WG1360540
1,1,2-Trichlorotrifluoroethane	U		0.000675	0.00250	1	10/10/2019 21:39	WG1360540
Tetrachloroethene	U		0.000700	0.00250	1	10/10/2019 21:39	WG1360540
Toluene	0.00141	J	0.00125	0.00500	1	10/10/2019 21:39	WG1360540
1,2,3-Trichlorobenzene	U		0.000625	0.00250	1	10/10/2019 21:39	WG1360540
1,2,4-Trichlorobenzene	U		0.00482	0.0125	1	10/10/2019 21:39	WG1360540
1,1,1-Trichloroethane	U		0.000275	0.00250	1	10/10/2019 21:39	WG1360540
1,1,2-Trichloroethane	U		0.000883	0.00250	1	10/10/2019 21:39	WG1360540
Trichloroethene	U		0.000400	0.00100	1	10/10/2019 21:39	WG1360540
Trichlorofluoromethane	U		0.000500	0.00250	1	10/10/2019 21:39	WG1360540
1,2,3-Trichloropropane	U		0.00510	0.0125	1	10/10/2019 21:39	WG1360540
1,2,4-Trimethylbenzene	U		0.00116	0.00500	1	10/10/2019 21:39	WG1360540
1,2,3-Trimethylbenzene	U		0.00115	0.00500	1	10/10/2019 21:39	WG1360540
1,3,5-Trimethylbenzene	U		0.00108	0.00500	1	10/10/2019 21:39	WG1360540
Vinyl chloride	U	J4	0.000683	0.00250	1	10/10/2019 21:39	WG1360540
Xylenes, Total	U		0.00478	0.00650	1	10/10/2019 21:39	WG1360540
(S) Toluene-d8	*106*			*75.0-131*		*10/10/2019 21:39*	WG1360540
(S) 4-Bromofluorobenzene	*95.4*			*67.0-138*		*10/10/2019 21:39*	WG1360540
(S) 1,2-Dichloroethane-d4	*121*			*70.0-130*		*10/10/2019 21:39*	WG1360540

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.000600	0.00600	1	10/09/2019 17:32	WG1359597
Acenaphthene	U		0.000600	0.00600	1	10/09/2019 17:32	WG1359597
Acenaphthylene	U		0.000600	0.00600	1	10/09/2019 17:32	WG1359597
Benzo(a)anthracene	U		0.000600	0.00600	1	10/09/2019 17:32	WG1359597
Benzo(a)pyrene	U		0.000600	0.00600	1	10/09/2019 17:32	WG1359597
Benzo(b)fluoranthene	U		0.000600	0.00600	1	10/09/2019 17:32	WG1359597
Benzo(g,h,i)perylene	U		0.000600	0.00600	1	10/09/2019 17:32	WG1359597
Benzo(k)fluoranthene	U		0.000600	0.00600	1	10/09/2019 17:32	WG1359597
Chrysene	U		0.000600	0.00600	1	10/09/2019 17:32	WG1359597
Dibenz(a,h)anthracene	U		0.000600	0.00600	1	10/09/2019 17:32	WG1359597
Fluoranthene	U		0.000600	0.00600	1	10/09/2019 17:32	WG1359597
Fluorene	U		0.000600	0.00600	1	10/09/2019 17:32	WG1359597
Indeno(1,2,3-cd)pyrene	U		0.000600	0.00600	1	10/09/2019 17:32	WG1359597
Naphthalene	U		0.00200	0.0200	1	10/09/2019 17:32	WG1359597
Phenanthrene	U		0.000600	0.00600	1	10/09/2019 17:32	WG1359597
Pyrene	U		0.000600	0.00600	1	10/09/2019 17:32	WG1359597
1-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 17:32	WG1359597

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
2-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 17:32	WG1359597
2-Chloronaphthalene	U		0.00200	0.0200	1	10/09/2019 17:32	WG1359597
(S) p-Terphenyl-d14	*69.6*			*23.0-120*		*10/09/2019 17:32*	WG1359597
(S) Nitrobenzene-d5	*119*			*14.0-149*		*10/09/2019 17:32*	WG1359597
(S) 2-Fluorobiphenyl	*76.5*			*34.0-125*		*10/09/2019 17:32*	WG1359597

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	10/10/2019 22:20	WG1359111

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.116		0.00280	0.0300	1	10/08/2019 21:16	WG1358737

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	11.2		0.460	2.00	1	10/09/2019 15:35	WG1359813
Barium	11.7		0.170	0.500	1	10/09/2019 15:35	WG1359813
Cadmium	U		0.0700	0.500	1	10/09/2019 15:35	WG1359813
Chromium	14.0		0.140	1.00	1	10/09/2019 15:35	WG1359813
Lead	28.4		0.190	0.500	1	10/09/2019 15:35	WG1359813
Selenium	0.834	J	0.620	2.00	1	10/09/2019 15:35	WG1359813
Silver	U		0.120	1.00	1	10/09/2019 15:35	WG1359813

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	0.0343	B J	0.0188	0.0343	1.37	10/10/2019 22:00	WG1360540
Acrylonitrile	U		0.00260	0.0171	1.37	10/10/2019 22:00	WG1360540
Benzene	U		0.000548	0.00137	1.37	10/10/2019 22:00	WG1360540
Bromobenzene	U		0.00144	0.0171	1.37	10/10/2019 22:00	WG1360540
Bromodichloromethane	U		0.00108	0.00343	1.37	10/10/2019 22:00	WG1360540
Bromoform	U		0.00819	0.0343	1.37	10/10/2019 22:00	WG1360540
Bromomethane	U		0.00507	0.0171	1.37	10/10/2019 22:00	WG1360540
n-Butylbenzene	U		0.00526	0.0171	1.37	10/10/2019 22:00	WG1360540
sec-Butylbenzene	U		0.00347	0.0171	1.37	10/10/2019 22:00	WG1360540
tert-Butylbenzene	U		0.00212	0.00685	1.37	10/10/2019 22:00	WG1360540
Carbon tetrachloride	U		0.00148	0.00685	1.37	10/10/2019 22:00	WG1360540
Chlorobenzene	U		0.000785	0.00343	1.37	10/10/2019 22:00	WG1360540
Chlorodibromomethane	U		0.000617	0.00343	1.37	10/10/2019 22:00	WG1360540
Chloroethane	U		0.00148	0.00685	1.37	10/10/2019 22:00	WG1360540
Chloroform	U		0.000569	0.00343	1.37	10/10/2019 22:00	WG1360540
Chloromethane	U		0.00190	0.0171	1.37	10/10/2019 22:00	WG1360540
2-Chlorotoluene	U		0.00126	0.00343	1.37	10/10/2019 22:00	WG1360540
4-Chlorotoluene	U		0.00155	0.00685	1.37	10/10/2019 22:00	WG1360540
1,2-Dibromo-3-Chloropropane	U		0.00699	0.0343	1.37	10/10/2019 22:00	WG1360540
1,2-Dibromoethane	U		0.000719	0.00343	1.37	10/10/2019 22:00	WG1360540
Dibromomethane	U		0.00137	0.00685	1.37	10/10/2019 22:00	WG1360540
1,2-Dichlorobenzene	U		0.00199	0.00685	1.37	10/10/2019 22:00	WG1360540
1,3-Dichlorobenzene	U		0.00233	0.00685	1.37	10/10/2019 22:00	WG1360540
1,4-Dichlorobenzene	U		0.00270	0.00685	1.37	10/10/2019 22:00	WG1360540
Dichlorodifluoromethane	U		0.00112	0.00343	1.37	10/10/2019 22:00	WG1360540
1,1-Dichloroethane	U		0.000788	0.00343	1.37	10/10/2019 22:00	WG1360540
1,2-Dichloroethane	U		0.000651	0.00343	1.37	10/10/2019 22:00	WG1360540
1,1-Dichloroethene	U		0.000685	0.00343	1.37	10/10/2019 22:00	WG1360540
cis-1,2-Dichloroethene	U		0.000945	0.00343	1.37	10/10/2019 22:00	WG1360540
trans-1,2-Dichloroethene	U		0.00196	0.00685	1.37	10/10/2019 22:00	WG1360540
1,2-Dichloropropane	U		0.00174	0.00685	1.37	10/10/2019 22:00	WG1360540
1,1-Dichloropropene	U		0.000959	0.00343	1.37	10/10/2019 22:00	WG1360540
1,3-Dichloropropane	U		0.00240	0.00685	1.37	10/10/2019 22:00	WG1360540

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
cis-1,3-Dichloropropene	U		0.000929	0.00343	1.37	10/10/2019 22:00	WG1360540
trans-1,3-Dichloropropene	U		0.00210	0.00685	1.37	10/10/2019 22:00	WG1360540
2,2-Dichloropropane	U		0.00109	0.00343	1.37	10/10/2019 22:00	WG1360540
Di-isopropyl ether	U		0.000480	0.00137	1.37	10/10/2019 22:00	WG1360540
Ethylbenzene	U		0.000726	0.00343	1.37	10/10/2019 22:00	WG1360540
Hexachloro-1,3-butadiene	U		0.0174	0.0343	1.37	10/10/2019 22:00	WG1360540
Isopropylbenzene	U		0.00118	0.00343	1.37	10/10/2019 22:00	WG1360540
p-Isopropyltoluene	U		0.00319	0.00685	1.37	10/10/2019 22:00	WG1360540
2-Butanone (MEK)	U		0.0171	0.0343	1.37	10/10/2019 22:00	WG1360540
Methylene Chloride	0.0135	B J	0.00910	0.0343	1.37	10/10/2019 22:00	WG1360540
4-Methyl-2-pentanone (MIBK)	U		0.0137	0.0343	1.37	10/10/2019 22:00	WG1360540
Methyl tert-butyl ether	U		0.000404	0.00137	1.37	10/10/2019 22:00	WG1360540
Naphthalene	U		0.00427	0.0171	1.37	10/10/2019 22:00	WG1360540
n-Propylbenzene	U		0.00162	0.00685	1.37	10/10/2019 22:00	WG1360540
Styrene	U		0.00374	0.0171	1.37	10/10/2019 22:00	WG1360540
1,1,1,2-Tetrachloroethane	U		0.000685	0.00343	1.37	10/10/2019 22:00	WG1360540
1,1,2,2-Tetrachloroethane	U		0.000534	0.00343	1.37	10/10/2019 22:00	WG1360540
1,1,2-Trichlorotrifluoroethane	U		0.000925	0.00343	1.37	10/10/2019 22:00	WG1360540
Tetrachloroethene	U		0.000959	0.00343	1.37	10/10/2019 22:00	WG1360540
Toluene	U		0.00171	0.00685	1.37	10/10/2019 22:00	WG1360540
1,2,3-Trichlorobenzene	U		0.000856	0.00343	1.37	10/10/2019 22:00	WG1360540
1,2,4-Trichlorobenzene	U		0.00660	0.0171	1.37	10/10/2019 22:00	WG1360540
1,1,1-Trichloroethane	U		0.000377	0.00343	1.37	10/10/2019 22:00	WG1360540
1,1,2-Trichloroethane	U		0.00121	0.00343	1.37	10/10/2019 22:00	WG1360540
Trichloroethene	U		0.000548	0.00137	1.37	10/10/2019 22:00	WG1360540
Trichlorofluoromethane	U		0.000685	0.00343	1.37	10/10/2019 22:00	WG1360540
1,2,3-Trichloropropane	U		0.00699	0.0171	1.37	10/10/2019 22:00	WG1360540
1,2,4-Trimethylbenzene	U		0.00159	0.00685	1.37	10/10/2019 22:00	WG1360540
1,2,3-Trimethylbenzene	U		0.00158	0.00685	1.37	10/10/2019 22:00	WG1360540
1,3,5-Trimethylbenzene	U		0.00148	0.00685	1.37	10/10/2019 22:00	WG1360540
Vinyl chloride	U	J4	0.000936	0.00343	1.37	10/10/2019 22:00	WG1360540
Xylenes, Total	U		0.00655	0.00890	1.37	10/10/2019 22:00	WG1360540
(S) Toluene-d8	*107*			*75.0-131*		*10/10/2019 22:00*	WG1360540
(S) 4-Bromofluorobenzene	*102*			*67.0-138*		*10/10/2019 22:00*	WG1360540
(S) 1,2-Dichloroethane-d4	*120*			*70.0-130*		*10/10/2019 22:00*	WG1360540

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.000600	0.00600	1	10/09/2019 17:53	WG1359597
Acenaphthene	U		0.000600	0.00600	1	10/09/2019 17:53	WG1359597
Acenaphthylene	U		0.000600	0.00600	1	10/09/2019 17:53	WG1359597
Benzo(a)anthracene	U		0.000600	0.00600	1	10/09/2019 17:53	WG1359597
Benzo(a)pyrene	U		0.000600	0.00600	1	10/09/2019 17:53	WG1359597
Benzo(b)fluoranthene	U		0.000600	0.00600	1	10/09/2019 17:53	WG1359597
Benzo(g,h,i)perylene	U		0.000600	0.00600	1	10/09/2019 17:53	WG1359597
Benzo(k)fluoranthene	U		0.000600	0.00600	1	10/09/2019 17:53	WG1359597
Chrysene	U		0.000600	0.00600	1	10/09/2019 17:53	WG1359597
Dibenz(a,h)anthracene	U		0.000600	0.00600	1	10/09/2019 17:53	WG1359597
Fluoranthene	U		0.000600	0.00600	1	10/09/2019 17:53	WG1359597
Fluorene	U		0.000600	0.00600	1	10/09/2019 17:53	WG1359597
Indeno(1,2,3-cd)pyrene	U		0.000600	0.00600	1	10/09/2019 17:53	WG1359597
Naphthalene	U		0.00200	0.0200	1	10/09/2019 17:53	WG1359597
Phenanthrene	U		0.000600	0.00600	1	10/09/2019 17:53	WG1359597
Pyrene	U		0.000600	0.00600	1	10/09/2019 17:53	WG1359597
1-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 17:53	WG1359597

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
2-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 17:53	WG1359597
2-Chloronaphthalene	U		0.00200	0.0200	1	10/09/2019 17:53	WG1359597
(S) p-Terphenyl-d14	*69.6*			*23.0-120*		*10/09/2019 17:53*	WG1359597
(S) Nitrobenzene-d5	*97.0*			*14.0-149*		*10/09/2019 17:53*	WG1359597
(S) 2-Fluorobiphenyl	*80.3*			*34.0-125*		*10/09/2019 17:53*	WG1359597

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	10/10/2019 22:25	WG1359111

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0787		0.00280	0.0300	1	10/08/2019 21:18	WG1358737

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	18.3		0.460	2.00	1	10/09/2019 15:38	WG1359813
Barium	7.27		0.170	0.500	1	10/09/2019 15:38	WG1359813
Cadmium	U		0.0700	0.500	1	10/09/2019 15:38	WG1359813
Chromium	24.8		0.140	1.00	1	10/09/2019 15:38	WG1359813
Lead	5.10		0.190	0.500	1	10/09/2019 15:38	WG1359813
Selenium	U		0.620	2.00	1	10/09/2019 15:38	WG1359813
Silver	U		0.120	1.00	1	10/09/2019 15:38	WG1359813

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	0.0215	B J	0.0137	0.0250	1	10/10/2019 19:57	WG1360540
Acrylonitrile	U		0.00190	0.0125	1	10/10/2019 19:57	WG1360540
Benzene	U		0.000400	0.00100	1	10/10/2019 19:57	WG1360540
Bromobenzene	U		0.00105	0.0125	1	10/10/2019 19:57	WG1360540
Bromodichloromethane	U		0.000788	0.00250	1	10/10/2019 19:57	WG1360540
Bromoform	U		0.00598	0.0250	1	10/10/2019 19:57	WG1360540
Bromomethane	U		0.00370	0.0125	1	10/10/2019 19:57	WG1360540
n-Butylbenzene	U		0.00384	0.0125	1	10/10/2019 19:57	WG1360540
sec-Butylbenzene	U		0.00253	0.0125	1	10/10/2019 19:57	WG1360540
tert-Butylbenzene	U		0.00155	0.00500	1	10/10/2019 19:57	WG1360540
Carbon tetrachloride	U		0.00108	0.00500	1	10/10/2019 19:57	WG1360540
Chlorobenzene	U		0.000573	0.00250	1	10/10/2019 19:57	WG1360540
Chlorodibromomethane	U		0.000450	0.00250	1	10/10/2019 19:57	WG1360540
Chloroethane	U		0.00108	0.00500	1	10/10/2019 19:57	WG1360540
Chloroform	U		0.000415	0.00250	1	10/10/2019 19:57	WG1360540
Chloromethane	U		0.00139	0.0125	1	10/10/2019 19:57	WG1360540
2-Chlorotoluene	U		0.000920	0.00250	1	10/10/2019 19:57	WG1360540
4-Chlorotoluene	U		0.00113	0.00500	1	10/10/2019 19:57	WG1360540
1,2-Dibromo-3-Chloropropane	U		0.00510	0.0250	1	10/10/2019 19:57	WG1360540
1,2-Dibromoethane	U		0.000525	0.00250	1	10/10/2019 19:57	WG1360540
Dibromomethane	U		0.00100	0.00500	1	10/10/2019 19:57	WG1360540
1,2-Dichlorobenzene	U		0.00145	0.00500	1	10/10/2019 19:57	WG1360540
1,3-Dichlorobenzene	U		0.00170	0.00500	1	10/10/2019 19:57	WG1360540
1,4-Dichlorobenzene	U		0.00197	0.00500	1	10/10/2019 19:57	WG1360540
Dichlorodifluoromethane	U		0.000818	0.00250	1	10/10/2019 19:57	WG1360540
1,1-Dichloroethane	U		0.000575	0.00250	1	10/10/2019 19:57	WG1360540
1,2-Dichloroethane	U		0.000475	0.00250	1	10/10/2019 19:57	WG1360540
1,1-Dichloroethene	U		0.000500	0.00250	1	10/10/2019 19:57	WG1360540
cis-1,2-Dichloroethene	U		0.000690	0.00250	1	10/10/2019 19:57	WG1360540
trans-1,2-Dichloroethene	U		0.00143	0.00500	1	10/10/2019 19:57	WG1360540
1,2-Dichloropropane	U		0.00127	0.00500	1	10/10/2019 19:57	WG1360540
1,1-Dichloropropene	U		0.000700	0.00250	1	10/10/2019 19:57	WG1360540
1,3-Dichloropropane	U		0.00175	0.00500	1	10/10/2019 19:57	WG1360540

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
cis-1,3-Dichloropropene	U		0.000678	0.00250	1	10/10/2019 19:57	WG1360540
trans-1,3-Dichloropropene	U		0.00153	0.00500	1	10/10/2019 19:57	WG1360540
2,2-Dichloropropane	U		0.000793	0.00250	1	10/10/2019 19:57	WG1360540
Di-isopropyl ether	U		0.000350	0.00100	1	10/10/2019 19:57	WG1360540
Ethylbenzene	U		0.000530	0.00250	1	10/10/2019 19:57	WG1360540
Hexachloro-1,3-butadiene	U		0.0127	0.0250	1	10/10/2019 19:57	WG1360540
Isopropylbenzene	U		0.000863	0.00250	1	10/10/2019 19:57	WG1360540
p-Isopropyltoluene	U		0.00233	0.00500	1	10/10/2019 19:57	WG1360540
2-Butanone (MEK)	0.0152	J	0.0125	0.0250	1	10/10/2019 19:57	WG1360540
Methylene Chloride	0.00926	B J	0.00664	0.0250	1	10/10/2019 19:57	WG1360540
4-Methyl-2-pentanone (MIBK)	U		0.0100	0.0250	1	10/10/2019 19:57	WG1360540
Methyl tert-butyl ether	U		0.000295	0.00100	1	10/10/2019 19:57	WG1360540
Naphthalene	U		0.00312	0.0125	1	10/10/2019 19:57	WG1360540
n-Propylbenzene	U		0.00118	0.00500	1	10/10/2019 19:57	WG1360540
Styrene	U		0.00273	0.0125	1	10/10/2019 19:57	WG1360540
1,1,1,2-Tetrachloroethane	U		0.000500	0.00250	1	10/10/2019 19:57	WG1360540
1,1,2,2-Tetrachloroethane	U		0.000390	0.00250	1	10/10/2019 19:57	WG1360540
1,1,2-Trichlorotrifluoroethane	U		0.000675	0.00250	1	10/10/2019 19:57	WG1360540
Tetrachloroethene	U		0.000700	0.00250	1	10/10/2019 19:57	WG1360540
Toluene	0.00171	J	0.00125	0.00500	1	10/10/2019 19:57	WG1360540
1,2,3-Trichlorobenzene	U		0.000625	0.00250	1	10/10/2019 19:57	WG1360540
1,2,4-Trichlorobenzene	U		0.00482	0.0125	1	10/10/2019 19:57	WG1360540
1,1,1-Trichloroethane	U		0.000275	0.00250	1	10/10/2019 19:57	WG1360540
1,1,2-Trichloroethane	U		0.000883	0.00250	1	10/10/2019 19:57	WG1360540
Trichloroethene	U		0.000400	0.00100	1	10/10/2019 19:57	WG1360540
Trichlorofluoromethane	U		0.000500	0.00250	1	10/10/2019 19:57	WG1360540
1,2,3-Trichloropropane	U		0.00510	0.0125	1	10/10/2019 19:57	WG1360540
1,2,4-Trimethylbenzene	U		0.00116	0.00500	1	10/10/2019 19:57	WG1360540
1,2,3-Trimethylbenzene	U		0.00115	0.00500	1	10/10/2019 19:57	WG1360540
1,3,5-Trimethylbenzene	U		0.00108	0.00500	1	10/10/2019 19:57	WG1360540
Vinyl chloride	U	J4	0.000683	0.00250	1	10/10/2019 19:57	WG1360540
Xylenes, Total	U		0.00478	0.00650	1	10/10/2019 19:57	WG1360540
(S) Toluene-d8	*108*			*75.0-131*		*10/10/2019 19:57*	WG1360540
(S) 4-Bromofluorobenzene	*101*			*67.0-138*		*10/10/2019 19:57*	WG1360540
(S) 1,2-Dichloroethane-d4	*121*			*70.0-130*		*10/10/2019 19:57*	WG1360540

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.000600	0.00600	1	10/09/2019 18:14	WG1359597
Acenaphthene	U		0.000600	0.00600	1	10/09/2019 18:14	WG1359597
Acenaphthylene	U		0.000600	0.00600	1	10/09/2019 18:14	WG1359597
Benzo(a)anthracene	0.000953	J	0.000600	0.00600	1	10/09/2019 18:14	WG1359597
Benzo(a)pyrene	0.00103	J	0.000600	0.00600	1	10/09/2019 18:14	WG1359597
Benzo(b)fluoranthene	0.00161	J	0.000600	0.00600	1	10/09/2019 18:14	WG1359597
Benzo(g,h,i)perylene	0.000937	J	0.000600	0.00600	1	10/09/2019 18:14	WG1359597
Benzo(k)fluoranthene	0.000634	J	0.000600	0.00600	1	10/09/2019 18:14	WG1359597
Chrysene	0.00103	J	0.000600	0.00600	1	10/09/2019 18:14	WG1359597
Dibenz(a,h)anthracene	U		0.000600	0.00600	1	10/09/2019 18:14	WG1359597
Fluoranthene	0.00202	J	0.000600	0.00600	1	10/09/2019 18:14	WG1359597
Fluorene	U		0.000600	0.00600	1	10/09/2019 18:14	WG1359597
Indeno(1,2,3-cd)pyrene	0.000726	J	0.000600	0.00600	1	10/09/2019 18:14	WG1359597
Naphthalene	U		0.00200	0.0200	1	10/09/2019 18:14	WG1359597
Phenanthrene	0.000746	J	0.000600	0.00600	1	10/09/2019 18:14	WG1359597
Pyrene	0.00161	J	0.000600	0.00600	1	10/09/2019 18:14	WG1359597
1-Methylnaphthalene	0.00344	J	0.00200	0.0200	1	10/09/2019 18:14	WG1359597

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
2-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 18:14	WG1359597
2-Chloronaphthalene	U		0.00200	0.0200	1	10/09/2019 18:14	WG1359597
(S) p-Terphenyl-d14	*68.1*			*23.0-120*		*10/09/2019 18:14*	WG1359597
(S) Nitrobenzene-d5	*119*			*14.0-149*		*10/09/2019 18:14*	WG1359597
(S) 2-Fluorobiphenyl	*79.9*			*34.0-125*		*10/09/2019 18:14*	WG1359597

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	10/10/2019 22:31	WG1359111

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.0688		0.00280	0.0300	1	10/08/2019 21:21	WG1358737

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	20.5		0.460	2.00	1	10/09/2019 15:40	WG1359813
Barium	9.83		0.170	0.500	1	10/09/2019 15:40	WG1359813
Cadmium	U		0.0700	0.500	1	10/09/2019 15:40	WG1359813
Chromium	34.4		0.140	1.00	1	10/09/2019 15:40	WG1359813
Lead	8.26		0.190	0.500	1	10/09/2019 15:40	WG1359813
Selenium	0.799	J	0.620	2.00	1	10/09/2019 15:40	WG1359813
Silver	U		0.120	1.00	1	10/09/2019 15:40	WG1359813

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	0.0184	B J	0.0169	0.0308	1.23	10/10/2019 20:18	WG1360540
Acrylonitrile	U		0.00234	0.0154	1.23	10/10/2019 20:18	WG1360540
Benzene	U		0.000492	0.00123	1.23	10/10/2019 20:18	WG1360540
Bromobenzene	U		0.00129	0.0154	1.23	10/10/2019 20:18	WG1360540
Bromodichloromethane	U		0.000969	0.00308	1.23	10/10/2019 20:18	WG1360540
Bromoform	U		0.00736	0.0308	1.23	10/10/2019 20:18	WG1360540
Bromomethane	U		0.00455	0.0154	1.23	10/10/2019 20:18	WG1360540
n-Butylbenzene	U		0.00472	0.0154	1.23	10/10/2019 20:18	WG1360540
sec-Butylbenzene	U		0.00311	0.0154	1.23	10/10/2019 20:18	WG1360540
tert-Butylbenzene	U		0.00191	0.00615	1.23	10/10/2019 20:18	WG1360540
Carbon tetrachloride	U		0.00133	0.00615	1.23	10/10/2019 20:18	WG1360540
Chlorobenzene	U		0.000705	0.00308	1.23	10/10/2019 20:18	WG1360540
Chlorodibromomethane	U		0.000554	0.00308	1.23	10/10/2019 20:18	WG1360540
Chloroethane	U		0.00133	0.00615	1.23	10/10/2019 20:18	WG1360540
Chloroform	U		0.000510	0.00308	1.23	10/10/2019 20:18	WG1360540
Chloromethane	U		0.00171	0.0154	1.23	10/10/2019 20:18	WG1360540
2-Chlorotoluene	U		0.00113	0.00308	1.23	10/10/2019 20:18	WG1360540
4-Chlorotoluene	U		0.00139	0.00615	1.23	10/10/2019 20:18	WG1360540
1,2-Dibromo-3-Chloropropane	U		0.00627	0.0308	1.23	10/10/2019 20:18	WG1360540
1,2-Dibromoethane	U		0.000646	0.00308	1.23	10/10/2019 20:18	WG1360540
Dibromomethane	U		0.00123	0.00615	1.23	10/10/2019 20:18	WG1360540
1,2-Dichlorobenzene	U		0.00178	0.00615	1.23	10/10/2019 20:18	WG1360540
1,3-Dichlorobenzene	U		0.00209	0.00615	1.23	10/10/2019 20:18	WG1360540
1,4-Dichlorobenzene	U		0.00242	0.00615	1.23	10/10/2019 20:18	WG1360540
Dichlorodifluoromethane	U		0.00101	0.00308	1.23	10/10/2019 20:18	WG1360540
1,1-Dichloroethane	U		0.000707	0.00308	1.23	10/10/2019 20:18	WG1360540
1,2-Dichloroethane	U		0.000584	0.00308	1.23	10/10/2019 20:18	WG1360540
1,1-Dichloroethene	U		0.000615	0.00308	1.23	10/10/2019 20:18	WG1360540
cis-1,2-Dichloroethene	U		0.000849	0.00308	1.23	10/10/2019 20:18	WG1360540
trans-1,2-Dichloroethene	U		0.00176	0.00615	1.23	10/10/2019 20:18	WG1360540
1,2-Dichloropropane	U		0.00156	0.00615	1.23	10/10/2019 20:18	WG1360540
1,1-Dichloropropene	U		0.000861	0.00308	1.23	10/10/2019 20:18	WG1360540
1,3-Dichloropropane	U		0.00215	0.00615	1.23	10/10/2019 20:18	WG1360540

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
cis-1,3-Dichloropropene	U		0.000834	0.00308	1.23	10/10/2019 20:18	WG1360540
trans-1,3-Dichloropropene	U		0.00188	0.00615	1.23	10/10/2019 20:18	WG1360540
2,2-Dichloropropane	U		0.000975	0.00308	1.23	10/10/2019 20:18	WG1360540
Di-isopropyl ether	U		0.000431	0.00123	1.23	10/10/2019 20:18	WG1360540
Ethylbenzene	U		0.000652	0.00308	1.23	10/10/2019 20:18	WG1360540
Hexachloro-1,3-butadiene	U		0.0156	0.0308	1.23	10/10/2019 20:18	WG1360540
Isopropylbenzene	U		0.00106	0.00308	1.23	10/10/2019 20:18	WG1360540
p-Isopropyltoluene	U		0.00287	0.00615	1.23	10/10/2019 20:18	WG1360540
2-Butanone (MEK)	U		0.0154	0.0308	1.23	10/10/2019 20:18	WG1360540
Methylene Chloride	0.0102	B J	0.00817	0.0308	1.23	10/10/2019 20:18	WG1360540
4-Methyl-2-pentanone (MIBK)	U		0.0123	0.0308	1.23	10/10/2019 20:18	WG1360540
Methyl tert-butyl ether	U		0.000363	0.00123	1.23	10/10/2019 20:18	WG1360540
Naphthalene	U		0.00384	0.0154	1.23	10/10/2019 20:18	WG1360540
n-Propylbenzene	U		0.00145	0.00615	1.23	10/10/2019 20:18	WG1360540
Styrene	U		0.00336	0.0154	1.23	10/10/2019 20:18	WG1360540
1,1,1,2-Tetrachloroethane	U		0.000615	0.00308	1.23	10/10/2019 20:18	WG1360540
1,1,2,2-Tetrachloroethane	U		0.000480	0.00308	1.23	10/10/2019 20:18	WG1360540
1,1,2-Trichlorotrifluoroethane	U		0.000830	0.00308	1.23	10/10/2019 20:18	WG1360540
Tetrachloroethene	U		0.000861	0.00308	1.23	10/10/2019 20:18	WG1360540
Toluene	U		0.00154	0.00615	1.23	10/10/2019 20:18	WG1360540
1,2,3-Trichlorobenzene	U		0.000769	0.00308	1.23	10/10/2019 20:18	WG1360540
1,2,4-Trichlorobenzene	U		0.00593	0.0154	1.23	10/10/2019 20:18	WG1360540
1,1,1-Trichloroethane	U		0.000338	0.00308	1.23	10/10/2019 20:18	WG1360540
1,1,2-Trichloroethane	U		0.00109	0.00308	1.23	10/10/2019 20:18	WG1360540
Trichloroethene	U		0.000492	0.00123	1.23	10/10/2019 20:18	WG1360540
Trichlorofluoromethane	U		0.000615	0.00308	1.23	10/10/2019 20:18	WG1360540
1,2,3-Trichloropropane	U		0.00627	0.0154	1.23	10/10/2019 20:18	WG1360540
1,2,4-Trimethylbenzene	U		0.00143	0.00615	1.23	10/10/2019 20:18	WG1360540
1,2,3-Trimethylbenzene	U		0.00141	0.00615	1.23	10/10/2019 20:18	WG1360540
1,3,5-Trimethylbenzene	U		0.00133	0.00615	1.23	10/10/2019 20:18	WG1360540
Vinyl chloride	U	J4	0.000840	0.00308	1.23	10/10/2019 20:18	WG1360540
Xylenes, Total	U		0.00588	0.00800	1.23	10/10/2019 20:18	WG1360540
(S) Toluene-d8	*111*			*75.0-131*		*10/10/2019 20:18*	WG1360540
(S) 4-Bromofluorobenzene	*95.7*			*67.0-138*		*10/10/2019 20:18*	WG1360540
(S) 1,2-Dichloroethane-d4	*105*			*70.0-130*		*10/10/2019 20:18*	WG1360540

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.000600	0.00600	1	10/09/2019 18:34	WG1359597
Acenaphthene	U		0.000600	0.00600	1	10/09/2019 18:34	WG1359597
Acenaphthylene	U		0.000600	0.00600	1	10/09/2019 18:34	WG1359597
Benzo(a)anthracene	0.00235	J	0.000600	0.00600	1	10/09/2019 18:34	WG1359597
Benzo(a)pyrene	0.00269	J	0.000600	0.00600	1	10/09/2019 18:34	WG1359597
Benzo(b)fluoranthene	0.00436	J	0.000600	0.00600	1	10/09/2019 18:34	WG1359597
Benzo(g,h,i)perylene	0.00341	J	0.000600	0.00600	1	10/09/2019 18:34	WG1359597
Benzo(k)fluoranthene	0.00168	J	0.000600	0.00600	1	10/09/2019 18:34	WG1359597
Chrysene	0.00240	J	0.000600	0.00600	1	10/09/2019 18:34	WG1359597
Dibenz(a,h)anthracene	U		0.000600	0.00600	1	10/09/2019 18:34	WG1359597
Fluoranthene	0.00422	J	0.000600	0.00600	1	10/09/2019 18:34	WG1359597
Fluorene	U		0.000600	0.00600	1	10/09/2019 18:34	WG1359597
Indeno(1,2,3-cd)pyrene	0.00287	J	0.000600	0.00600	1	10/09/2019 18:34	WG1359597
Naphthalene	U		0.00200	0.0200	1	10/09/2019 18:34	WG1359597
Phenanthrene	0.00182	J	0.000600	0.00600	1	10/09/2019 18:34	WG1359597
Pyrene	0.00480	J	0.000600	0.00600	1	10/09/2019 18:34	WG1359597
1-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 18:34	WG1359597

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
2-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 18:34	WG1359597
2-Chloronaphthalene	U		0.00200	0.0200	1	10/09/2019 18:34	WG1359597
(S) p-Terphenyl-d14	*68.7*			*23.0-120*		*10/09/2019 18:34*	WG1359597
(S) Nitrobenzene-d5	*111*			*14.0-149*		*10/09/2019 18:34*	WG1359597
(S) 2-Fluorobiphenyl	*75.4*			*34.0-125*		*10/09/2019 18:34*	WG1359597

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	10/10/2019 22:36	WG1359111

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	0.166		0.00280	0.0300	1	10/08/2019 21:24	WG1358737

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	9.04		0.460	2.00	1	10/09/2019 15:43	WG1359813
Barium	19.5		0.170	0.500	1	10/09/2019 15:43	WG1359813
Cadmium	U		0.0700	0.500	1	10/09/2019 15:43	WG1359813
Chromium	10.2		0.140	1.00	1	10/09/2019 15:43	WG1359813
Lead	18.5		0.190	0.500	1	10/09/2019 15:43	WG1359813
Selenium	U		0.620	2.00	1	10/09/2019 15:43	WG1359813
Silver	U		0.120	1.00	1	10/09/2019 15:43	WG1359813

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	0.0467	B J	0.0318	0.0580	2.32	10/10/2019 23:02	WG1360540
Acrylonitrile	U		0.00441	0.0290	2.32	10/10/2019 23:02	WG1360540
Benzene	U		0.000928	0.00232	2.32	10/10/2019 23:02	WG1360540
Bromobenzene	U		0.00244	0.0290	2.32	10/10/2019 23:02	WG1360540
Bromodichloromethane	U		0.00183	0.00580	2.32	10/10/2019 23:02	WG1360540
Bromoform	U		0.0139	0.0580	2.32	10/10/2019 23:02	WG1360540
Bromomethane	U		0.00858	0.0290	2.32	10/10/2019 23:02	WG1360540
n-Butylbenzene	U		0.00891	0.0290	2.32	10/10/2019 23:02	WG1360540
sec-Butylbenzene	U		0.00587	0.0290	2.32	10/10/2019 23:02	WG1360540
tert-Butylbenzene	U		0.00360	0.0116	2.32	10/10/2019 23:02	WG1360540
Carbon tetrachloride	U		0.00251	0.0116	2.32	10/10/2019 23:02	WG1360540
Chlorobenzene	U		0.00133	0.00580	2.32	10/10/2019 23:02	WG1360540
Chlorodibromomethane	U		0.00104	0.00580	2.32	10/10/2019 23:02	WG1360540
Chloroethane	U		0.00251	0.0116	2.32	10/10/2019 23:02	WG1360540
Chloroform	U		0.000963	0.00580	2.32	10/10/2019 23:02	WG1360540
Chloromethane	U		0.00322	0.0290	2.32	10/10/2019 23:02	WG1360540
2-Chlorotoluene	U		0.00213	0.00580	2.32	10/10/2019 23:02	WG1360540
4-Chlorotoluene	U		0.00262	0.0116	2.32	10/10/2019 23:02	WG1360540
1,2-Dibromo-3-Chloropropane	U		0.0118	0.0580	2.32	10/10/2019 23:02	WG1360540
1,2-Dibromoethane	U		0.00122	0.00580	2.32	10/10/2019 23:02	WG1360540
Dibromomethane	U		0.00232	0.0116	2.32	10/10/2019 23:02	WG1360540
1,2-Dichlorobenzene	U		0.00336	0.0116	2.32	10/10/2019 23:02	WG1360540
1,3-Dichlorobenzene	U		0.00394	0.0116	2.32	10/10/2019 23:02	WG1360540
1,4-Dichlorobenzene	U		0.00457	0.0116	2.32	10/10/2019 23:02	WG1360540
Dichlorodifluoromethane	U		0.00190	0.00580	2.32	10/10/2019 23:02	WG1360540
1,1-Dichloroethane	U		0.00133	0.00580	2.32	10/10/2019 23:02	WG1360540
1,2-Dichloroethane	U		0.00110	0.00580	2.32	10/10/2019 23:02	WG1360540
1,1-Dichloroethene	U		0.00116	0.00580	2.32	10/10/2019 23:02	WG1360540
cis-1,2-Dichloroethene	U		0.00160	0.00580	2.32	10/10/2019 23:02	WG1360540
trans-1,2-Dichloroethene	U		0.00332	0.0116	2.32	10/10/2019 23:02	WG1360540
1,2-Dichloropropane	U		0.00295	0.0116	2.32	10/10/2019 23:02	WG1360540
1,1-Dichloropropene	U		0.00162	0.00580	2.32	10/10/2019 23:02	WG1360540
1,3-Dichloropropane	U		0.00406	0.0116	2.32	10/10/2019 23:02	WG1360540

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
cis-1,3-Dichloropropene	U		0.00157	0.00580	2.32	10/10/2019 23:02	WG1360540
trans-1,3-Dichloropropene	U		0.00355	0.0116	2.32	10/10/2019 23:02	WG1360540
2,2-Dichloropropane	U		0.00184	0.00580	2.32	10/10/2019 23:02	WG1360540
Di-isopropyl ether	U		0.000812	0.00232	2.32	10/10/2019 23:02	WG1360540
Ethylbenzene	U		0.00123	0.00580	2.32	10/10/2019 23:02	WG1360540
Hexachloro-1,3-butadiene	U		0.0295	0.0580	2.32	10/10/2019 23:02	WG1360540
Isopropylbenzene	U		0.00200	0.00580	2.32	10/10/2019 23:02	WG1360540
p-Isopropyltoluene	U		0.00541	0.0116	2.32	10/10/2019 23:02	WG1360540
2-Butanone (MEK)	U		0.0290	0.0580	2.32	10/10/2019 23:02	WG1360540
Methylene Chloride	0.0209	B J	0.0154	0.0580	2.32	10/10/2019 23:02	WG1360540
4-Methyl-2-pentanone (MIBK)	U		0.0232	0.0580	2.32	10/10/2019 23:02	WG1360540
Methyl tert-butyl ether	U		0.000684	0.00232	2.32	10/10/2019 23:02	WG1360540
Naphthalene	U		0.00724	0.0290	2.32	10/10/2019 23:02	WG1360540
n-Propylbenzene	U		0.00274	0.0116	2.32	10/10/2019 23:02	WG1360540
Styrene	U		0.00633	0.0290	2.32	10/10/2019 23:02	WG1360540
1,1,1,2-Tetrachloroethane	U		0.00116	0.00580	2.32	10/10/2019 23:02	WG1360540
1,1,2,2-Tetrachloroethane	U		0.000905	0.00580	2.32	10/10/2019 23:02	WG1360540
1,1,2-Trichlorotrifluoroethane	U		0.00157	0.00580	2.32	10/10/2019 23:02	WG1360540
Tetrachloroethene	U		0.00162	0.00580	2.32	10/10/2019 23:02	WG1360540
Toluene	U		0.00290	0.0116	2.32	10/10/2019 23:02	WG1360540
1,2,3-Trichlorobenzene	U		0.00145	0.00580	2.32	10/10/2019 23:02	WG1360540
1,2,4-Trichlorobenzene	U		0.0112	0.0290	2.32	10/10/2019 23:02	WG1360540
1,1,1-Trichloroethane	U		0.000638	0.00580	2.32	10/10/2019 23:02	WG1360540
1,1,2-Trichloroethane	U		0.00205	0.00580	2.32	10/10/2019 23:02	WG1360540
Trichloroethene	U		0.000928	0.00232	2.32	10/10/2019 23:02	WG1360540
Trichlorofluoromethane	U		0.00116	0.00580	2.32	10/10/2019 23:02	WG1360540
1,2,3-Trichloropropane	U		0.0118	0.0290	2.32	10/10/2019 23:02	WG1360540
1,2,4-Trimethylbenzene	U		0.00269	0.0116	2.32	10/10/2019 23:02	WG1360540
1,2,3-Trimethylbenzene	U		0.00267	0.0116	2.32	10/10/2019 23:02	WG1360540
1,3,5-Trimethylbenzene	U		0.00251	0.0116	2.32	10/10/2019 23:02	WG1360540
Vinyl chloride	U	J4	0.00158	0.00580	2.32	10/10/2019 23:02	WG1360540
Xylenes, Total	U		0.0111	0.0151	2.32	10/10/2019 23:02	WG1360540
(S) Toluene-d8	*107*			*75.0-131*		*10/10/2019 23:02*	WG1360540
(S) 4-Bromofluorobenzene	*99.7*			*67.0-138*		*10/10/2019 23:02*	WG1360540
(S) 1,2-Dichloroethane-d4	*120*			*70.0-130*		*10/10/2019 23:02*	WG1360540

Sample Narrative:

L1146108-12 WG1360540: Lowest possible dilution due to limited sample volume.

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	U		0.000600	0.00600	1	10/09/2019 19:57	WG1359597
Acenaphthene	U		0.000600	0.00600	1	10/09/2019 19:57	WG1359597
Acenaphthylene	U		0.000600	0.00600	1	10/09/2019 19:57	WG1359597
Benzo(a)anthracene	U		0.000600	0.00600	1	10/09/2019 19:57	WG1359597
Benzo(a)pyrene	U		0.000600	0.00600	1	10/09/2019 19:57	WG1359597
Benzo(b)fluoranthene	U		0.000600	0.00600	1	10/09/2019 19:57	WG1359597
Benzo(g,h,i)perylene	U		0.000600	0.00600	1	10/09/2019 19:57	WG1359597
Benzo(k)fluoranthene	U		0.000600	0.00600	1	10/09/2019 19:57	WG1359597
Chrysene	U		0.000600	0.00600	1	10/09/2019 19:57	WG1359597
Dibenz(a,h)anthracene	U		0.000600	0.00600	1	10/09/2019 19:57	WG1359597
Fluoranthene	U		0.000600	0.00600	1	10/09/2019 19:57	WG1359597
Fluorene	U		0.000600	0.00600	1	10/09/2019 19:57	WG1359597
Indeno(1,2,3-cd)pyrene	U		0.000600	0.00600	1	10/09/2019 19:57	WG1359597
Naphthalene	U		0.00200	0.0200	1	10/09/2019 19:57	WG1359597

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Phenanthrene	U		0.000600	0.00600	1	10/09/2019 19:57	WG1359597
Pyrene	U		0.000600	0.00600	1	10/09/2019 19:57	WG1359597
1-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 19:57	WG1359597
2-Methylnaphthalene	U		0.00200	0.0200	1	10/09/2019 19:57	WG1359597
2-Chloronaphthalene	U		0.00200	0.0200	1	10/09/2019 19:57	WG1359597
(S) p-Terphenyl-d14	*52.3*			*23.0-120*		*10/09/2019 19:57*	WG1359597
(S) Nitrobenzene-d5	*120*			*14.0-149*		*10/09/2019 19:57*	WG1359597
(S) 2-Fluorobiphenyl	*81.0*			*34.0-125*		*10/09/2019 19:57*	WG1359597

Method Blank (MB)

(MB) R3459943-1 10/10/19 20:03

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Hexavalent Chromium	U		0.255	1.00

L1146108-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1146108-01 10/10/19 21:00 • (DUP) R3459943-3 10/10/19 21:07

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Hexavalent Chromium	U	0.000	1	0.000		20

L1146629-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1146629-12 10/10/19 23:28 • (DUP) R3459943-8 10/10/19 23:33

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Hexavalent Chromium	2.10	2.13	1	1.42		20

Laboratory Control Sample (LCS)

(LCS) R3459943-2 10/10/19 20:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	10.0	8.49	84.9	80.0-120	

L1146108-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1146108-02 10/10/19 21:13 • (MS) R3459943-4 10/10/19 21:18 • (MSD) R3459943-5 10/10/19 21:23

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexavalent Chromium	20.0	U	20.5	20.9	102	105	1	75.0-125			2.20	20

L1146108-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1146108-02 10/10/19 21:13 • (MS) R3459943-6 10/10/19 21:28

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	788	U	765	97.1	50	75.0-125	

Method Blank (MB)

(MB) R3459051-1 10/08/19 20:35

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/kg		mg/kg	mg/kg
Mercury	U		0.00280	0.0300

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3459051-2 10/08/19 20:37 • (LCSD) R3459051-3 10/08/19 20:40

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	%	%	%			%	%
Mercury	0.500	0.461	0.462	92.2	92.5	80.0-120			0.323	20

L1146840-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1146840-01 10/08/19 20:42 • (MS) R3459051-4 10/08/19 20:45 • (MSD) R3459051-5 10/08/19 20:48

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Mercury	0.500	ND	0.417	0.385	81.2	74.6	1	75.0-125		J6	8.17	20

Method Blank (MB)

(MB) R3459519-6 10/09/19 21:43

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.460	2.00
Barium	U		0.170	0.500
Cadmium	U		0.0700	0.500
Chromium	U		0.140	1.00
Lead	0.490	J	0.190	0.500
Selenium	U		0.620	2.00
Silver	U		0.120	1.00

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3459519-7 10/09/19 21:45 • (LCSD) R3459519-1 10/09/19 14:26

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Arsenic	100	106	92.5	106	92.5	80.0-120			13.9	20
Barium	100	113	96.4	113	96.4	80.0-120			16.0	20
Cadmium	100	106	90.9	106	90.9	80.0-120			15.3	20
Chromium	100	108	91.4	108	91.4	80.0-120			16.5	20
Lead	100	105	90.3	105	90.3	80.0-120			15.2	20
Selenium	100	106	93.2	106	93.2	80.0-120			13.3	20
Silver	20.0	19.7	16.7	98.6	83.3	80.0-120			16.8	20

L1146011-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1146011-01 10/09/19 14:29 • (MS) R3459519-4 10/09/19 14:36 • (MSD) R3459519-5 10/09/19 14:39

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	13.9	113	107	99.0	92.7	1	75.0-125			5.73	20
Barium	100	882	959	1050	76.6	163	1	75.0-125		V	8.67	20
Cadmium	100	ND	94.0	90.3	93.8	90.1	1	75.0-125			3.98	20
Chromium	100	22.4	114	108	91.5	86.0	1	75.0-125			4.93	20
Lead	100	15.3	108	104	92.3	88.6	1	75.0-125			3.45	20
Selenium	100	ND	97.0	92.8	96.2	92.0	1	75.0-125			4.41	20
Silver	20.0	ND	16.7	16.2	83.4	81.1	1	75.0-125			2.83	20

Method Blank (MB)

(MB) R3460356-2 10/11/19 14:32

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acetone	U		0.0137	0.0250
Acrylonitrile	U		0.00190	0.0125
Benzene	U		0.000400	0.00100
Bromobenzene	U		0.00105	0.0125
Bromodichloromethane	U		0.000788	0.00250
Bromoform	U		0.00598	0.0250
Bromomethane	U		0.00370	0.0125
n-Butylbenzene	U		0.00384	0.0125
sec-Butylbenzene	U		0.00253	0.0125
tert-Butylbenzene	U		0.00155	0.00500
Carbon tetrachloride	U		0.00108	0.00500
Chlorobenzene	U		0.000573	0.00250
Chlorodibromomethane	U		0.000450	0.00250
Chloroethane	U		0.00108	0.00500
Chloroform	0.000675	J	0.000415	0.00250
Chloromethane	U		0.00139	0.0125
2-Chlorotoluene	U		0.000920	0.00250
4-Chlorotoluene	U		0.00113	0.00500
1,2-Dibromo-3-Chloropropane	U		0.00510	0.0250
1,2-Dibromoethane	U		0.000525	0.00250
Dibromomethane	U		0.00100	0.00500
1,2-Dichlorobenzene	U		0.00145	0.00500
1,3-Dichlorobenzene	U		0.00170	0.00500
1,4-Dichlorobenzene	U		0.00197	0.00500
Dichlorodifluoromethane	U		0.000818	0.00250
1,1-Dichloroethane	U		0.000575	0.00250
1,2-Dichloroethane	U		0.000475	0.00250
1,1-Dichloroethene	U		0.000500	0.00250
cis-1,2-Dichloroethene	U		0.000690	0.00250
trans-1,2-Dichloroethene	U		0.00143	0.00500
1,2-Dichloropropane	U		0.00127	0.00500
1,1-Dichloropropene	U		0.000700	0.00250
1,3-Dichloropropane	U		0.00175	0.00500
cis-1,3-Dichloropropene	U		0.000678	0.00250
trans-1,3-Dichloropropene	U		0.00153	0.00500
2,2-Dichloropropane	U		0.000793	0.00250
Di-isopropyl ether	U		0.000350	0.00100
Ethylbenzene	U		0.000530	0.00250
Hexachloro-1,3-butadiene	U		0.0127	0.0250
Isopropylbenzene	U		0.000863	0.00250

Method Blank (MB)

(MB) R3460356-2 10/11/19 14:32

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
p-Isopropyltoluene	U		0.00233	0.00500
2-Butanone (MEK)	U		0.0125	0.0250
Methylene Chloride	U		0.00664	0.0250
4-Methyl-2-pentanone (MIBK)	U		0.0100	0.0250
Methyl tert-butyl ether	U		0.000295	0.00100
Naphthalene	U		0.00312	0.0125
n-Propylbenzene	U		0.00118	0.00500
Styrene	U		0.00273	0.0125
1,1,1,2-Tetrachloroethane	U		0.000500	0.00250
1,1,2,2-Tetrachloroethane	U		0.000390	0.00250
Tetrachloroethene	U		0.000700	0.00250
Toluene	U		0.00125	0.00500
1,1,2-Trichlorotrifluoroethane	U		0.000675	0.00250
1,2,3-Trichlorobenzene	U		0.000625	0.00250
1,2,4-Trichlorobenzene	U		0.00482	0.0125
1,1,1-Trichloroethane	U		0.000275	0.00250
1,1,2-Trichloroethane	U		0.000883	0.00250
Trichloroethene	U		0.000400	0.00100
Trichlorofluoromethane	U		0.000500	0.00250
1,2,3-Trichloropropane	U		0.00510	0.0125
1,2,3-Trimethylbenzene	U		0.00115	0.00500
1,2,4-Trimethylbenzene	U		0.00116	0.00500
1,3,5-Trimethylbenzene	U		0.00108	0.00500
Vinyl chloride	U		0.000683	0.00250
Xylenes, Total	U		0.00478	0.00650
(S) Toluene-d8	*111*			*75.0-131*
(S) 4-Bromofluorobenzene	*88.6*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*97.3*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3460356-1 10/11/19 13:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	0.625	0.562	89.9	10.0-160	
Acrylonitrile	0.625	0.731	117	45.0-153	
Benzene	0.125	0.0990	79.2	70.0-123	
Bromobenzene	0.125	0.114	91.2	73.0-121	
Bromodichloromethane	0.125	0.121	96.8	73.0-121	

Laboratory Control Sample (LCS)

(LCS) R3460356-1 10/11/19 13:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromoform	0.125	0.125	100	64.0-132	
Bromomethane	0.125	0.163	130	56.0-147	
n-Butylbenzene	0.125	0.105	84.0	68.0-135	
sec-Butylbenzene	0.125	0.104	83.2	74.0-130	
tert-Butylbenzene	0.125	0.110	88.0	75.0-127	
Carbon tetrachloride	0.125	0.139	111	66.0-128	
Chlorobenzene	0.125	0.113	90.4	76.0-128	
Chlorodibromomethane	0.125	0.133	106	74.0-127	
Chloroethane	0.125	0.106	84.8	61.0-134	
Chloroform	0.125	0.119	95.2	72.0-123	
Chloromethane	0.125	0.0914	73.1	51.0-138	
2-Chlorotoluene	0.125	0.0957	76.6	75.0-124	
4-Chlorotoluene	0.125	0.0944	75.5	75.0-124	
1,2-Dibromo-3-Chloropropane	0.125	0.109	87.2	59.0-130	
1,2-Dibromoethane	0.125	0.105	84.0	74.0-128	
Dibromomethane	0.125	0.0899	71.9	75.0-122	J4
1,2-Dichlorobenzene	0.125	0.113	90.4	76.0-124	
1,3-Dichlorobenzene	0.125	0.0986	78.9	76.0-125	
1,4-Dichlorobenzene	0.125	0.109	87.2	77.0-121	
Dichlorodifluoromethane	0.125	0.0856	68.5	43.0-156	
1,1-Dichloroethane	0.125	0.102	81.6	70.0-127	
1,2-Dichloroethane	0.125	0.130	104	65.0-131	
1,1-Dichloroethene	0.125	0.102	81.6	65.0-131	
cis-1,2-Dichloroethene	0.125	0.130	104	73.0-125	
trans-1,2-Dichloroethene	0.125	0.0967	77.4	71.0-125	
1,2-Dichloropropane	0.125	0.108	86.4	74.0-125	
1,1-Dichloropropene	0.125	0.106	84.8	73.0-125	
1,3-Dichloropropane	0.125	0.120	96.0	80.0-125	
cis-1,3-Dichloropropene	0.125	0.140	112	76.0-127	
trans-1,3-Dichloropropene	0.125	0.150	120	73.0-127	
2,2-Dichloropropane	0.125	0.131	105	59.0-135	
Di-isopropyl ether	0.125	0.0984	78.7	60.0-136	
Ethylbenzene	0.125	0.115	92.0	74.0-126	
Hexachloro-1,3-butadiene	0.125	0.108	86.4	57.0-150	
Isopropylbenzene	0.125	0.126	101	72.0-127	
p-Isopropyltoluene	0.125	0.115	92.0	72.0-133	
2-Butanone (MEK)	0.625	0.492	78.7	30.0-160	
Methylene Chloride	0.125	0.109	87.2	68.0-123	
4-Methyl-2-pentanone (MIBK)	0.625	0.638	102	56.0-143	
Methyl tert-butyl ether	0.125	0.166	133	66.0-132	J4

Laboratory Control Sample (LCS)

(LCS) R3460356-1 10/11/19 13:17

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Naphthalene	0.125	0.0715	57.2	59.0-130	J4
n-Propylbenzene	0.125	0.124	99.2	74.0-126	
Styrene	0.125	0.111	88.8	72.0-127	
1,1,1,2-Tetrachloroethane	0.125	0.132	106	74.0-129	
1,1,2,2-Tetrachloroethane	0.125	0.113	90.4	68.0-128	
Tetrachloroethene	0.125	0.159	127	70.0-136	
Toluene	0.125	0.114	91.2	75.0-121	
1,1,2-Trichlorotrifluoroethane	0.125	0.123	98.4	61.0-139	
1,2,3-Trichlorobenzene	0.125	0.0626	50.1	59.0-139	J4
1,2,4-Trichlorobenzene	0.125	0.0846	67.7	62.0-137	
1,1,1-Trichloroethane	0.125	0.119	95.2	69.0-126	
1,1,2-Trichloroethane	0.125	0.0976	78.1	78.0-123	
Trichloroethene	0.125	0.155	124	76.0-126	
Trichlorofluoromethane	0.125	0.126	101	61.0-142	
1,2,3-Trichloropropane	0.125	0.105	84.0	67.0-129	
1,2,3-Trimethylbenzene	0.125	0.115	92.0	74.0-124	
1,2,4-Trimethylbenzene	0.125	0.101	80.8	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.109	87.2	73.0-127	
Vinyl chloride	0.125	0.120	96.0	63.0-134	
Xylenes, Total	0.375	0.329	87.7	72.0-127	
(S) Toluene-d8			*103*	*75.0-131*	
(S) 4-Bromofluorobenzene			*90.8*	*67.0-138*	
(S) 1,2-Dichloroethane-d4			*110*	*70.0-130*	

Method Blank (MB)

(MB) R3459988-1 10/10/19 15:23

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acetone	0.0291		0.0137	0.0250
Acrylonitrile	U		0.00190	0.0125
Benzene	U		0.000400	0.00100
Bromobenzene	U		0.00105	0.0125
Bromodichloromethane	U		0.000788	0.00250
Bromoform	U		0.00598	0.0250
Bromomethane	U		0.00370	0.0125
n-Butylbenzene	U		0.00384	0.0125
sec-Butylbenzene	U		0.00253	0.0125
tert-Butylbenzene	U		0.00155	0.00500
Carbon tetrachloride	U		0.00108	0.00500
Chlorobenzene	U		0.000573	0.00250
Chlorodibromomethane	U		0.000450	0.00250
Chloroethane	U		0.00108	0.00500
Chloroform	U		0.000415	0.00250
Chloromethane	U		0.00139	0.0125
2-Chlorotoluene	U		0.000920	0.00250
4-Chlorotoluene	U		0.00113	0.00500
1,2-Dibromo-3-Chloropropane	U		0.00510	0.0250
1,2-Dibromoethane	U		0.000525	0.00250
Dibromomethane	U		0.00100	0.00500
1,2-Dichlorobenzene	U		0.00145	0.00500
1,3-Dichlorobenzene	U		0.00170	0.00500
1,4-Dichlorobenzene	U		0.00197	0.00500
Dichlorodifluoromethane	U		0.000818	0.00250
1,1-Dichloroethane	U		0.000575	0.00250
1,2-Dichloroethane	U		0.000475	0.00250
1,1-Dichloroethene	U		0.000500	0.00250
cis-1,2-Dichloroethene	U		0.000690	0.00250
trans-1,2-Dichloroethene	U		0.00143	0.00500
1,2-Dichloropropane	U		0.00127	0.00500
1,1-Dichloropropene	U		0.000700	0.00250
1,3-Dichloropropane	U		0.00175	0.00500
cis-1,3-Dichloropropene	U		0.000678	0.00250
trans-1,3-Dichloropropene	U		0.00153	0.00500
2,2-Dichloropropane	U		0.000793	0.00250
Di-isopropyl ether	U		0.000350	0.00100
Ethylbenzene	U		0.000530	0.00250
Hexachloro-1,3-butadiene	U		0.0127	0.0250
Isopropylbenzene	U		0.000863	0.00250

Method Blank (MB)

(MB) R3459988-1 10/10/19 15:23

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
p-Isopropyltoluene	U		0.00233	0.00500
2-Butanone (MEK)	U		0.0125	0.0250
Methylene Chloride	0.0103	J	0.00664	0.0250
4-Methyl-2-pentanone (MIBK)	U		0.0100	0.0250
Methyl tert-butyl ether	U		0.000295	0.00100
Naphthalene	U		0.00312	0.0125
n-Propylbenzene	U		0.00118	0.00500
Styrene	U		0.00273	0.0125
1,1,1,2-Tetrachloroethane	U		0.000500	0.00250
1,1,2,2-Tetrachloroethane	U		0.000390	0.00250
Tetrachloroethene	U		0.000700	0.00250
Toluene	U		0.00125	0.00500
1,1,2-Trichlorotrifluoroethane	U		0.000675	0.00250
1,2,3-Trichlorobenzene	U		0.000625	0.00250
1,2,4-Trichlorobenzene	U		0.00482	0.0125
1,1,1-Trichloroethane	U		0.000275	0.00250
1,1,2-Trichloroethane	U		0.000883	0.00250
Trichloroethene	U		0.000400	0.00100
Trichlorofluoromethane	U		0.000500	0.00250
1,2,3-Trichloropropane	U		0.00510	0.0125
1,2,3-Trimethylbenzene	U		0.00115	0.00500
1,2,4-Trimethylbenzene	U		0.00116	0.00500
1,3,5-Trimethylbenzene	U		0.00108	0.00500
Vinyl chloride	U		0.000683	0.00250
Xylenes, Total	U		0.00478	0.00650
(S) Toluene-d8	*108*			*75.0-131*
(S) 4-Bromofluorobenzene	*99.0*			*67.0-138*
(S) 1,2-Dichloroethane-d4	*119*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3459988-2 10/10/19 16:07

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	0.625	0.326	52.2	10.0-160	
Acrylonitrile	0.625	0.539	86.2	45.0-153	
Benzene	0.125	0.116	92.8	70.0-123	
Bromobenzene	0.125	0.130	104	73.0-121	
Bromodichloromethane	0.125	0.129	103	73.0-121	

Laboratory Control Sample (LCS)

(LCS) R3459988-2 10/10/19 16:07

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromoform	0.125	0.127	102	64.0-132	
Bromomethane	0.125	0.129	103	56.0-147	
n-Butylbenzene	0.125	0.122	97.6	68.0-135	
sec-Butylbenzene	0.125	0.140	112	74.0-130	
tert-Butylbenzene	0.125	0.132	106	75.0-127	
Carbon tetrachloride	0.125	0.133	106	66.0-128	
Chlorobenzene	0.125	0.104	83.2	76.0-128	
Chlorodibromomethane	0.125	0.135	108	74.0-127	
Chloroethane	0.125	0.152	122	61.0-134	
Chloroform	0.125	0.105	84.0	72.0-123	
Chloromethane	0.125	0.164	131	51.0-138	
2-Chlorotoluene	0.125	0.117	93.6	75.0-124	
4-Chlorotoluene	0.125	0.133	106	75.0-124	
1,2-Dibromo-3-Chloropropane	0.125	0.134	107	59.0-130	
1,2-Dibromoethane	0.125	0.123	98.4	74.0-128	
Dibromomethane	0.125	0.104	83.2	75.0-122	
1,2-Dichlorobenzene	0.125	0.120	96.0	76.0-124	
1,3-Dichlorobenzene	0.125	0.127	102	76.0-125	
1,4-Dichlorobenzene	0.125	0.116	92.8	77.0-121	
Dichlorodifluoromethane	0.125	0.155	124	43.0-156	
1,1-Dichloroethane	0.125	0.150	120	70.0-127	
1,2-Dichloroethane	0.125	0.143	114	65.0-131	
1,1-Dichloroethene	0.125	0.164	131	65.0-131	
cis-1,2-Dichloroethene	0.125	0.110	88.0	73.0-125	
trans-1,2-Dichloroethene	0.125	0.120	96.0	71.0-125	
1,2-Dichloropropane	0.125	0.135	108	74.0-125	
1,1-Dichloropropene	0.125	0.131	105	73.0-125	
1,3-Dichloropropane	0.125	0.118	94.4	80.0-125	
cis-1,3-Dichloropropene	0.125	0.111	88.8	76.0-127	
trans-1,3-Dichloropropene	0.125	0.128	102	73.0-127	
2,2-Dichloropropane	0.125	0.116	92.8	59.0-135	
Di-isopropyl ether	0.125	0.127	102	60.0-136	
Ethylbenzene	0.125	0.124	99.2	74.0-126	
Hexachloro-1,3-butadiene	0.125	0.140	112	57.0-150	
Isopropylbenzene	0.125	0.113	90.4	72.0-127	
p-Isopropyltoluene	0.125	0.132	106	72.0-133	
2-Butanone (MEK)	0.625	0.561	89.8	30.0-160	
Methylene Chloride	0.125	0.116	92.8	68.0-123	
4-Methyl-2-pentanone (MIBK)	0.625	0.602	96.3	56.0-143	
Methyl tert-butyl ether	0.125	0.140	112	66.0-132	

Laboratory Control Sample (LCS)

(LCS) R3459988-2 10/10/19 16:07

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Naphthalene	0.125	0.127	102	59.0-130	
n-Propylbenzene	0.125	0.125	100	74.0-126	
Styrene	0.125	0.121	96.8	72.0-127	
1,1,1,2-Tetrachloroethane	0.125	0.130	104	74.0-129	
1,1,2,2-Tetrachloroethane	0.125	0.108	86.4	68.0-128	
Tetrachloroethene	0.125	0.143	114	70.0-136	
Toluene	0.125	0.116	92.8	75.0-121	
1,1,2-Trichlorotrifluoroethane	0.125	0.104	83.2	61.0-139	
1,2,3-Trichlorobenzene	0.125	0.133	106	59.0-139	
1,2,4-Trichlorobenzene	0.125	0.142	114	62.0-137	
1,1,1-Trichloroethane	0.125	0.141	113	69.0-126	
1,1,2-Trichloroethane	0.125	0.130	104	78.0-123	
Trichloroethene	0.125	0.113	90.4	76.0-126	
Trichlorofluoromethane	0.125	0.117	93.6	61.0-142	
1,2,3-Trichloropropane	0.125	0.118	94.4	67.0-129	
1,2,3-Trimethylbenzene	0.125	0.133	106	74.0-124	
1,2,4-Trimethylbenzene	0.125	0.131	105	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.133	106	73.0-127	
Vinyl chloride	0.125	0.177	142	63.0-134	J4
Xylenes, Total	0.375	0.345	92.0	72.0-127	
(S) Toluene-d8			*108*	*75.0-131*	
(S) 4-Bromofluorobenzene			*96.6*	*67.0-138*	
(S) 1,2-Dichloroethane-d4			*118*	*70.0-130*	

L1148279-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1148279-04 10/10/19 18:16 • (MS) R3459988-3 10/11/19 00:03 • (MSD) R3459988-4 10/11/19 00:23

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acetone	0.625	ND	0.338	0.514	54.1	82.2	1	10.0-160		J3	41.3	40
Acrylonitrile	0.625	ND	0.608	0.651	97.3	104	1	10.0-160			6.83	40
Benzene	0.125	ND	0.113	0.115	90.4	92.0	1	10.0-149			1.75	37
Bromobenzene	0.125	ND	0.141	0.130	113	104	1	10.0-156			8.12	38
Bromodichloromethane	0.125	ND	0.137	0.139	110	111	1	10.0-143			1.45	37
Bromoform	0.125	ND	0.139	0.137	111	110	1	10.0-146			1.45	36
Bromomethane	0.125	ND	0.107	0.113	85.6	90.4	1	10.0-149			5.45	38
n-Butylbenzene	0.125	ND	0.129	0.129	103	103	1	10.0-160			0.000	40
sec-Butylbenzene	0.125	ND	0.144	0.142	115	114	1	10.0-159			1.40	39
tert-Butylbenzene	0.125	ND	0.137	0.128	110	102	1	10.0-156			6.79	39

L1148279-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1148279-04 10/10/19 18:16 • (MS) R3459988-3 10/11/19 00:03 • (MSD) R3459988-4 10/11/19 00:23

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Carbon tetrachloride	0.125	ND	0.126	0.126	101	101	1	10.0-145			0.000	37
Chlorobenzene	0.125	ND	0.108	0.111	86.4	88.8	1	10.0-152			2.74	39
Chlorodibromomethane	0.125	ND	0.139	0.138	111	110	1	10.0-146			0.722	37
Chloroethane	0.125	ND	0.113	0.118	90.4	94.4	1	10.0-146			4.33	40
Chloroform	0.125	ND	0.113	0.109	90.4	87.2	1	10.0-146			3.60	37
Chloromethane	0.125	ND	0.114	0.122	91.2	97.6	1	10.0-159			6.78	37
2-Chlorotoluene	0.125	ND	0.122	0.112	97.6	89.6	1	10.0-159			8.55	38
4-Chlorotoluene	0.125	ND	0.149	0.138	119	110	1	10.0-155			7.67	39
1,2-Dibromo-3-Chloropropane	0.125	ND	0.124	0.133	99.2	106	1	10.0-151			7.00	39
1,2-Dibromoethane	0.125	ND	0.127	0.128	102	102	1	10.0-148			0.784	34
Dibromomethane	0.125	ND	0.113	0.110	90.4	88.0	1	10.0-147			2.69	35
1,2-Dichlorobenzene	0.125	ND	0.142	0.133	114	106	1	10.0-155			6.55	37
1,3-Dichlorobenzene	0.125	ND	0.143	0.131	114	105	1	10.0-153			8.76	38
1,4-Dichlorobenzene	0.125	ND	0.134	0.127	107	102	1	10.0-151			5.36	38
Dichlorodifluoromethane	0.125	ND	0.0988	0.115	79.0	92.0	1	10.0-160			15.2	35
1,1-Dichloroethane	0.125	ND	0.150	0.153	120	122	1	10.0-147			1.98	37
1,2-Dichloroethane	0.125	ND	0.155	0.153	124	122	1	10.0-148			1.30	35
1,1-Dichloroethene	0.125	ND	0.140	0.148	112	118	1	10.0-155			5.56	37
cis-1,2-Dichloroethene	0.125	ND	0.111	0.112	88.8	89.6	1	10.0-149			0.897	37
trans-1,2-Dichloroethene	0.125	ND	0.111	0.115	88.8	92.0	1	10.0-150			3.54	37
1,2-Dichloropropane	0.125	ND	0.145	0.143	116	114	1	10.0-148			1.39	37
1,1-Dichloropropene	0.125	ND	0.121	0.124	96.8	99.2	1	10.0-153			2.45	35
1,3-Dichloropropane	0.125	ND	0.125	0.126	100	101	1	10.0-154			0.797	35
cis-1,3-Dichloropropene	0.125	ND	0.121	0.119	96.8	95.2	1	10.0-151			1.67	37
trans-1,3-Dichloropropene	0.125	ND	0.143	0.134	114	107	1	10.0-148			6.50	37
2,2-Dichloropropane	0.125	ND	0.128	0.119	102	95.2	1	10.0-138			7.29	36
Di-isopropyl ether	0.125	ND	0.132	0.133	106	106	1	10.0-147			0.755	36
Ethylbenzene	0.125	ND	0.125	0.123	100	98.4	1	10.0-160			1.61	38
Hexachloro-1,3-butadiene	0.125	ND	0.157	0.164	126	131	1	10.0-160			4.36	40
Isopropylbenzene	0.125	ND	0.114	0.118	91.2	94.4	1	10.0-155			3.45	38
p-Isopropyltoluene	0.125	ND	0.134	0.128	107	102	1	10.0-160			4.58	40
2-Butanone (MEK)	0.625	ND	0.566	0.604	90.6	96.6	1	10.0-160			6.50	40
Methylene Chloride	0.125	ND	0.122	0.124	97.6	99.2	1	10.0-141			1.63	37
4-Methyl-2-pentanone (MIBK)	0.625	ND	0.635	0.643	102	103	1	10.0-160			1.25	35
Methyl tert-butyl ether	0.125	ND	0.130	0.135	104	108	1	11.0-147			3.77	35
Naphthalene	0.125	ND	0.136	0.132	109	106	1	10.0-160			2.99	36
n-Propylbenzene	0.125	ND	0.124	0.120	99.2	96.0	1	10.0-158			3.28	38
Styrene	0.125	ND	0.130	0.126	104	101	1	10.0-160			3.12	40
1,1,1,2-Tetrachloroethane	0.125	ND	0.140	0.139	112	111	1	10.0-149			0.717	39
1,1,2,2-Tetrachloroethane	0.125	ND	0.112	0.100	89.6	80.0	1	10.0-160			11.3	35

L1148279-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1148279-04 10/10/19 18:16 • (MS) R3459988-3 10/11/19 00:03 • (MSD) R3459988-4 10/11/19 00:23

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Tetrachloroethene	0.125	ND	0.132	0.133	106	106	1	10.0-156			0.755	39
Toluene	0.125	ND	0.117	0.118	93.6	94.4	1	10.0-156			0.851	38
1,1,2-Trichlorotrifluoroethane	0.125	ND	0.0905	0.0954	72.4	76.3	1	10.0-160			5.27	36
1,2,3-Trichlorobenzene	0.125	ND	0.154	0.148	123	118	1	10.0-160			3.97	40
1,2,4-Trichlorobenzene	0.125	ND	0.167	0.166	134	133	1	10.0-160			0.601	40
1,1,1-Trichloroethane	0.125	ND	0.135	0.147	108	118	1	10.0-144			8.51	35
1,1,2-Trichloroethane	0.125	ND	0.139	0.138	111	110	1	10.0-160			0.722	35
Trichloroethene	0.125	ND	0.114	0.122	91.2	97.6	1	10.0-156			6.78	38
Trichlorofluoromethane	0.125	ND	0.101	0.112	80.8	89.6	1	10.0-160			10.3	40
1,2,3-Trichloropropane	0.125	ND	0.131	0.124	105	99.2	1	10.0-156			5.49	35
1,2,3-Trimethylbenzene	0.125	ND	0.147	0.137	118	110	1	10.0-160			7.04	36
1,2,4-Trimethylbenzene	0.125	ND	0.138	0.134	110	107	1	10.0-160			2.94	36
1,3,5-Trimethylbenzene	0.125	ND	0.136	0.128	109	102	1	10.0-160			6.06	38
Vinyl chloride	0.125	ND	0.135	0.132	108	106	1	10.0-160			2.25	37
Xylenes, Total	0.375	ND	0.348	0.361	92.8	96.3	1	10.0-160			3.67	38
(S) Toluene-d8					*108*	*108*		*75.0-131*				
(S) 4-Bromofluorobenzene					*97.6*	*96.2*		*67.0-138*				
(S) 1,2-Dichloroethane-d4					*122*	*123*		*70.0-130*				

Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM L1146108-01,02,03,04,05,06,07,08,09,10,11,12

Method Blank (MB)

(MB) R3459449-2 10/09/19 14:47

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Anthracene	U		0.000600	0.00600
Acenaphthene	U		0.000600	0.00600
Acenaphthylene	U		0.000600	0.00600
Benzo(a)anthracene	U		0.000600	0.00600
Benzo(a)pyrene	U		0.000600	0.00600
Benzo(b)fluoranthene	U		0.000600	0.00600
Benzo(g,h,i)perylene	U		0.000600	0.00600
Benzo(k)fluoranthene	U		0.000600	0.00600
Chrysene	U		0.000600	0.00600
Dibenz(a,h)anthracene	U		0.000600	0.00600
Fluoranthene	U		0.000600	0.00600
Fluorene	U		0.000600	0.00600
Indeno(1,2,3-cd)pyrene	U		0.000600	0.00600
Naphthalene	U		0.00200	0.0200
Phenanthrene	U		0.000600	0.00600
Pyrene	U		0.000600	0.00600
1-Methylnaphthalene	U		0.00200	0.0200
2-Methylnaphthalene	U		0.00200	0.0200
2-Chloronaphthalene	U		0.00200	0.0200
(S) Nitrobenzene-d5	*90.0*			*14.0-149*
(S) 2-Fluorobiphenyl	*68.5*			*34.0-125*
(S) p-Terphenyl-d14	*62.4*			*23.0-120*

Laboratory Control Sample (LCS)

(LCS) R3459449-1 10/09/19 14:27

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Anthracene	0.0800	0.0719	89.9	50.0-126	
Acenaphthene	0.0800	0.0669	83.6	50.0-120	
Acenaphthylene	0.0800	0.0694	86.8	50.0-120	
Benzo(a)anthracene	0.0800	0.0670	83.8	45.0-120	
Benzo(a)pyrene	0.0800	0.0596	74.5	42.0-120	
Benzo(b)fluoranthene	0.0800	0.0680	85.0	42.0-121	
Benzo(g,h,i)perylene	0.0800	0.0613	76.6	45.0-125	
Benzo(k)fluoranthene	0.0800	0.0725	90.6	49.0-125	
Chrysene	0.0800	0.0650	81.3	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0640	80.0	47.0-125	
Fluoranthene	0.0800	0.0739	92.4	49.0-129	

Laboratory Control Sample (LCS)

(LCS) R3459449-1 10/09/19 14:27

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Fluorene	0.0800	0.0717	89.6	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0635	79.4	46.0-125	
Naphthalene	0.0800	0.0605	75.6	50.0-120	
Phenanthrene	0.0800	0.0712	89.0	47.0-120	
Pyrene	0.0800	0.0643	80.4	43.0-123	
1-Methylnaphthalene	0.0800	0.0666	83.3	51.0-121	
2-Methylnaphthalene	0.0800	0.0637	79.6	50.0-120	
2-Chloronaphthalene	0.0800	0.0663	82.9	50.0-120	
(S) Nitrobenzene-d5			*116*	*14.0-149*	
(S) 2-Fluorobiphenyl			*87.5*	*34.0-125*	
(S) p-Terphenyl-d14			*79.7*	*23.0-120*	

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J4	The associated batch QC was outside the established quality control range for accuracy.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.

Highland Technical Services, Inc.

528 Mineral Trace
Hoover, AL 35244

Billing Information:
Accounts Payable
528 Mineral Trace
Hoover, AL 35244

Report to: Mr. David Wall

Email To: dwall@htsienv.com

Project Description: Munger Site - Birmingham, AL

City/State Collected: Birmingham, AL

Please Circle: PT MT (CT) ET

Phone: 205-985-4874
Fax:

Client Project # 19-132114.01

Lab Project # HIGTEHAL-1913211401

Collected by (print): Adam Hughes

Site/Facility ID #

P.O. #

Collected by (signature): Adam Hughes

Immediately Packed on Ice N ___ Y ___

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page 1 of 2

Pace Analytical®
National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

SDG # L1146108

Table B088

Acctnum: HIGTEHAL

Template: T156188

Prelogin: P730922

PM: 034 - Craig Cothron

PB: TB 9-18-19

Shipped Via: FedEX Ground

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	CR6IC 2ozClr-NoPres	MRCRA8 2ozClr-NoPres	SV8270PAHSIM 4ozClr-NoPres	V8260 40mlAmb/MeOH5ml/Syr	VOC SCREEN 2ozClr-NoPres	Remarks	Sample # (lab only)
B1 (0-1)	G	SS	N/A	10/8/19	0915	5	X	X	X	X	X		-01
B1 (4-8)		SS			0920	5	X	X	X	X	X		-02
B1 (20-21)		SS			0940	5	X	X	X	X	X		-03
B2 (0-1)		SS			1330	5	X	X	X	X	X		-04
B2 (4-8)		SS			1332	5	X	X	X	X	X		-05
B2 (19-20)		SS			1345	5	X	X	X	X	X		-06
B3 (0-1)		SS			1513	5	X	X	X	X	X		-07
B3 (4-8)		SS			1516	5	X	X	X	X	X		-08
B3 (26-27)		SS		↓	1555	5	X	X	X	X	X		-09
B4 (0-1)	↓	SS	↓	10/9/19	1007	5	X	X	X	X	X		-10

* Matrix:
(SS) - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via: __ UPS __ FedEx __ Courier _____

Tracking # 1203 5782 7478

Sample Receipt Checklist

COC Seal Present/Intact:	NP	Y N
COC Signed/Accurate:		Y N
Bottles arrive intact:		Y N
Correct bottles used:		Y N
Sufficient volume sent:		Y N
If Applicable		
VOA Zero Headspace:		Y N
Preservation Correct/Checked:		Y N
RAD Screen <0.5 mR/hr:		Y N

	Date:	Time:	Received by: (Signature)	Trip Blank Received: (Yes) / No HCL / MeoH TBR	
Relinquished by : (Signature) Adam Hughes	10/3/19	1830			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 1.2 °C Bottles Received: 60 (04-3-01)	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 10/3 Time: 0845	Hold: Condition: NCF / OK

Highland Technical Services, Inc.

528 Mineral Trace
Hoover, AL 35244

Billing Information:
Accounts Payable
528 Mineral Trace
Hoover, AL 35244

Report to: Mr. David Wall

Email To: dwall@htsienv.com

Project Description: Munger Site - Birmingham, AL

City/State Collected: Birmingham, AL

Please Circle: PT MT CT ET

Phone: 205-985-4874
Fax:

Client Project # 19-132114.01

Lab Project # HIGTEHAL-1913211401

Collected by (print): Adam Hughes

Site/Facility ID #

P.O. #

Collected by (signature): Adam Hughes

Immediately Packed on Ice N ___ Y ___

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Chain of Custody Page 1 of 2

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Table # B088

Acctnum: HIGTEHAL

Template: T156188

Prelogin: P730922

PM: 034 - Craig Cothron

PB: TB 9-18-19

Shipped Via: FedEX Ground

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Pres Chk	CR6IC 2ozClr-NoPres	MRCRA8 2ozClr-NoPres	SV8270PAHSIM 4ozClr-NoPres	V8260 40mlAmb/MeOH5ml/Syr	VOC SCREEN 2ozClr-NoPres						Remarks	Sample # (lab only)
B1 (0-1)	G	SS	N/A	10/8/19	0915	5		X	X	X	X	X							-01
B1 (4-8)		SS			0920	5		X	X	X	X	X							-02
B1 (20-21)		SS			0940	5		X	X	X	X	X							-03
B2 (0-1)		SS			1330	5		X	X	X	X	X							-04
B2 (4-8)		SS			1332	5		X	X	X	X	X							-05
B2 (19-20)		SS			1345	5		X	X	X	X	X							-06
B3 (0-1)		SS			1513	5		X	X	X	X	X							-07
B3 (4-8)		SS			1516	5		X	X	X	X	X							-08
B3 (26-27)		SS			1555	5		X	X	X	X	X							-09
B4 (0-1)		SS		10/2/19	1007	5		X	X	X	X	X							-10

Analysis / Container / Preservative

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via: __ UPS __ FedEx __ Courier _____

Tracking # 1203 5782 7478

Sample Receipt Checklist

COC Seal Present/Intact:	NP	Y N
COC Signed/Accurate:		Y N
Bottles arrive intact:		Y N
Correct bottles used:		Y N
Sufficient volume sent:		Y N
If Applicable		
VOA Zero Headspace:		Y N
Preservation Correct/Checked:		Y N
RAD Screen <0.5 mR/hr:		Y N

	Date:	Time:			
Relinquished by : (Signature) Adam Hughes	10/3/19	1830	Received by: (Signature)	Trip Blank Received: (Yes) / No HCL / MeoH TBR	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 12.0 °C Bottles Received: 60	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 10/3 Time: 0845	Hold: Condition: NCF / OK

APPENDIX C

Highland Technical Services, Inc.

GROUNDWATER SAMPLING LOG

SITE NAME: Munger	PROJECT: Munger VCP Assist.	PROJECT: 19-132114.01
FIELD PERSONNEL/SAMPLER: Adam Hughes	WEATHER CONDITIONS: sunny 80s	DATE: 10/8/19
WELL NO: MW-1	WELL DIAMETER (in): 2" PVC	PURGE PUMP TYPE OR BAILER: peri
TOTAL WELL DEPTH (feet): 24.20		
STATIC WATER LEVEL (feet): 10.90	TIME: 1330	
DEPTH TO FREE PRODUCT (feet):		
LENGTH OF WATER COLUMN:		
WELL VOLUME (gallons):		

PURGING DATA

INITAIL PUMP OR TUBING DEPTH IN WELL (feet): 18'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 18'	
PURGING INITIATED AT: 1340	PURGING ENDED AT: 1405	TOTAL VOLUME PURGED (gallons): 1

TIME	DEPTH TO WATER (feet)	pH (standard units)	COND. (mS/cm)	TURBIDITY (NTUs)	DISSOLVED OXYGEN (mg/L)	TEMP. (°C)	REDOX (ORP) (mV)	COLOR *	ODOR
1345	11.15	5.12	0.387	0.0	1.65	26.43	206	turbid	none
1350	11.15	5.32	0.320	0.0	1.23	25.25	174	turbid	none
1353	↓	5.35	0.310	↓	1.07	25.22	164	↓	↓
1356	↓	5.36	0.301	↓	0.97	25.13	155	↓	↓
1359	↓	5.35	0.296	↓	0.93	25.03	151	↓	↓
1402	↓	5.34	0.290	↓	0.92	24.95	146	↓	↓
1405	11.15	5.33	0.288	0.0	0.89	24.89	144	turbid	none

REMARKS: * water is grey/white turbid, cannot see through however no reading on Turb

SAMPLING DATA

SAMPLE DATE: 10/8/19	SAMPLE TIME: 1406	SAMPLE METHOD: peri

ANALYSIS AND/OR METHOD	VOLUME	#CONTAINERS	PRESERVATIVE USED:	COMMENTS:
Chromium	250 ml	1	NONE	
RCRA Metals	250 ml	1	HNO3	
PAHs	40 ml	2	NONE	
VOCs	40 ml	3	HCl	

REMARKS:

Verify Well Cap Secured and Locked*	Yes:	✓

CALIBRATION INFORMATION: pH: 3.73 cond: 4.47 Turb: 0.0 DO: 7.84 ORP: 280 Temp: 27.39

SAMPLED BY (PRINT): Adam Hughes	SAMPLER(S) SIGNATURES: Adam Hughes

HIGHLAND TECHNICAL SERVICES, INC.
528 Mineral Trace
Hoover, Alabama 35244
Phone (205) 985-4874 Fax (205) 987-6080

Highland Technical Services, Inc.

GROUNDWATER SAMPLING LOG

SITE NAME: Munger	PROJECT: Munger VCP Assist.	PROJECT: 19-132114.01
FIELD PERSONNEL/SAMPLER: Adam Hughes	WEATHER CONDITIONS: sunny 80s	DATE: 10/8/19
WELL NO: MW-2	WELL DIAMETER (in): 1" PVC	PURGE PUMP TYPE OR BAILER: peri
TOTAL WELL DEPTH (feet): 20.81		
STATIC WATER LEVEL (feet): 12.77	TIME: 1432	
DEPTH TO FREE PRODUCT (feet):		
LENGTH OF WATER COLUMN:		
WELL VOLUME (gallons):		

PURGING DATA

INITAIL PUMP OR TUBING DEPTH IN WELL (feet): 18'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 19.5'	
PURGING INITIATED AT: 1440	PURGING ENDED AT: 1505	TOTAL VOLUME PURGED (gallons): 1/2

TIME	DEPTH TO WATER (feet)	pH (standard units)	COND. (mS/cm)	TURBIDITY (NTUs)	DISSOLVED OXYGEN (mg/L)	TEMP. (°C)	REDOX (ORP) (mV)	COLOR	ODOR
1445	[illegible]	5.51	0.327	15.5	2.88	27.62	152	clear	none
1450	—	5.36	0.327	7.0	2.44	27.30	137	clear	none
1453	—	5.30	0.328	3.0	2.22	27.06	127	clear	none
1456	—	5.27	0.331	3.1	2.04	26.91	121	↓	↓
1459	—	5.24	0.332	3.2	1.83	26.78	114	↓	↓
1502	—	5.21	0.326	1.1	1.69	26.73	110	↓	↓
1505	18.60	5.22	0.325	0.0	1.57	26.69	107	clear	none

REMARKS:

SAMPLING DATA

SAMPLE DATE: 10/8/19	SAMPLE TIME: 1506	SAMPLE METHOD: peri

ANALYSIS AND/OR METHOD	VOLUME	#CONTAINERS	PRESERVATIVE USED:	COMMENTS:
Chromium	250 ml	1	NONE	
RCRA Metals	250 ml	1	HNO3	
PAHs	40 ml	2	NONE	
VOCs	40 ml	3	HCl	

REMARKS:

Verify Well Cap Secured and Locked*	**Yes:**	✓

CALIBRATION INFORMATION: see MW-1

SAMPLED BY (PRINT): Adam Hughes	SAMPLER(S) SIGNATURES: [signature]

HIGHLAND TECHNICAL SERVICES, INC.
528 Mineral Trace
Hoover, Alabama 35244
Phone (205) 985-4874 Fax (205) 987-6080

Highland Technical Services, Inc.

GROUNDWATER SAMPLING LOG

SITE NAME: Munger	PROJECT: Munger VCP Assist.	PROJECT: 19-132114.01
FIELD PERSONNEL/SAMPLER: Adam Hughes	WEATHER CONDITIONS: Sunny 80s	DATE: 10/8/19
WELL NO: MW-3	WELL DIAMETER (in): 1" PVC	PURGE PUMP TYPE OR BAILER: peri
TOTAL WELL DEPTH (feet): 27.85		
STATIC WATER LEVEL (feet): 20.52	TIME: 1535	
DEPTH TO FREE PRODUCT (feet):		
LENGTH OF WATER COLUMN:		
WELL VOLUME (gallons):		

PURGING DATA

INITAIL PUMP OR TUBING DEPTH IN WELL (feet): 26'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 26'	
PURGING INITIATED AT: 1543	PURGING ENDED AT: 1610	TOTAL VOLUME PURGED (gallons): 1/2

TIME	DEPTH TO WATER (feet)	pH (standard units)	COND. (mS/cm)	TURBIDITY (NTUs)	DISSOLVED OXYGEN (mg/L)	TEMP. (°C)	REDOX (ORP) (mV)	COLOR	ODOR
1550	—	5.64	0.479	0.0	4.28	24.94	119	clear	none
1555	—	5.55	0.495	0.0	4.08	24.44	123	clear	none
1558	—	5.54	0.483	0.0	3.94	24.25	119		
1601	—	5.49	0.471	0.0	4.07	24.08	121		
1604	—	5.40	0.452	0.0	4.28	23.87	122		
1607	—	5.36	0.455	0.0	4.11	23.71	126		
1610	25.64	5.33	0.461	0.0	3.84	23.58	129	↓	↓

REMARKS:

SAMPLING DATA

SAMPLE DATE: 10/8/19	SAMPLE TIME: 1611	SAMPLE METHOD: peri

ANALYSIS AND/OR METHOD	VOLUME	#CONTAINERS	PRESERVATIVE USED:	COMMENTS:
Chromium	250 ml	1	NONE	
RCRA Metals	250 ml	1	HNO3	
PAHs	40 ml	2	NONE	
VOCs	40 ml	3	HCl	

REMARKS:

Verify Well Cap Secured and Locked*	**Yes:**	✓

CALIBRATION INFORMATION: see MW-1

SAMPLED BY (PRINT): Adam Hughes	SAMPLER(S) SIGNATURES: Adam Hughes

HIGHLAND TECHNICAL SERVICES, INC.
528 Mineral Trace
Hoover, Alabama 35244
Phone (205) 985-4874 Fax (205) 987-6080

Highland Technical Services, Inc.

GROUNDWATER SAMPLING LOG

SITE NAME: Munger	PROJECT: Munger VCP Assist.	PROJECT: 19-132114.01
FIELD PERSONNEL/SAMPLER: Adam Hughes	WEATHER CONDITIONS: sunny 80s	DATE: 10/9/19
WELL NO: MW-4	WELL DIAMETER (in): 1" PVC	PURGE PUMP TYPE OR BAILER: peri
TOTAL WELL DEPTH (feet): 27.15		
STATIC WATER LEVEL (feet): 20.15	TIME: 1435	
DEPTH TO FREE PRODUCT (feet):		
LENGTH OF WATER COLUMN:		
WELL VOLUME (gallons):		

PURGING DATA

INITAIL PUMP OR TUBING DEPTH IN WELL (feet): 26'	FINAL PUMP OR TUBING DEPTH IN WELL (feet): 26'	
PURGING INITIATED AT: 1437	PURGING ENDED AT: 1502	TOTAL VOLUME PURGED (gallons): 1/2

TIME	DEPTH TO WATER (feet)	pH (standard units)	COND. (mS/cm)	TURBIDITY * (NTUs)	DISSOLVED OXYGEN (mg/L)	TEMP. (°C)	REDOX (ORP) (mV)	COLOR *	ODOR
1442	—	6.23	2.34	0.0	2.22	27.43	7	turbid	none
1447	—	6.26	2.27	0.0	2.06	27.51	-9	turbid	none
1450	—	6.27	2.18	0.0	2.00	27.72	-20	↓	↓
1453	—	6.25	2.06	0.0	1.94	27.95	-39		
1456	—	6.24	2.00	0.0	1.91	28.19	-56		
1459	—	6.24	1.88	0.0	1.87	28.48	-73	↓	↓
1502	25.77	6.24	1.71	0.0	1.85	28.77	-87	turbid	none

REMARKS:
* cloudy turbid - like water, however no evident impact on NTU reading, refer to MW-1

SAMPLING DATA

SAMPLE DATE: 10/9/19	SAMPLE TIME: 1503	SAMPLE METHOD: peri

ANALYSIS AND/OR METHOD	VOLUME	#CONTAINERS	PRESERVATIVE USED:	COMMENTS:
Chromium	250 ml	1	NONE	
RCRA Metals	250 ml	1	HNO3	
PAHs	40 ml	2	NONE	
VOCs	40 ml	3	HCl	

REMARKS:

Verify Well Cap Secured and Locked*	**Yes:**	✓

CALIBRATION INFORMATION:
pH: 5.27 cond: 4.34 Turb: 0.0 DO: 9.20 Temp: 29.12 ORP: 212

SAMPLED BY (PRINT): Adam Hughes	SAMPLER(S) SIGNATURES: Adam Hughes

HIGHLAND TECHNICAL SERVICES, INC.
528 Mineral Trace
Hoover, Alabama 35244
Phone (205) 985-4874 Fax (205) 987-6080

APPENDIX D

MONITORING WELL SAMPLING RECORD

PROJECT NO: 19-132114.01
PROJECT NAME: Munger
SITE LOCATION: Birmingham, Alabama
RECORDED BY: Adam Hughes

WELL NUMBER	MW-1	MW-2	MW-3	MW-4
GENERAL WELL DATA				
Top of Casing (TOC) Elevation (ft)	671.98	676.36	684.16	683.40
Original Total Depth (feet)	24.20	20.81	27.85	27.15
TOC Height (ft above/below grade)	-0.26	-0.18	-0.38	-0.22
Screened Interval (ft-bgs)	14.2 - 24.2	10.8 - 20.8	17.9 - 27.9	17.2 - 27.2
Well Diameter (in)/Material	2-in, PVC	1-in PVC	1-in PVC	1-in PVC
Current Well Condition	Good	Good	Good	Good
WATER LEVEL DATA				
Date (mm/dd/yyyy)	10/8/2019	10/8/2019	10/8/2019	10/8/2019
Time (military)	1330	1432	1535	1435
Measured Total Depth (ft below TOC)	24.20	20.81	27.85	27.15
Static Water Level (ft below TOC)	10.90	12.77	20.52	20.15
Static Elevation (ft - AMSL)	661.08	663.59	663.64	663.25
WELL PURGE DATA				
Purge Date (mm/dd/yyyy)	10/8/2019	10/8/2019	10/8/2019	10/8/2019
Purge Time (military)	1340	1440	1543	1437
Minimum Purge Volume (gal)	Low-Flow	Low-Flow	Low-Flow	Low-Flow
Actual Purge Volume (gal)	1.00	0.50	0.50	0.50
Equipment Used	Pump	Pump	Pump	Pump
WELL SAMPLING DATA				
Sampling Date (mm/dd/yyyy)	10/8/2019	10/8/2019	10/8/2019	10/9/2019
Sampling Time (military)	1406	1506	1611	1503
Weather Conditions	Sunny, 80s	Sunny, 80s	Sunny, 80s	Sunny, 80s
Equipment Used	Pump	Pump	Pump	Pump
Groundwater pH (std units)	5.33	5.22	5.33	6.24
Specific Conductance (mS/cm)	0.288	0.325	0.461	1.710
Turbidity (NTU)	0.0	0.0	0.0	0.0
Dissolved Oxygen (mg/L)	0.89	1.57	3.84	1.85
Groundwater Temperature (degrees C)	24.89	26.69	12.58	28.77
Oxidation-Reduction Potential (mV)	144	107	129	-87
Number of Containers Filled	7	7	7	7
Water Clarity	Turbid	Clear	Clear	Turbid
Parameters to be Analyzed	Metals, Hex Cr VOCs, PAHs	Metals, Hex Cr VOCs, PAHs	Metals, Hex Cr VOCs, PAHs	Metals, Hex Cr VOCs, PAHs

I certify that all water level measurement devices, purging equipment, and sampling equipment were properly cleaned prior to use in each well. Signature 

REMARKS

NA = Not Applicable/Not Available

NS = Not Sampled - (Well MW-4 Not Accessible During March 2019 Event)

Highland Technical Services, Inc.
528 Mineral Trace
Hoover, Alabama 35244
Phone (205) 985-4874 Fax (205) 987-6080

APPENDIX E

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

October 17, 2019

Highland Technical Services, Inc.

Sample Delivery Group:	L1147753
Samples Received:	10/09/2019
Project Number:	19-132114.01
Description:	Munger Site - Birmingham, AL

Report To:

Mr. David Wall
528 Mineral Trace
Hoover, AL 35244

Entire Report Reviewed By:

Jason Romer
Project Manager

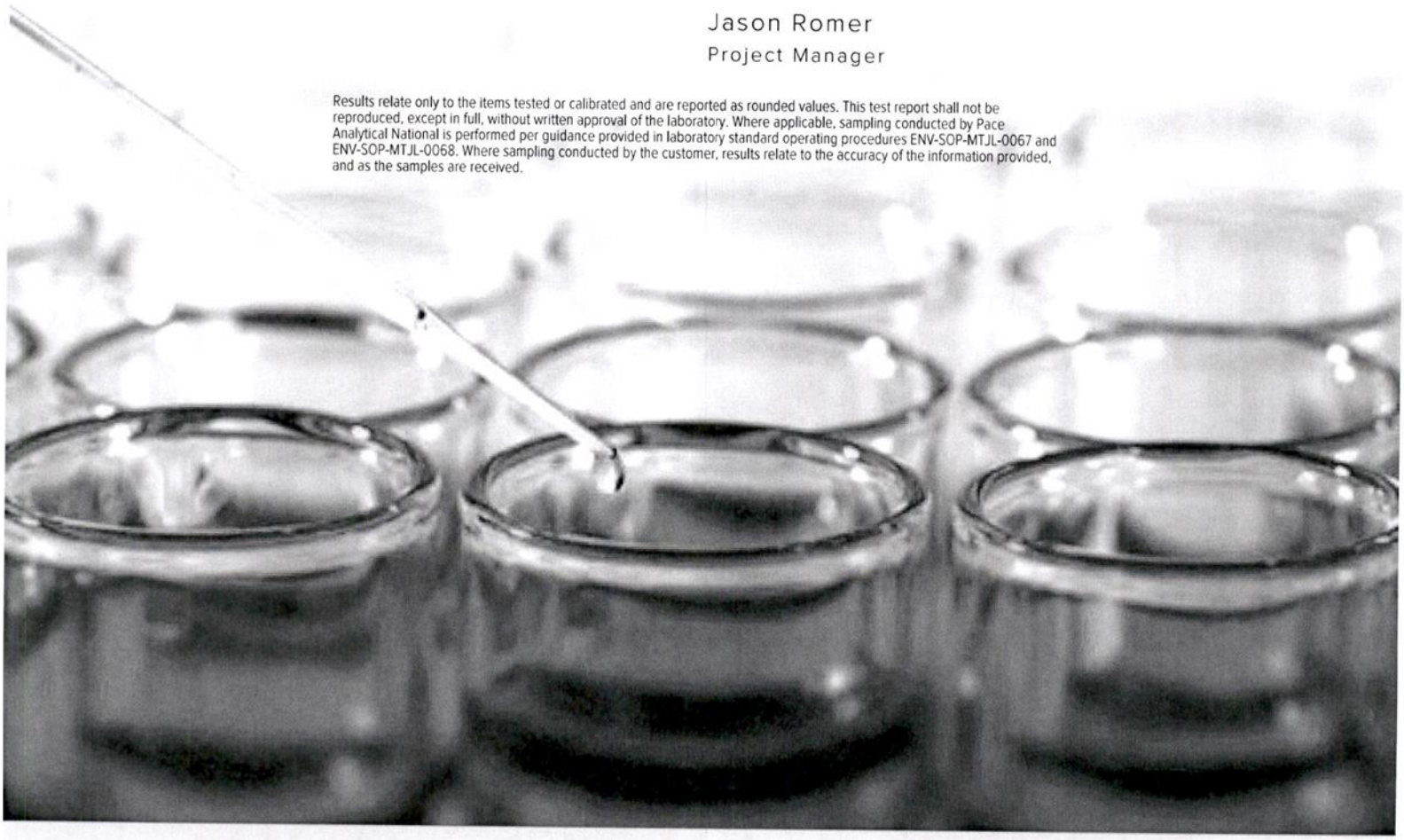


TABLE OF CONTENTS

MW-1 L1147753-01 GW

Collected by: Adam Hughes | Collected date/time: 10/08/19 14:06 | Received date/time: 10/09/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 7199	WG1359119	1	10/11/19 23:15	10/11/19 23:15	GB	Mt. Juliet, TN
Mercury by Method 7470A	WG1360954	1	10/10/19 19:32	10/11/19 10:40	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1362016	1	10/14/19 21:06	10/15/19 02:19	TRB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1364267	1	10/16/19 22:23	10/16/19 22:23	DWR	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1361403	4	10/11/19 16:33	10/12/19 06:58	DMG	Mt. Juliet, TN

MW-2 L1147753-02 GW

Collected by: Adam Hughes | Collected date/time: 10/08/19 15:06 | Received date/time: 10/09/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 7199	WG1359119	1	10/11/19 23:22	10/11/19 23:22	GB	Mt. Juliet, TN
Mercury by Method 7470A	WG1360954	1	10/10/19 19:32	10/11/19 10:46	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1362016	1	10/14/19 21:06	10/15/19 02:21	TRB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1364267	1	10/16/19 22:42	10/16/19 22:42	DWR	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1361403	1	10/11/19 16:33	10/12/19 07:21	DMG	Mt. Juliet, TN

MW-3 L1147753-03 GW

Collected by: Adam Hughes | Collected date/time: 10/08/19 16:11 | Received date/time: 10/09/19 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 7199	WG1359119	1	10/11/19 23:29	10/11/19 23:29	GB	Mt. Juliet, TN
Mercury by Method 7470A	WG1360954	1	10/10/19 19:32	10/11/19 10:48	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1362016	1	10/14/19 21:06	10/15/19 02:24	TRB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1364267	1	10/16/19 23:00	10/16/19 23:00	DWR	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1361403	1	10/11/19 16:33	10/12/19 07:44	DMG	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jason Romer
Project Manager

Wet Chemistry by Method 7199

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hexavalent Chromium	0.000196	J	0.000150	0.000500	1	10/11/2019 23:15	WG1359119

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury,Dissolved	U		0.0000490	0.000200	1	10/11/2019 10:40	WG1360954

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	U		0.00650	0.0100	1	10/15/2019 02:19	WG1362016
Barium,Dissolved	0.00726		0.00170	0.00500	1	10/15/2019 02:19	WG1362016
Cadmium,Dissolved	U		0.000700	0.00200	1	10/15/2019 02:19	WG1362016
Chromium,Dissolved	U		0.00140	0.0100	1	10/15/2019 02:19	WG1362016
Lead,Dissolved	U		0.00190	0.00500	1	10/15/2019 02:19	WG1362016
Selenium,Dissolved	U		0.00740	0.0100	1	10/15/2019 02:19	WG1362016
Silver,Dissolved	U		0.00280	0.00500	1	10/15/2019 02:19	WG1362016

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	0.0127	J	0.0100	0.0500	1	10/16/2019 22:23	WG1364267
Acrolein	U		0.00887	0.0500	1	10/16/2019 22:23	WG1364267
Acrylonitrile	U		0.00187	0.0100	1	10/16/2019 22:23	WG1364267
Benzene	U		0.000331	0.00100	1	10/16/2019 22:23	WG1364267
Bromobenzene	U		0.000352	0.00100	1	10/16/2019 22:23	WG1364267
Bromodichloromethane	U		0.000380	0.00100	1	10/16/2019 22:23	WG1364267
Bromoform	U		0.000469	0.00100	1	10/16/2019 22:23	WG1364267
Bromomethane	U		0.000866	0.00500	1	10/16/2019 22:23	WG1364267
n-Butylbenzene	U		0.000361	0.00100	1	10/16/2019 22:23	WG1364267
sec-Butylbenzene	U		0.000365	0.00100	1	10/16/2019 22:23	WG1364267
tert-Butylbenzene	U		0.000399	0.00100	1	10/16/2019 22:23	WG1364267
Carbon tetrachloride	U		0.000379	0.00100	1	10/16/2019 22:23	WG1364267
Chlorobenzene	U		0.000348	0.00100	1	10/16/2019 22:23	WG1364267
Chlorodibromomethane	U		0.000327	0.00100	1	10/16/2019 22:23	WG1364267
Chloroethane	U		0.000453	0.00500	1	10/16/2019 22:23	WG1364267
Chloroform	0.00318	J	0.000324	0.00500	1	10/16/2019 22:23	WG1364267
Chloromethane	U		0.000276	0.00250	1	10/16/2019 22:23	WG1364267
2-Chlorotoluene	U		0.000375	0.00100	1	10/16/2019 22:23	WG1364267
4-Chlorotoluene	U		0.000351	0.00100	1	10/16/2019 22:23	WG1364267
1,2-Dibromo-3-Chloropropane	U		0.00133	0.00500	1	10/16/2019 22:23	WG1364267
1,2-Dibromoethane	U		0.000381	0.00100	1	10/16/2019 22:23	WG1364267
Dibromomethane	U		0.000346	0.00100	1	10/16/2019 22:23	WG1364267
1,2-Dichlorobenzene	U		0.000349	0.00100	1	10/16/2019 22:23	WG1364267
1,3-Dichlorobenzene	U		0.000220	0.00100	1	10/16/2019 22:23	WG1364267
1,4-Dichlorobenzene	U		0.000274	0.00100	1	10/16/2019 22:23	WG1364267
Dichlorodifluoromethane	U		0.000551	0.00500	1	10/16/2019 22:23	WG1364267
1,1-Dichloroethane	U		0.000259	0.00100	1	10/16/2019 22:23	WG1364267
1,2-Dichloroethane	U		0.000361	0.00100	1	10/16/2019 22:23	WG1364267
1,1-Dichloroethene	U		0.000398	0.00100	1	10/16/2019 22:23	WG1364267
cis-1,2-Dichloroethene	0.00103		0.000260	0.00100	1	10/16/2019 22:23	WG1364267
trans-1,2-Dichloroethene	U		0.000396	0.00100	1	10/16/2019 22:23	WG1364267
1,2-Dichloropropane	U		0.000306	0.00100	1	10/16/2019 22:23	WG1364267
1,1-Dichloropropene	U		0.000352	0.00100	1	10/16/2019 22:23	WG1364267

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
1,3-Dichloropropane	U		0.000366	0.00100	1	10/16/2019 22:23	WG1364267
cis-1,3-Dichloropropene	U		0.000418	0.00100	1	10/16/2019 22:23	WG1364267
trans-1,3-Dichloropropene	U		0.000419	0.00100	1	10/16/2019 22:23	WG1364267
2,2-Dichloropropane	U		0.000321	0.00100	1	10/16/2019 22:23	WG1364267
Di-isopropyl ether	U		0.000320	0.00100	1	10/16/2019 22:23	WG1364267
Ethylbenzene	U		0.000384	0.00100	1	10/16/2019 22:23	WG1364267
Hexachloro-1,3-butadiene	U		0.000256	0.00100	1	10/16/2019 22:23	WG1364267
Isopropylbenzene	U		0.000326	0.00100	1	10/16/2019 22:23	WG1364267
p-Isopropyltoluene	U		0.000350	0.00100	1	10/16/2019 22:23	WG1364267
2-Butanone (MEK)	U		0.00393	0.0100	1	10/16/2019 22:23	WG1364267
Methylene Chloride	U		0.00100	0.00500	1	10/16/2019 22:23	WG1364267
4-Methyl-2-pentanone (MIBK)	U		0.00214	0.0100	1	10/16/2019 22:23	WG1364267
Methyl tert-butyl ether	U		0.000367	0.00100	1	10/16/2019 22:23	WG1364267
Naphthalene	U		0.00100	0.00500	1	10/16/2019 22:23	WG1364267
n-Propylbenzene	U		0.000349	0.00100	1	10/16/2019 22:23	WG1364267
Styrene	U		0.000307	0.00100	1	10/16/2019 22:23	WG1364267
1,1,1,2-Tetrachloroethane	U		0.000385	0.00100	1	10/16/2019 22:23	WG1364267
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100	1	10/16/2019 22:23	WG1364267
1,1,2-Trichlorotrifluoroethane	U		0.000303	0.00100	1	10/16/2019 22:23	WG1364267
Tetrachloroethene	U		0.000372	0.00100	1	10/16/2019 22:23	WG1364267
Toluene	U		0.000412	0.00100	1	10/16/2019 22:23	WG1364267
1,2,3-Trichlorobenzene	U		0.000230	0.00100	1	10/16/2019 22:23	WG1364267
1,2,4-Trichlorobenzene	U		0.000355	0.00100	1	10/16/2019 22:23	WG1364267
1,1,1-Trichloroethane	U		0.000319	0.00100	1	10/16/2019 22:23	WG1364267
1,1,2-Trichloroethane	U		0.000383	0.00100	1	10/16/2019 22:23	WG1364267
Trichloroethene	U		0.000398	0.00100	1	10/16/2019 22:23	WG1364267
Trichlorofluoromethane	U		0.00120	0.00500	1	10/16/2019 22:23	WG1364267
1,2,3-Trichloropropane	U		0.000807	0.00250	1	10/16/2019 22:23	WG1364267
1,2,4-Trimethylbenzene	U		0.000373	0.00100	1	10/16/2019 22:23	WG1364267
1,2,3-Trimethylbenzene	U		0.000321	0.00100	1	10/16/2019 22:23	WG1364267
1,3,5-Trimethylbenzene	U		0.000387	0.00100	1	10/16/2019 22:23	WG1364267
Vinyl chloride	0.00160		0.000259	0.00100	1	10/16/2019 22:23	WG1364267
Xylenes, Total	U		0.00106	0.00300	1	10/16/2019 22:23	WG1364267
(S) Toluene-d8	*106*			*80.0-120*		*10/16/2019 22:23*	WG1364267
(S) 4-Bromofluorobenzene	*98.2*			*77.0-126*		*10/16/2019 22:23*	WG1364267
(S) 1,2-Dichloroethane-d4	*98.8*			*70.0-130*		*10/16/2019 22:23*	WG1364267

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	U		0.0000560	0.000200	4	10/12/2019 06:58	WG1361403
Acenaphthene	U		0.0000400	0.000200	4	10/12/2019 06:58	WG1361403
Acenaphthylene	U		0.0000480	0.000200	4	10/12/2019 06:58	WG1361403
Benzo(a)anthracene	U		0.0000164	0.000200	4	10/12/2019 06:58	WG1361403
Benzo(a)pyrene	U		0.0000464	0.000200	4	10/12/2019 06:58	WG1361403
Benzo(b)fluoranthene	U		0.00000848	0.000200	4	10/12/2019 06:58	WG1361403
Benzo(g,h,i)perylene	U		0.00000908	0.000200	4	10/12/2019 06:58	WG1361403
Benzo(k)fluoranthene	U		0.0000544	0.000200	4	10/12/2019 06:58	WG1361403
Chrysene	U		0.0000432	0.000200	4	10/12/2019 06:58	WG1361403
Dibenz(a,h)anthracene	U		0.0000158	0.000200	4	10/12/2019 06:58	WG1361403
Fluoranthene	U		0.0000628	0.000200	4	10/12/2019 06:58	WG1361403
Fluorene	U		0.0000340	0.000200	4	10/12/2019 06:58	WG1361403
Indeno(1,2,3-cd)pyrene	U		0.0000592	0.000200	4	10/12/2019 06:58	WG1361403
Naphthalene	U		0.0000792	0.00100	4	10/12/2019 06:58	WG1361403
Phenanthrene	U		0.0000328	0.000200	4	10/12/2019 06:58	WG1361403
Pyrene	U		0.0000468	0.000200	4	10/12/2019 06:58	WG1361403

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
1-Methylnaphthalene	U		0.0000328	0.00100	4	10/12/2019 06:58	WG1361403
2-Methylnaphthalene	U		0.0000361	0.00100	4	10/12/2019 06:58	WG1361403
2-Chloronaphthalene	U		0.0000259	0.00100	4	10/12/2019 06:58	WG1361403
(S) Nitrobenzene-d5	*175*	J1		*31.0-160*		*10/12/2019 06:58*	WG1361403
(S) 2-Fluorobiphenyl	*90.0*			*48.0-148*		*10/12/2019 06:58*	WG1361403
(S) p-Terphenyl-d14	*90.0*			*37.0-146*		*10/12/2019 06:58*	WG1361403

Sample Narrative:

L1147753-01 WG1361403: Dilution due to matrix impact during extraction procedure

Wet Chemistry by Method 7199

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Hexavalent Chromium	U		0.000150	0.000500	1	10/11/2019 23:22	WG1359119

Mercury by Method 7470A

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Mercury,Dissolved	U		0.0000490	0.000200	1	10/11/2019 10:46	WG1360954

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Arsenic,Dissolved	U		0.00650	0.0100	1	10/15/2019 02:21	WG1362016
Barium,Dissolved	0.0631		0.00170	0.00500	1	10/15/2019 02:21	WG1362016
Cadmium,Dissolved	U		0.000700	0.00200	1	10/15/2019 02:21	WG1362016
Chromium,Dissolved	U		0.00140	0.0100	1	10/15/2019 02:21	WG1362016
Lead,Dissolved	U		0.00190	0.00500	1	10/15/2019 02:21	WG1362016
Selenium,Dissolved	U		0.00740	0.0100	1	10/15/2019 02:21	WG1362016
Silver,Dissolved	U		0.00280	0.00500	1	10/15/2019 02:21	WG1362016

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
Acetone	U		0.0100	0.0500	1	10/16/2019 22:42	WG1364267
Acrolein	U		0.00887	0.0500	1	10/16/2019 22:42	WG1364267
Acrylonitrile	U		0.00187	0.0100	1	10/16/2019 22:42	WG1364267
Benzene	U		0.000331	0.00100	1	10/16/2019 22:42	WG1364267
Bromobenzene	U		0.000352	0.00100	1	10/16/2019 22:42	WG1364267
Bromodichloromethane	U		0.000380	0.00100	1	10/16/2019 22:42	WG1364267
Bromoform	U		0.000469	0.00100	1	10/16/2019 22:42	WG1364267
Bromomethane	U		0.000866	0.00500	1	10/16/2019 22:42	WG1364267
n-Butylbenzene	U		0.000361	0.00100	1	10/16/2019 22:42	WG1364267
sec-Butylbenzene	U		0.000365	0.00100	1	10/16/2019 22:42	WG1364267
tert-Butylbenzene	U		0.000399	0.00100	1	10/16/2019 22:42	WG1364267
Carbon tetrachloride	U		0.000379	0.00100	1	10/16/2019 22:42	WG1364267
Chlorobenzene	U		0.000348	0.00100	1	10/16/2019 22:42	WG1364267
Chlorodibromomethane	U		0.000327	0.00100	1	10/16/2019 22:42	WG1364267
Chloroethane	U		0.000453	0.00500	1	10/16/2019 22:42	WG1364267
Chloroform	U		0.000324	0.00500	1	10/16/2019 22:42	WG1364267
Chloromethane	U		0.000276	0.00250	1	10/16/2019 22:42	WG1364267
2-Chlorotoluene	U		0.000375	0.00100	1	10/16/2019 22:42	WG1364267
4-Chlorotoluene	U		0.000351	0.00100	1	10/16/2019 22:42	WG1364267
1,2-Dibromo-3-Chloropropane	U		0.00133	0.00500	1	10/16/2019 22:42	WG1364267
1,2-Dibromoethane	U		0.000381	0.00100	1	10/16/2019 22:42	WG1364267
Dibromomethane	U		0.000346	0.00100	1	10/16/2019 22:42	WG1364267
1,2-Dichlorobenzene	U		0.000349	0.00100	1	10/16/2019 22:42	WG1364267
1,3-Dichlorobenzene	U		0.000220	0.00100	1	10/16/2019 22:42	WG1364267
1,4-Dichlorobenzene	U		0.000274	0.00100	1	10/16/2019 22:42	WG1364267
Dichlorodifluoromethane	U		0.000551	0.00500	1	10/16/2019 22:42	WG1364267
1,1-Dichloroethane	U		0.000259	0.00100	1	10/16/2019 22:42	WG1364267
1,2-Dichloroethane	U		0.000361	0.00100	1	10/16/2019 22:42	WG1364267
1,1-Dichloroethene	U		0.000398	0.00100	1	10/16/2019 22:42	WG1364267
cis-1,2-Dichloroethene	U		0.000260	0.00100	1	10/16/2019 22:42	WG1364267
trans-1,2-Dichloroethene	U		0.000396	0.00100	1	10/16/2019 22:42	WG1364267
1,2-Dichloropropane	U		0.000306	0.00100	1	10/16/2019 22:42	WG1364267
1,1-Dichloropropene	U		0.000352	0.00100	1	10/16/2019 22:42	WG1364267

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
1,3-Dichloropropane	U		0.000366	0.00100	1	10/16/2019 22:42	WG1364267
cis-1,3-Dichloropropene	U		0.000418	0.00100	1	10/16/2019 22:42	WG1364267
trans-1,3-Dichloropropene	U		0.000419	0.00100	1	10/16/2019 22:42	WG1364267
2,2-Dichloropropane	U		0.000321	0.00100	1	10/16/2019 22:42	WG1364267
Di-isopropyl ether	U		0.000320	0.00100	1	10/16/2019 22:42	WG1364267
Ethylbenzene	U		0.000384	0.00100	1	10/16/2019 22:42	WG1364267
Hexachloro-1,3-butadiene	U		0.000256	0.00100	1	10/16/2019 22:42	WG1364267
Isopropylbenzene	U		0.000326	0.00100	1	10/16/2019 22:42	WG1364267
p-Isopropyltoluene	U		0.000350	0.00100	1	10/16/2019 22:42	WG1364267
2-Butanone (MEK)	U		0.00393	0.0100	1	10/16/2019 22:42	WG1364267
Methylene Chloride	U		0.00100	0.00500	1	10/16/2019 22:42	WG1364267
4-Methyl-2-pentanone (MIBK)	U		0.00214	0.0100	1	10/16/2019 22:42	WG1364267
Methyl tert-butyl ether	U		0.000367	0.00100	1	10/16/2019 22:42	WG1364267
Naphthalene	U		0.00100	0.00500	1	10/16/2019 22:42	WG1364267
n-Propylbenzene	U		0.000349	0.00100	1	10/16/2019 22:42	WG1364267
Styrene	U		0.000307	0.00100	1	10/16/2019 22:42	WG1364267
1,1,1,2-Tetrachloroethane	U		0.000385	0.00100	1	10/16/2019 22:42	WG1364267
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100	1	10/16/2019 22:42	WG1364267
1,1,2-Trichlorotrifluoroethane	U		0.000303	0.00100	1	10/16/2019 22:42	WG1364267
Tetrachloroethene	U		0.000372	0.00100	1	10/16/2019 22:42	WG1364267
Toluene	U		0.000412	0.00100	1	10/16/2019 22:42	WG1364267
1,2,3-Trichlorobenzene	U		0.000230	0.00100	1	10/16/2019 22:42	WG1364267
1,2,4-Trichlorobenzene	U		0.000355	0.00100	1	10/16/2019 22:42	WG1364267
1,1,1-Trichloroethane	U		0.000319	0.00100	1	10/16/2019 22:42	WG1364267
1,1,2-Trichloroethane	U		0.000383	0.00100	1	10/16/2019 22:42	WG1364267
Trichloroethene	U		0.000398	0.00100	1	10/16/2019 22:42	WG1364267
Trichlorofluoromethane	U		0.00120	0.00500	1	10/16/2019 22:42	WG1364267
1,2,3-Trichloropropane	U		0.000807	0.00250	1	10/16/2019 22:42	WG1364267
1,2,4-Trimethylbenzene	U		0.000373	0.00100	1	10/16/2019 22:42	WG1364267
1,2,3-Trimethylbenzene	U		0.000321	0.00100	1	10/16/2019 22:42	WG1364267
1,3,5-Trimethylbenzene	U		0.000387	0.00100	1	10/16/2019 22:42	WG1364267
Vinyl chloride	U		0.000259	0.00100	1	10/16/2019 22:42	WG1364267
Xylenes, Total	U		0.00106	0.00300	1	10/16/2019 22:42	WG1364267
(S) Toluene-d8	*103*			*80.0-120*		*10/16/2019 22:42*	WG1364267
(S) 4-Bromofluorobenzene	*99.6*			*77.0-126*		*10/16/2019 22:42*	WG1364267
(S) 1,2-Dichloroethane-d4	*92.8*			*70.0-130*		*10/16/2019 22:42*	WG1364267

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	U		0.0000140	0.0000500	1	10/12/2019 07:21	WG1361403
Acenaphthene	U		0.0000100	0.0000500	1	10/12/2019 07:21	WG1361403
Acenaphthylene	U		0.0000120	0.0000500	1	10/12/2019 07:21	WG1361403
Benzo(a)anthracene	U		0.00000410	0.0000500	1	10/12/2019 07:21	WG1361403
Benzo(a)pyrene	U		0.0000116	0.0000500	1	10/12/2019 07:21	WG1361403
Benzo(b)fluoranthene	U		0.00000212	0.0000500	1	10/12/2019 07:21	WG1361403
Benzo(g,h,i)perylene	U		0.00000227	0.0000500	1	10/12/2019 07:21	WG1361403
Benzo(k)fluoranthene	U		0.0000136	0.0000500	1	10/12/2019 07:21	WG1361403
Chrysene	U		0.0000108	0.0000500	1	10/12/2019 07:21	WG1361403
Dibenz(a,h)anthracene	U		0.00000396	0.0000500	1	10/12/2019 07:21	WG1361403
Fluoranthene	U		0.0000157	0.0000500	1	10/12/2019 07:21	WG1361403
Fluorene	U		0.00000850	0.0000500	1	10/12/2019 07:21	WG1361403
Indeno(1,2,3-cd)pyrene	U		0.0000148	0.0000500	1	10/12/2019 07:21	WG1361403
Naphthalene	0.0000471	B J	0.0000198	0.000250	1	10/12/2019 07:21	WG1361403
Phenanthrene	U		0.00000820	0.0000500	1	10/12/2019 07:21	WG1361403
Pyrene	U		0.0000117	0.0000500	1	10/12/2019 07:21	WG1361403

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	mg/l		mg/l	mg/l		date / time	
1-Methylnaphthalene	0.00000911	J	0.00000821	0.000250	1	10/12/2019 07:21	WG1361403
2-Methylnaphthalene	0.0000160	J	0.00000902	0.000250	1	10/12/2019 07:21	WG1361403
2-Chloronaphthalene	U		0.00000647	0.000250	1	10/12/2019 07:21	WG1361403
(S) Nitrobenzene-d5	*146*			*31.0-160*		*10/12/2019 07:21*	WG1361403
(S) 2-Fluorobiphenyl	*81.6*			*48.0-148*		*10/12/2019 07:21*	WG1361403
(S) p-Terphenyl-d14	*90.5*			*37.0-146*		*10/12/2019 07:21*	WG1361403

Wet Chemistry by Method 7199

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.000150	0.000500	1	10/11/2019 23:29	WG1359119

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury,Dissolved	U		0.0000490	0.000200	1	10/11/2019 10:48	WG1360954

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	U		0.00650	0.0100	1	10/15/2019 02:24	WG1362016
Barium,Dissolved	0.0491		0.00170	0.00500	1	10/15/2019 02:24	WG1362016
Cadmium,Dissolved	U		0.000700	0.00200	1	10/15/2019 02:24	WG1362016
Chromium,Dissolved	U		0.00140	0.0100	1	10/15/2019 02:24	WG1362016
Lead,Dissolved	U		0.00190	0.00500	1	10/15/2019 02:24	WG1362016
Selenium,Dissolved	U		0.00740	0.0100	1	10/15/2019 02:24	WG1362016
Silver,Dissolved	U		0.00280	0.00500	1	10/15/2019 02:24	WG1362016

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	U		0.0100	0.0500	1	10/16/2019 23:00	WG1364267
Acrolein	U		0.00887	0.0500	1	10/16/2019 23:00	WG1364267
Acrylonitrile	U		0.00187	0.0100	1	10/16/2019 23:00	WG1364267
Benzene	U		0.000331	0.00100	1	10/16/2019 23:00	WG1364267
Bromobenzene	U		0.000352	0.00100	1	10/16/2019 23:00	WG1364267
Bromodichloromethane	U		0.000380	0.00100	1	10/16/2019 23:00	WG1364267
Bromoform	U		0.000469	0.00100	1	10/16/2019 23:00	WG1364267
Bromomethane	U		0.000866	0.00500	1	10/16/2019 23:00	WG1364267
n-Butylbenzene	U		0.000361	0.00100	1	10/16/2019 23:00	WG1364267
sec-Butylbenzene	U		0.000365	0.00100	1	10/16/2019 23:00	WG1364267
tert-Butylbenzene	U		0.000399	0.00100	1	10/16/2019 23:00	WG1364267
Carbon tetrachloride	U		0.000379	0.00100	1	10/16/2019 23:00	WG1364267
Chlorobenzene	U		0.000348	0.00100	1	10/16/2019 23:00	WG1364267
Chlorodibromomethane	U		0.000327	0.00100	1	10/16/2019 23:00	WG1364267
Chloroethane	U		0.000453	0.00500	1	10/16/2019 23:00	WG1364267
Chloroform	0.00303	J	0.000324	0.00500	1	10/16/2019 23:00	WG1364267
Chloromethane	U		0.000276	0.00250	1	10/16/2019 23:00	WG1364267
2-Chlorotoluene	U		0.000375	0.00100	1	10/16/2019 23:00	WG1364267
4-Chlorotoluene	U		0.000351	0.00100	1	10/16/2019 23:00	WG1364267
1,2-Dibromo-3-Chloropropane	U		0.00133	0.00500	1	10/16/2019 23:00	WG1364267
1,2-Dibromoethane	U		0.000381	0.00100	1	10/16/2019 23:00	WG1364267
Dibromomethane	U		0.000346	0.00100	1	10/16/2019 23:00	WG1364267
1,2-Dichlorobenzene	U		0.000349	0.00100	1	10/16/2019 23:00	WG1364267
1,3-Dichlorobenzene	U		0.000220	0.00100	1	10/16/2019 23:00	WG1364267
1,4-Dichlorobenzene	U		0.000274	0.00100	1	10/16/2019 23:00	WG1364267
Dichlorodifluoromethane	0.00451	J	0.000551	0.00500	1	10/16/2019 23:00	WG1364267
1,1-Dichloroethane	U		0.000259	0.00100	1	10/16/2019 23:00	WG1364267
1,2-Dichloroethane	U		0.000361	0.00100	1	10/16/2019 23:00	WG1364267
1,1-Dichloroethene	U		0.000398	0.00100	1	10/16/2019 23:00	WG1364267
cis-1,2-Dichloroethene	U		0.000260	0.00100	1	10/16/2019 23:00	WG1364267
trans-1,2-Dichloroethene	U		0.000396	0.00100	1	10/16/2019 23:00	WG1364267
1,2-Dichloropropane	U		0.000306	0.00100	1	10/16/2019 23:00	WG1364267
1,1-Dichloropropene	U		0.000352	0.00100	1	10/16/2019 23:00	WG1364267

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
1,3-Dichloropropane	U		0.000366	0.00100	1	10/16/2019 23:00	WG1364267
cis-1,3-Dichloropropene	U		0.000418	0.00100	1	10/16/2019 23:00	WG1364267
trans-1,3-Dichloropropene	U		0.000419	0.00100	1	10/16/2019 23:00	WG1364267
2,2-Dichloropropane	U		0.000321	0.00100	1	10/16/2019 23:00	WG1364267
Di-isopropyl ether	U		0.000320	0.00100	1	10/16/2019 23:00	WG1364267
Ethylbenzene	U		0.000384	0.00100	1	10/16/2019 23:00	WG1364267
Hexachloro-1,3-butadiene	U		0.000256	0.00100	1	10/16/2019 23:00	WG1364267
Isopropylbenzene	U		0.000326	0.00100	1	10/16/2019 23:00	WG1364267
p-Isopropyltoluene	U		0.000350	0.00100	1	10/16/2019 23:00	WG1364267
2-Butanone (MEK)	U		0.00393	0.0100	1	10/16/2019 23:00	WG1364267
Methylene Chloride	U		0.00100	0.00500	1	10/16/2019 23:00	WG1364267
4-Methyl-2-pentanone (MIBK)	U		0.00214	0.0100	1	10/16/2019 23:00	WG1364267
Methyl tert-butyl ether	U		0.000367	0.00100	1	10/16/2019 23:00	WG1364267
Naphthalene	U		0.00100	0.00500	1	10/16/2019 23:00	WG1364267
n-Propylbenzene	U		0.000349	0.00100	1	10/16/2019 23:00	WG1364267
Styrene	U		0.000307	0.00100	1	10/16/2019 23:00	WG1364267
1,1,1,2-Tetrachloroethane	U		0.000385	0.00100	1	10/16/2019 23:00	WG1364267
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100	1	10/16/2019 23:00	WG1364267
1,1,2-Trichlorotrifluoroethane	U		0.000303	0.00100	1	10/16/2019 23:00	WG1364267
Tetrachloroethene	U		0.000372	0.00100	1	10/16/2019 23:00	WG1364267
Toluene	U		0.000412	0.00100	1	10/16/2019 23:00	WG1364267
1,2,3-Trichlorobenzene	U		0.000230	0.00100	1	10/16/2019 23:00	WG1364267
1,2,4-Trichlorobenzene	U		0.000355	0.00100	1	10/16/2019 23:00	WG1364267
1,1,1-Trichloroethane	U		0.000319	0.00100	1	10/16/2019 23:00	WG1364267
1,1,2-Trichloroethane	U		0.000383	0.00100	1	10/16/2019 23:00	WG1364267
Trichloroethene	U		0.000398	0.00100	1	10/16/2019 23:00	WG1364267
Trichlorofluoromethane	U		0.00120	0.00500	1	10/16/2019 23:00	WG1364267
1,2,3-Trichloropropane	U		0.000807	0.00250	1	10/16/2019 23:00	WG1364267
1,2,4-Trimethylbenzene	U		0.000373	0.00100	1	10/16/2019 23:00	WG1364267
1,2,3-Trimethylbenzene	U		0.000321	0.00100	1	10/16/2019 23:00	WG1364267
1,3,5-Trimethylbenzene	U		0.000387	0.00100	1	10/16/2019 23:00	WG1364267
Vinyl chloride	U		0.000259	0.00100	1	10/16/2019 23:00	WG1364267
Xylenes, Total	U		0.00106	0.00300	1	10/16/2019 23:00	WG1364267
(S) Toluene-d8	*111*			*80.0-120*		*10/16/2019 23:00*	WG1364267
(S) 4-Bromofluorobenzene	*99.8*			*77.0-126*		*10/16/2019 23:00*	WG1364267
(S) 1,2-Dichloroethane-d4	*88.9*			*70.0-130*		*10/16/2019 23:00*	WG1364267

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	U		0.0000140	0.0000500	1	10/12/2019 07:44	WG1361403
Acenaphthene	0.0000310	J	0.0000100	0.0000500	1	10/12/2019 07:44	WG1361403
Acenaphthylene	U		0.0000120	0.0000500	1	10/12/2019 07:44	WG1361403
Benzo(a)anthracene	U		0.00000410	0.0000500	1	10/12/2019 07:44	WG1361403
Benzo(a)pyrene	U		0.0000116	0.0000500	1	10/12/2019 07:44	WG1361403
Benzo(b)fluoranthene	U		0.00000212	0.0000500	1	10/12/2019 07:44	WG1361403
Benzo(g,h,i)perylene	U		0.00000227	0.0000500	1	10/12/2019 07:44	WG1361403
Benzo(k)fluoranthene	U		0.0000136	0.0000500	1	10/12/2019 07:44	WG1361403
Chrysene	U		0.0000108	0.0000500	1	10/12/2019 07:44	WG1361403
Dibenz(a,h)anthracene	0.00000530	J	0.00000396	0.0000500	1	10/12/2019 07:44	WG1361403
Fluoranthene	0.0000220	J	0.0000157	0.0000500	1	10/12/2019 07:44	WG1361403
Fluorene	U		0.00000850	0.0000500	1	10/12/2019 07:44	WG1361403
Indeno(1,2,3-cd)pyrene	U		0.0000148	0.0000500	1	10/12/2019 07:44	WG1361403
Naphthalene	0.0000476	B J	0.0000198	0.000250	1	10/12/2019 07:44	WG1361403
Phenanthrene	0.0000105	J	0.00000820	0.0000500	1	10/12/2019 07:44	WG1361403
Pyrene	0.0000234	J	0.0000117	0.0000500	1	10/12/2019 07:44	WG1361403

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	0.0000104	J	0.00000821	0.000250	1	10/12/2019 07:44	WG1361403
2-Methylnaphthalene	0.0000121	J	0.00000902	0.000250	1	10/12/2019 07:44	WG1361403
2-Chloronaphthalene	U		0.00000647	0.000250	1	10/12/2019 07:44	WG1361403
(S) Nitrobenzene-d5	*214*	J1		*31.0-160*		*10/12/2019 07:44*	WG1361403
(S) 2-Fluorobiphenyl	*115*			*48.0-148*		*10/12/2019 07:44*	WG1361403
(S) p-Terphenyl-d14	*125*			*37.0-146*		*10/12/2019 07:44*	WG1361403

Method Blank (MB)

(MB) R3460306-1 10/11/19 19:13

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hexavalent Chromium	U		0.000150	0.000500

L1143828-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1143828-01 10/11/19 20:25 • (DUP) R3460306-4 10/11/19 21:22

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Hexavalent Chromium	ND	0.000	1	0.000		20

L1148308-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1148308-03 10/11/19 23:52 • (DUP) R3460306-7 10/11/19 23:59

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Hexavalent Chromium	ND	0.000372	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3460306-2 10/11/19 19:20

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hexavalent Chromium	0.00200	0.00199	99.6	90.0-110	

L1144275-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1144275-01 10/11/19 20:34 • (MS) R3460306-3 10/11/19 20:42

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Hexavalent Chromium	0.0500	ND	0.0509	102	1	90.0-110	

L1147327-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1147327-02 10/11/19 22:38 • (MS) R3460306-5 10/11/19 22:45 • (MSD) R3460306-6 10/11/19 22:53

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hexavalent Chromium	0.0500	0.00415	0.0547	0.0553	101	102	1	90.0-110			1.14	20

Method Blank (MB)

(MB) R3460088-1 10/11/19 10:30

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Mercury,Dissolved	U		0.0000490	0.000200

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3460088-2 10/11/19 10:32 • (LCSD) R3460088-3 10/11/19 10:34

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Mercury,Dissolved	0.00300	0.00312	0.00311	104	104	80.0-120			0.122	20

L1147753-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1147753-01 10/11/19 10:40 • (MS) R3460088-4 10/11/19 10:42 • (MSD) R3460088-5 10/11/19 10:44

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Mercury,Dissolved	0.00300	U	0.00335	0.00340	112	113	1	75.0-125			1.30	20

Method Blank (MB)

(MB) R3460983-1 10/15/19 02:01

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Arsenic,Dissolved	U		0.00650	0.0100
Barium,Dissolved	U		0.00170	0.00500
Cadmium,Dissolved	U		0.000700	0.00200
Chromium,Dissolved	U		0.00140	0.0100
Lead,Dissolved	U		0.00190	0.00500
Selenium,Dissolved	U		0.00740	0.0100
Silver,Dissolved	U		0.00280	0.00500

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3460983-2 10/15/19 02:03 • (LCSD) R3460983-3 10/15/19 02:06

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Arsenic,Dissolved	1.00	0.930	0.944	93.0	94.4	80.0-120			1.40	20
Barium,Dissolved	1.00	0.983	0.992	98.3	99.2	80.0-120			0.963	20
Cadmium,Dissolved	1.00	0.939	0.947	93.9	94.7	80.0-120			0.934	20
Chromium,Dissolved	1.00	0.950	0.962	95.0	96.2	80.0-120			1.33	20
Lead,Dissolved	1.00	0.953	0.964	95.3	96.4	80.0-120			1.17	20
Selenium,Dissolved	1.00	0.938	0.952	93.8	95.2	80.0-120			1.52	20
Silver,Dissolved	0.200	0.171	0.173	85.5	86.6	80.0-120			1.29	20

L1147817-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1147817-02 10/15/19 02:08 • (MS) R3460983-5 10/15/19 02:14 • (MSD) R3460983-6 10/15/19 02:16

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic,Dissolved	1.00	U	0.964	0.952	96.4	95.2	1	75.0-125			1.23	20
Barium,Dissolved	1.00	0.0394	1.03	1.02	98.7	97.8	1	75.0-125			0.876	20
Cadmium,Dissolved	1.00	U	0.960	0.950	96.0	95.0	1	75.0-125			0.971	20
Chromium,Dissolved	1.00	U	0.960	0.955	96.0	95.5	1	75.0-125			0.583	20
Lead,Dissolved	1.00	U	0.971	0.962	97.1	96.2	1	75.0-125			0.963	20
Selenium,Dissolved	1.00	U	0.973	0.962	97.3	96.2	1	75.0-125			1.20	20
Silver,Dissolved	0.200	U	0.175	0.174	87.4	87.0	1	75.0-125			0.430	20

Method Blank (MB)

(MB) R3461950-4 10/16/19 20:50

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0100	0.0500
Acrolein	U		0.00887	0.0500
Acrylonitrile	U		0.00187	0.0100
Benzene	U		0.000331	0.00100
Bromobenzene	U		0.000352	0.00100
Bromodichloromethane	U		0.000380	0.00100
Bromoform	U		0.000469	0.00100
Bromomethane	U		0.000866	0.00500
n-Butylbenzene	U		0.000361	0.00100
sec-Butylbenzene	U		0.000365	0.00100
tert-Butylbenzene	U		0.000399	0.00100
Carbon tetrachloride	U		0.000379	0.00100
Chlorobenzene	U		0.000348	0.00100
Chlorodibromomethane	U		0.000327	0.00100
Chloroethane	U		0.000453	0.00500
Chloroform	U		0.000324	0.00500
Chloromethane	U		0.000276	0.00250
2-Chlorotoluene	U		0.000375	0.00100
4-Chlorotoluene	U		0.000351	0.00100
1,2-Dibromo-3-Chloropropane	U		0.00133	0.00500
1,2-Dibromoethane	U		0.000381	0.00100
Dibromomethane	U		0.000346	0.00100
1,2-Dichlorobenzene	U		0.000349	0.00100
1,3-Dichlorobenzene	U		0.000220	0.00100
1,4-Dichlorobenzene	U		0.000274	0.00100
Dichlorodifluoromethane	U		0.000551	0.00500
1,1-Dichloroethane	U		0.000259	0.00100
1,2-Dichloroethane	U		0.000361	0.00100
1,1-Dichloroethene	U		0.000398	0.00100
cis-1,2-Dichloroethene	U		0.000260	0.00100
trans-1,2-Dichloroethene	U		0.000396	0.00100
1,2-Dichloropropane	U		0.000306	0.00100
1,1-Dichloropropene	U		0.000352	0.00100
1,3-Dichloropropane	U		0.000366	0.00100
cis-1,3-Dichloropropene	U		0.000418	0.00100
trans-1,3-Dichloropropene	U		0.000419	0.00100
2,2-Dichloropropane	U		0.000321	0.00100
Di-isopropyl ether	U		0.000320	0.00100
Ethylbenzene	U		0.000384	0.00100
Hexachloro-1,3-butadiene	U		0.000256	0.00100

Method Blank (MB)

(MB) R3461950-4 10/16/19 20:50

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Isopropylbenzene	U		0.000326	0.00100
p-Isopropyltoluene	U		0.000350	0.00100
2-Butanone (MEK)	U		0.00393	0.0100
Methylene Chloride	U		0.00100	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.00214	0.0100
Methyl tert-butyl ether	U		0.000367	0.00100
Naphthalene	U		0.00100	0.00500
n-Propylbenzene	U		0.000349	0.00100
Styrene	U		0.000307	0.00100
1,1,1,2-Tetrachloroethane	U		0.000385	0.00100
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100
Tetrachloroethene	U		0.000372	0.00100
Toluene	U		0.000412	0.00100
1,1,2-Trichlorotrifluoroethane	U		0.000303	0.00100
1,2,3-Trichlorobenzene	U		0.000230	0.00100
1,2,4-Trichlorobenzene	U		0.000355	0.00100
1,1,1-Trichloroethane	U		0.000319	0.00100
1,1,2-Trichloroethane	U		0.000383	0.00100
Trichloroethene	U		0.000398	0.00100
Trichlorofluoromethane	U		0.00120	0.00500
1,2,3-Trichloropropane	U		0.000807	0.00250
1,2,3-Trimethylbenzene	U		0.000321	0.00100
1,2,4-Trimethylbenzene	U		0.000373	0.00100
1,3,5-Trimethylbenzene	U		0.000387	0.00100
Vinyl chloride	U		0.000259	0.00100
Xylenes, Total	U		0.00106	0.00300
(S) Toluene-d8	*107*			*80.0-120*
(S) 4-Bromofluorobenzene	*99.4*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*101*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3461950-1 10/16/19 19:35 • (LCSD) R3461950-2 10/16/19 19:53

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.125	0.0916	0.106	73.3	84.8	19.0-160			14.6	27
Acrolein	0.125	0.0463	0.0512	37.0	41.0	10.0-160			10.1	26
Acrylonitrile	0.125	0.0946	0.113	75.7	90.4	55.0-149			17.7	20
Benzene	0.0250	0.0239	0.0235	95.6	94.0	70.0-123			1.69	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3461950-1 10/16/19 19:35 • (LCSD) R3461950-2 10/16/19 19:53

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Bromobenzene	0.0250	0.0278	0.0269	111	108	73.0-121			3.29	20
Bromodichloromethane	0.0250	0.0268	0.0243	107	97.2	75.0-120			9.78	20
Bromoform	0.0250	0.0226	0.0227	90.4	90.8	68.0-132			0.442	20
Bromomethane	0.0250	0.0262	0.0238	105	95.2	10.0-160			9.60	25
n-Butylbenzene	0.0250	0.0238	0.0247	95.2	98.8	73.0-125			3.71	20
sec-Butylbenzene	0.0250	0.0271	0.0268	108	107	75.0-125			1.11	20
tert-Butylbenzene	0.0250	0.0271	0.0261	108	104	76.0-124			3.76	20
Carbon tetrachloride	0.0250	0.0235	0.0241	94.0	96.4	68.0-126			2.52	20
Chlorobenzene	0.0250	0.0240	0.0240	96.0	96.0	80.0-121			0.000	20
Chlorodibromomethane	0.0250	0.0238	0.0238	95.2	95.2	77.0-125			0.000	20
Chloroethane	0.0250	0.0272	0.0251	109	100	47.0-150			8.03	20
Chloroform	0.0250	0.0247	0.0240	98.8	96.0	73.0-120			2.87	20
Chloromethane	0.0250	0.0294	0.0265	118	106	41.0-142			10.4	20
2-Chlorotoluene	0.0250	0.0280	0.0267	112	107	76.0-123			4.75	20
4-Chlorotoluene	0.0250	0.0278	0.0268	111	107	75.0-122			3.66	20
1,2-Dibromo-3-Chloropropane	0.0250	0.0246	0.0235	98.4	94.0	58.0-134			4.57	20
1,2-Dibromoethane	0.0250	0.0239	0.0236	95.6	94.4	80.0-122			1.26	20
Dibromomethane	0.0250	0.0243	0.0228	97.2	91.2	80.0-120			6.37	20
1,2-Dichlorobenzene	0.0250	0.0240	0.0238	96.0	95.2	79.0-121			0.837	20
1,3-Dichlorobenzene	0.0250	0.0242	0.0249	96.8	99.6	79.0-120			2.85	20
1,4-Dichlorobenzene	0.0250	0.0247	0.0242	98.8	96.8	79.0-120			2.04	20
Dichlorodifluoromethane	0.0250	0.0278	0.0246	111	98.4	51.0-149			12.2	20
1,1-Dichloroethane	0.0250	0.0256	0.0253	102	101	70.0-126			1.18	20
1,2-Dichloroethane	0.0250	0.0236	0.0231	94.4	92.4	70.0-128			2.14	20
1,1-Dichloroethene	0.0250	0.0257	0.0244	103	97.6	71.0-124			5.19	20
cis-1,2-Dichloroethene	0.0250	0.0253	0.0251	101	100	73.0-120			0.794	20
trans-1,2-Dichloroethene	0.0250	0.0237	0.0239	94.8	95.6	73.0-120			0.840	20
1,2-Dichloropropane	0.0250	0.0298	0.0266	119	106	77.0-125			11.3	20
1,1-Dichloropropene	0.0250	0.0244	0.0254	97.6	102	74.0-126			4.02	20
1,3-Dichloropropane	0.0250	0.0249	0.0250	99.6	100	80.0-120			0.401	20
cis-1,3-Dichloropropene	0.0250	0.0279	0.0256	112	102	80.0-123			8.60	20
trans-1,3-Dichloropropene	0.0250	0.0250	0.0252	100	101	78.0-124			0.797	20
2,2-Dichloropropane	0.0250	0.0280	0.0290	112	116	58.0-130			3.51	20
Di-isopropyl ether	0.0250	0.0270	0.0263	108	105	58.0-138			2.63	20
Ethylbenzene	0.0250	0.0232	0.0235	92.8	94.0	79.0-123			1.28	20
Hexachloro-1,3-butadiene	0.0250	0.0271	0.0302	108	121	54.0-138			10.8	20
Isopropylbenzene	0.0250	0.0242	0.0242	96.8	96.8	76.0-127			0.000	20
p-Isopropyltoluene	0.0250	0.0258	0.0258	103	103	76.0-125			0.000	20
2-Butanone (MEK)	0.125	0.104	0.115	83.2	92.0	44.0-160			10.0	20
Methylene Chloride	0.0250	0.0252	0.0238	101	95.2	67.0-120			5.71	20

Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3461950-1 10/16/19 19:35 • (LCSD) R3461950-2 10/16/19 19:53

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
4-Methyl-2-pentanone (MIBK)	0.125	0.119	0.119	95.2	95.2	68.0-142			0.000	20
Methyl tert-butyl ether	0.0250	0.0238	0.0235	95.2	94.0	68.0-125			1.27	20
Naphthalene	0.0250	0.0272	0.0264	109	106	54.0-135			2.99	20
n-Propylbenzene	0.0250	0.0281	0.0269	112	108	77.0-124			4.36	20
Styrene	0.0250	0.0239	0.0240	95.6	96.0	73.0-130			0.418	20
1,1,1,2-Tetrachloroethane	0.0250	0.0235	0.0231	94.0	92.4	75.0-125			1.72	20
1,1,2,2-Tetrachloroethane	0.0250	0.0301	0.0284	120	114	65.0-130			5.81	20
Tetrachloroethene	0.0250	0.0244	0.0245	97.6	98.0	72.0-132			0.409	20
Toluene	0.0250	0.0243	0.0242	97.2	96.8	79.0-120			0.412	20
1,1,2-Trichlorotrifluoroethane	0.0250	0.0280	0.0269	112	108	69.0-132			4.01	20
1,2,3-Trichlorobenzene	0.0250	0.0333	0.0344	133	138	50.0-138			3.25	20
1,2,4-Trichlorobenzene	0.0250	0.0311	0.0315	124	126	57.0-137			1.28	20
1,1,1-Trichloroethane	0.0250	0.0246	0.0253	98.4	101	73.0-124			2.81	20
1,1,2-Trichloroethane	0.0250	0.0245	0.0242	98.0	96.8	80.0-120			1.23	20
Trichloroethene	0.0250	0.0212	0.0213	84.8	85.2	78.0-124			0.471	20
Trichlorofluoromethane	0.0250	0.0271	0.0245	108	98.0	59.0-147			10.1	20
1,2,3-Trichloropropane	0.0250	0.0264	0.0248	106	99.2	73.0-130			6.25	20
1,2,3-Trimethylbenzene	0.0250	0.0244	0.0245	97.6	98.0	77.0-120			0.409	20
1,2,4-Trimethylbenzene	0.0250	0.0266	0.0253	106	101	76.0-121			5.01	20
1,3,5-Trimethylbenzene	0.0250	0.0280	0.0267	112	107	76.0-122			4.75	20
Vinyl chloride	0.0250	0.0279	0.0246	112	98.4	67.0-131			12.6	20
Xylenes, Total	0.0750	0.0717	0.0723	95.6	96.4	79.0-123			0.833	20
(S) Toluene-d8				*104*	*105*	*80.0-120*				
(S) 4-Bromofluorobenzene				*98.8*	*98.1*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*118*	*105*	*70.0-130*				

Cp
Tc
Ss
Cn
Sr
Qc
Gl
Al
Sc

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM L1147753-01,02,03

Method Blank (MB)

(MB) R3460490-3 10/12/19 06:35

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000140	0.0000500
Acenaphthene	U		0.0000100	0.0000500
Acenaphthylene	U		0.0000120	0.0000500
Benzo(a)anthracene	U		0.00000410	0.0000500
Benzo(a)pyrene	U		0.0000116	0.0000500
Benzo(b)fluoranthene	U		0.00000212	0.0000500
Benzo(g,h,i)perylene	0.00000274	J	0.00000227	0.0000500
Benzo(k)fluoranthene	U		0.0000136	0.0000500
Chrysene	U		0.0000108	0.0000500
Dibenz(a,h)anthracene	U		0.00000396	0.0000500
Fluoranthene	U		0.0000157	0.0000500
Fluorene	U		0.00000850	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000148	0.0000500
Naphthalene	0.0000204	J	0.0000198	0.000250
Phenanthrene	U		0.00000820	0.0000500
Pyrene	U		0.0000117	0.0000500
1-Methylnaphthalene	U		0.00000821	0.000250
2-Methylnaphthalene	U		0.00000902	0.000250
2-Chloronaphthalene	U		0.00000647	0.000250
(S) Nitrobenzene-d5	*202*	J1		*31.0-160*
(S) 2-Fluorobiphenyl	*113*			*48.0-148*
(S) p-Terphenyl-d14	*124*			*37.0-146*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3460490-1 10/12/19 05:50 • (LCSD) R3460490-2 10/12/19 06:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.00200	0.00238	0.00224	119	112	67.0-150			6.06	20
Acenaphthene	0.00200	0.00256	0.00232	128	116	65.0-138			9.84	20
Acenaphthylene	0.00200	0.00274	0.00248	137	124	66.0-140			9.96	20
Benzo(a)anthracene	0.00200	0.00241	0.00221	120	111	61.0-140			8.66	20
Benzo(a)pyrene	0.00200	0.00233	0.00216	117	108	60.0-143			7.57	20
Benzo(b)fluoranthene	0.00200	0.00222	0.00213	111	106	58.0-141			4.14	20
Benzo(g,h,i)perylene	0.00200	0.00246	0.00226	123	113	52.0-153			8.47	20
Benzo(k)fluoranthene	0.00200	0.00240	0.00210	120	105	58.0-148			13.3	20
Chrysene	0.00200	0.00228	0.00208	114	104	64.0-144			9.17	20
Dibenz(a,h)anthracene	0.00200	0.00257	0.00235	129	117	52.0-155			8.94	20
Fluoranthene	0.00200	0.00220	0.00204	110	102	69.0-153			7.55	20

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

L1147753-01,02,03

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3460490-1 10/12/19 05:50 • (LCSD) R3460490-2 10/12/19 06:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Fluorene	0.00200	0.00248	0.00226	124	113	64.0-136			9.28	20
Indeno(1,2,3-cd)pyrene	0.00200	0.00261	0.00240	131	120	54.0-153			8.38	20
Naphthalene	0.00200	0.00238	0.00215	119	108	61.0-137			10.2	20
Phenanthrene	0.00200	0.00234	0.00212	117	106	62.0-137			9.87	20
Pyrene	0.00200	0.00241	0.00223	120	111	60.0-142			7.76	20
1-Methylnaphthalene	0.00200	0.00216	0.00194	108	97.0	66.0-142			10.7	20
2-Methylnaphthalene	0.00200	0.00205	0.00186	102	93.0	62.0-136			9.72	20
2-Chloronaphthalene	0.00200	0.00250	0.00227	125	114	64.0-140			9.64	20
(S) Nitrobenzene-d5				*226*	*130*	*31.0-160*	J1			
(S) 2-Fluorobiphenyl				*126*	*72.5*	*48.0-148*				
(S) p-Terphenyl-d14				*132*	*76.5*	*37.0-146*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.

Highland Technical Services, Inc.

528 Mineral Trace
Hoover, AL 35244

Billing Information:
Accounts Payable
528 Mineral Trace
Hoover, AL 35244

Report to: Mr. David Wall

Email To: dwall@htsienv.com

Project Description: Munger Site - Birmingham, AL

City/State Collected: B'ham, AL

Please Circle: PT MT CT ET

Phone: 205-985-4874
Fax: Adam Hughes

Client Project # 19-132114.01

Lab Project # HIGTEHAL-1913211401

Collected by (print):

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N___ Y✓

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	CR6IC 250mlHDPE-NoPres	MRCRA8 250mlHDPE-HNO3	PAHSIMLVI 40mlAmb-NoPres-WT	V8260 40mlAmb-HCl	Pres Chk	<2	Remarks	Sample # (lab only)
MW-1	G	GW	N/A	10/8/19	1406	7	X	X	X	X				01
MW-2	G	GW	N/A	↓	1506	7	X	X	X	X				02
MW-3	G	GW	N/A	↓	1611	7	X	X	X	X				03
~~———~~		~~GW~~				7	X	X	X	X				
~~———~~		~~GW~~				7	X	X	X	X				

Chain of Custody Page 1 of 1

Pace Analytical®
National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

SDG # 114754

Ta 1145

Acctnum: HIGTEHAL

Template: T156189

Prelogin: P730923

PM: 034 - Craig Cothron

PB: TB 9-18-19

Shipped Via: FedEX Ground

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking # 120357827524

Sample Receipt Checklist

COC Seal Present/Intact:	NP	Y	N
COC Signed/Accurate:		Y	N
Bottles arrive intact:		Y	N
Correct bottles used:		Y	N
Sufficient volume sent:		Y	N
If Applicable			
VOA Zero Headspace:		Y	N
Preservation Correct/Checked:		Y	N
RAD Screen <0.5 mR/hr:		Y	N

	Date:	Time:			
Relinquished by : (Signature) Adam Hughes	10/18/19	1845	Received by: (Signature)	Trip Blank Received: (Yes) / No HCl / MeoH TBR	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 0.4-.1=0.3 °C Bottles Received: AL AS 21	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 10/9/19 Time: 8:30	Hold: Condition NCF / OK

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

November 19, 2019

Highland Technical Services, Inc.

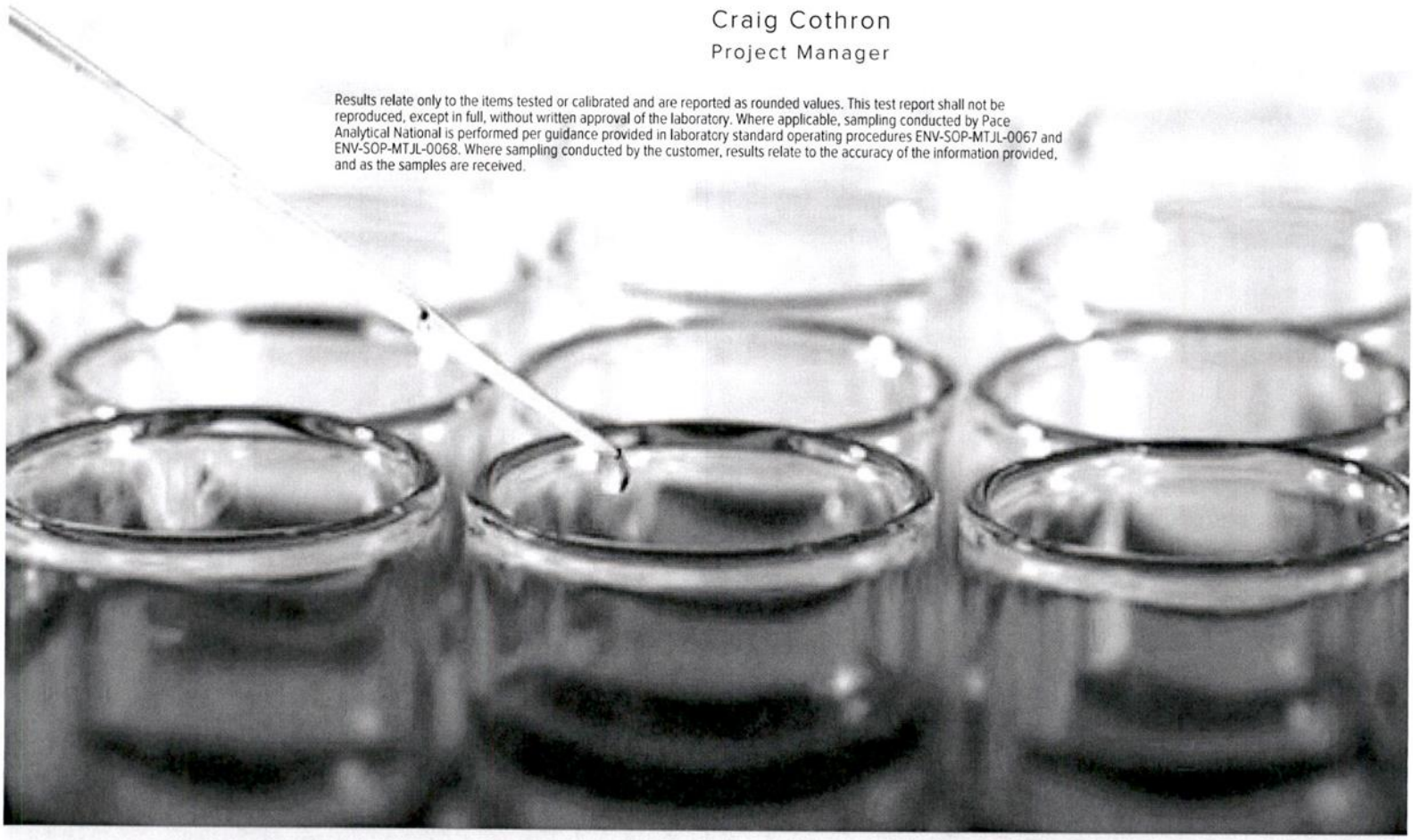
Sample Delivery Group:	L1148331
Samples Received:	10/10/2019
Project Number:	19-132114.01
Description:	Munger Site - Birmingham, AL

Report To:

Mr. David Wall
528 Mineral Trace
Hoover, AL 35244

Entire Report Reviewed By:

Craig Cothron
Project Manager



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MW-4 L1148331-01 GW

Collected by	Collected date/time	Received date/time
Adam Hughes	10/09/19 15:03	10/10/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 7199	WG1362378	1	10/15/19 17:45	10/15/19 17:45	GB	Mt. Juliet, TN
Mercury by Method 7470A	WG1366927	1	10/22/19 21:00	10/23/19 11:45	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1368674	1	10/24/19 09:38	10/24/19 12:00	CCE	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1365111	1	10/18/19 05:26	10/18/19 05:26	ACG	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1362218	3	10/13/19 16:36	10/13/19 20:49	DMG	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Craig Cothron
Project Manager

Wet Chemistry by Method 7199

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.000150	0.000500	1	10/15/2019 17:45	WG1362378

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury,Dissolved	U		0.0000490	0.000200	1	10/23/2019 11:45	WG1366927

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	U		0.00650	0.0100	1	10/24/2019 12:00	WG1368674
Barium,Dissolved	0.0333		0.00170	0.00500	1	10/24/2019 12:00	WG1368674
Cadmium,Dissolved	U		0.000700	0.00200	1	10/24/2019 12:00	WG1368674
Chromium,Dissolved	U		0.00140	0.0100	1	10/24/2019 12:00	WG1368674
Lead,Dissolved	U		0.00190	0.00500	1	10/24/2019 12:00	WG1368674
Selenium,Dissolved	U		0.00740	0.0100	1	10/24/2019 12:00	WG1368674
Silver,Dissolved	U		0.00280	0.00500	1	10/24/2019 12:00	WG1368674

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	U		0.0100	0.0500	1	10/18/2019 05:26	WG1365111
Acrolein	U		0.00887	0.0500	1	10/18/2019 05:26	WG1365111
Acrylonitrile	U		0.00187	0.0100	1	10/18/2019 05:26	WG1365111
Benzene	U		0.000331	0.00100	1	10/18/2019 05:26	WG1365111
Bromobenzene	U		0.000352	0.00100	1	10/18/2019 05:26	WG1365111
Bromodichloromethane	U		0.000380	0.00100	1	10/18/2019 05:26	WG1365111
Bromoform	U		0.000469	0.00100	1	10/18/2019 05:26	WG1365111
Bromomethane	U		0.000866	0.00500	1	10/18/2019 05:26	WG1365111
n-Butylbenzene	U		0.000361	0.00100	1	10/18/2019 05:26	WG1365111
sec-Butylbenzene	U		0.000365	0.00100	1	10/18/2019 05:26	WG1365111
tert-Butylbenzene	U		0.000399	0.00100	1	10/18/2019 05:26	WG1365111
Carbon tetrachloride	U		0.000379	0.00100	1	10/18/2019 05:26	WG1365111
Chlorobenzene	U		0.000348	0.00100	1	10/18/2019 05:26	WG1365111
Chlorodibromomethane	U		0.000327	0.00100	1	10/18/2019 05:26	WG1365111
Chloroethane	U		0.000453	0.00500	1	10/18/2019 05:26	WG1365111
Chloroform	0.000627	J	0.000324	0.00500	1	10/18/2019 05:26	WG1365111
Chloromethane	U		0.000276	0.00250	1	10/18/2019 05:26	WG1365111
2-Chlorotoluene	U		0.000375	0.00100	1	10/18/2019 05:26	WG1365111
4-Chlorotoluene	U		0.000351	0.00100	1	10/18/2019 05:26	WG1365111
1,2-Dibromo-3-Chloropropane	U		0.00133	0.00500	1	10/18/2019 05:26	WG1365111
1,2-Dibromoethane	U		0.000381	0.00100	1	10/18/2019 05:26	WG1365111
Dibromomethane	U		0.000346	0.00100	1	10/18/2019 05:26	WG1365111
1,2-Dichlorobenzene	U		0.000349	0.00100	1	10/18/2019 05:26	WG1365111
1,3-Dichlorobenzene	U		0.000220	0.00100	1	10/18/2019 05:26	WG1365111
1,4-Dichlorobenzene	U		0.000274	0.00100	1	10/18/2019 05:26	WG1365111
Dichlorodifluoromethane	U		0.000551	0.00500	1	10/18/2019 05:26	WG1365111
1,1-Dichloroethane	U		0.000259	0.00100	1	10/18/2019 05:26	WG1365111
1,2-Dichloroethane	U		0.000361	0.00100	1	10/18/2019 05:26	WG1365111
1,1-Dichloroethene	U		0.000398	0.00100	1	10/18/2019 05:26	WG1365111
cis-1,2-Dichloroethene	U		0.000260	0.00100	1	10/18/2019 05:26	WG1365111
trans-1,2-Dichloroethene	U		0.000396	0.00100	1	10/18/2019 05:26	WG1365111
1,2-Dichloropropane	U		0.000306	0.00100	1	10/18/2019 05:26	WG1365111
1,1-Dichloropropene	U		0.000352	0.00100	1	10/18/2019 05:26	WG1365111

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
1,3-Dichloropropane	U		0.000366	0.00100	1	10/18/2019 05:26	WG1365111
cis-1,3-Dichloropropene	U		0.000418	0.00100	1	10/18/2019 05:26	WG1365111
trans-1,3-Dichloropropene	U		0.000419	0.00100	1	10/18/2019 05:26	WG1365111
2,2-Dichloropropane	U		0.000321	0.00100	1	10/18/2019 05:26	WG1365111
Di-isopropyl ether	U		0.000320	0.00100	1	10/18/2019 05:26	WG1365111
Ethylbenzene	U		0.000384	0.00100	1	10/18/2019 05:26	WG1365111
Hexachloro-1,3-butadiene	U		0.000256	0.00100	1	10/18/2019 05:26	WG1365111
Isopropylbenzene	U		0.000326	0.00100	1	10/18/2019 05:26	WG1365111
p-Isopropyltoluene	U		0.000350	0.00100	1	10/18/2019 05:26	WG1365111
2-Butanone (MEK)	U		0.00393	0.0100	1	10/18/2019 05:26	WG1365111
Methylene Chloride	U		0.00100	0.00500	1	10/18/2019 05:26	WG1365111
4-Methyl-2-pentanone (MIBK)	U		0.00214	0.0100	1	10/18/2019 05:26	WG1365111
Methyl tert-butyl ether	U		0.000367	0.00100	1	10/18/2019 05:26	WG1365111
Naphthalene	U		0.00100	0.00500	1	10/18/2019 05:26	WG1365111
n-Propylbenzene	U		0.000349	0.00100	1	10/18/2019 05:26	WG1365111
Styrene	U		0.000307	0.00100	1	10/18/2019 05:26	WG1365111
1,1,1,2-Tetrachloroethane	U		0.000385	0.00100	1	10/18/2019 05:26	WG1365111
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100	1	10/18/2019 05:26	WG1365111
1,1,2-Trichlorotrifluoroethane	U		0.000303	0.00100	1	10/18/2019 05:26	WG1365111
Tetrachloroethene	U		0.000372	0.00100	1	10/18/2019 05:26	WG1365111
Toluene	U		0.000412	0.00100	1	10/18/2019 05:26	WG1365111
1,2,3-Trichlorobenzene	U		0.000230	0.00100	1	10/18/2019 05:26	WG1365111
1,2,4-Trichlorobenzene	U		0.000355	0.00100	1	10/18/2019 05:26	WG1365111
1,1,1-Trichloroethane	U		0.000319	0.00100	1	10/18/2019 05:26	WG1365111
1,1,2-Trichloroethane	U		0.000383	0.00100	1	10/18/2019 05:26	WG1365111
Trichloroethene	U		0.000398	0.00100	1	10/18/2019 05:26	WG1365111
Trichlorofluoromethane	U		0.00120	0.00500	1	10/18/2019 05:26	WG1365111
1,2,3-Trichloropropane	U		0.000807	0.00250	1	10/18/2019 05:26	WG1365111
1,2,4-Trimethylbenzene	U		0.000373	0.00100	1	10/18/2019 05:26	WG1365111
1,2,3-Trimethylbenzene	U		0.000321	0.00100	1	10/18/2019 05:26	WG1365111
1,3,5-Trimethylbenzene	U		0.000387	0.00100	1	10/18/2019 05:26	WG1365111
Vinyl chloride	U		0.000259	0.00100	1	10/18/2019 05:26	WG1365111
Xylenes, Total	U		0.00106	0.00300	1	10/18/2019 05:26	WG1365111
(S) Toluene-d8	*116*			*80.0-120*		*10/18/2019 05:26*	WG1365111
(S) 4-Bromofluorobenzene	*102*			*77.0-126*		*10/18/2019 05:26*	WG1365111
(S) 1,2-Dichloroethane-d4	*98.7*			*70.0-130*		*10/18/2019 05:26*	WG1365111

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	U		0.0000420	0.000150	3	10/13/2019 20:49	WG1362218
Acenaphthene	U		0.0000300	0.000150	3	10/13/2019 20:49	WG1362218
Acenaphthylene	U		0.0000360	0.000150	3	10/13/2019 20:49	WG1362218
Benzo(a)anthracene	U		0.0000123	0.000150	3	10/13/2019 20:49	WG1362218
Benzo(a)pyrene	U		0.0000348	0.000150	3	10/13/2019 20:49	WG1362218
Benzo(b)fluoranthene	U		0.00000636	0.000150	3	10/13/2019 20:49	WG1362218
Benzo(g,h,i)perylene	U		0.00000681	0.000150	3	10/13/2019 20:49	WG1362218
Benzo(k)fluoranthene	U		0.0000408	0.000150	3	10/13/2019 20:49	WG1362218
Chrysene	U		0.0000324	0.000150	3	10/13/2019 20:49	WG1362218
Dibenz(a,h)anthracene	U		0.0000119	0.000150	3	10/13/2019 20:49	WG1362218
Fluoranthene	U		0.0000471	0.000150	3	10/13/2019 20:49	WG1362218
Fluorene	U		0.0000255	0.000150	3	10/13/2019 20:49	WG1362218
Indeno(1,2,3-cd)pyrene	U		0.0000444	0.000150	3	10/13/2019 20:49	WG1362218
Naphthalene	U		0.0000594	0.000750	3	10/13/2019 20:49	WG1362218
Phenanthrene	U		0.0000246	0.000150	3	10/13/2019 20:49	WG1362218
Pyrene	U		0.0000351	0.000150	3	10/13/2019 20:49	WG1362218

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
1-Methylnaphthalene	U		0.0000246	0.000750	3	10/13/2019 20:49	WG1362218
2-Methylnaphthalene	U		0.0000271	0.000750	3	10/13/2019 20:49	WG1362218
2-Chloronaphthalene	U		0.0000194	0.000750	3	10/13/2019 20:49	WG1362218
(S) Nitrobenzene-d5	*96.3*			*31.0-160*		*10/13/2019 20:49*	WG1362218
(S) 2-Fluorobiphenyl	*87.4*			*48.0-148*		*10/13/2019 20:49*	WG1362218
(S) p-Terphenyl-d14	*78.5*			*37.0-146*		*10/13/2019 20:49*	WG1362218

Sample Narrative:

L1148331-01 WG1362218: Dilution due to matrix impact during extraction procedure

Method Blank (MB)

(MB) R3461361-1 10/15/19 15:02

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Hexavalent Chromium	U		0.000150	0.000500

L1147787-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1147787-01 10/15/19 16:22 • (DUP) R3461361-3 10/15/19 16:31

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Hexavalent Chromium	ND	0.000	1	0.000		20

L1148463-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1148463-04 10/15/19 19:58 • (DUP) R3461361-8 10/15/19 20:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Hexavalent Chromium	0.391	0.393	10	0.483		20

Laboratory Control Sample (LCS)

(LCS) R3461361-2 10/15/19 15:11

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Hexavalent Chromium	0.00200	0.00214	107	90.0-110	

L1147871-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1147871-01 10/15/19 17:08 • (MS) R3461361-4 10/15/19 17:16 • (MSD) R3461361-5 10/15/19 17:38

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Hexavalent Chromium	0.0500	ND	0.0446	0.0461	89.3	92.1	1	90.0-110	J6		3.12	20

L1149360-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1149360-02 10/15/19 19:29 • (MS) R3461361-7 10/15/19 19:36

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
	mg/l	mg/l	mg/l	%		%	
Hexavalent Chromium	0.0500	0.00744	0.0566	98.2	1	90.0-110	

Method Blank (MB)

(MB) R3464181-1 10/23/19 11:30

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Mercury,Dissolved	U		0.0000490	0.000200

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3464181-2 10/23/19 11:33 • (LCSD) R3464181-3 10/23/19 11:35

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Mercury,Dissolved	0.00300	0.00293	0.00300	97.8	100	80.0-120			2.30	20

L1152313-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1152313-01 10/23/19 11:38 • (MS) R3464181-4 10/23/19 11:40 • (MSD) R3464181-5 10/23/19 11:42

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	mg/l	%	%		%			%	%
Mercury,Dissolved	0.00300	U	0.00300	0.00303	100	101	1	75.0-125			0.753	20

Method Blank (MB)

(MB) R3464583-1 10/24/19 11:42

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Arsenic,Dissolved	U		0.00650	0.0100
Barium,Dissolved	U		0.00170	0.00500
Cadmium,Dissolved	U		0.000700	0.00200
Chromium,Dissolved	U		0.00140	0.0100
Lead,Dissolved	U		0.00190	0.00500
Selenium,Dissolved	U		0.00740	0.0100
Silver,Dissolved	0.00302	J	0.00280	0.00500

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3464583-2 10/24/19 11:45 • (LCSD) R3464583-3 10/24/19 11:47

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Arsenic,Dissolved	1.00	1.09	1.09	109	109	80.0-120			0.236	20
Barium,Dissolved	1.00	1.15	1.14	115	114	80.0-120			0.246	20
Cadmium,Dissolved	1.00	1.07	1.07	107	107	80.0-120			0.0456	20
Chromium,Dissolved	1.00	1.05	1.05	105	105	80.0-120			0.0482	20
Lead,Dissolved	1.00	1.09	1.08	109	108	80.0-120			0.422	20
Selenium,Dissolved	1.00	1.10	1.10	110	110	80.0-120			0.331	20
Silver,Dissolved	0.200	0.208	0.207	104	103	80.0-120			0.441	20

L1151303-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1151303-02 10/24/19 11:50 • (MS) R3464583-5 10/24/19 11:55 • (MSD) R3464583-6 10/24/19 11:58

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic,Dissolved	1.00	ND	1.15	1.11	115	111	1	75.0-125			2.94	20
Barium,Dissolved	1.00	0.0886	1.22	1.19	113	110	1	75.0-125			2.48	20
Cadmium,Dissolved	1.00	ND	1.10	1.08	110	108	1	75.0-125			2.64	20
Chromium,Dissolved	1.00	ND	1.07	1.05	106	105	1	75.0-125			1.48	20
Lead,Dissolved	1.00	ND	1.12	1.09	112	109	1	75.0-125			2.61	20
Selenium,Dissolved	1.00	ND	1.15	1.12	115	112	1	75.0-125			2.63	20
Silver,Dissolved	0.200	ND	0.215	0.211	107	106	1	75.0-125			1.73	20

Method Blank (MB)

(MB) R3462512-2 10/18/19 00:11

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0100	0.0500
Acrolein	U		0.00887	0.0500
Acrylonitrile	U		0.00187	0.0100
Benzene	U		0.000331	0.00100
Bromobenzene	U		0.000352	0.00100
Bromodichloromethane	U		0.000380	0.00100
Bromoform	U		0.000469	0.00100
Bromomethane	U		0.000866	0.00500
n-Butylbenzene	U		0.000361	0.00100
sec-Butylbenzene	U		0.000365	0.00100
tert-Butylbenzene	U		0.000399	0.00100
Carbon tetrachloride	U		0.000379	0.00100
Chlorobenzene	U		0.000348	0.00100
Chlorodibromomethane	U		0.000327	0.00100
Chloroethane	U		0.000453	0.00500
Chloroform	U		0.000324	0.00500
Chloromethane	U		0.000276	0.00250
2-Chlorotoluene	U		0.000375	0.00100
4-Chlorotoluene	U		0.000351	0.00100
1,2-Dibromo-3-Chloropropane	U		0.00133	0.00500
1,2-Dibromoethane	U		0.000381	0.00100
Dibromomethane	U		0.000346	0.00100
1,2-Dichlorobenzene	U		0.000349	0.00100
1,3-Dichlorobenzene	U		0.000220	0.00100
1,4-Dichlorobenzene	U		0.000274	0.00100
Dichlorodifluoromethane	U		0.000551	0.00500
1,1-Dichloroethane	U		0.000259	0.00100
1,2-Dichloroethane	U		0.000361	0.00100
1,1-Dichloroethene	U		0.000398	0.00100
cis-1,2-Dichloroethene	U		0.000260	0.00100
trans-1,2-Dichloroethene	U		0.000396	0.00100
1,2-Dichloropropane	U		0.000306	0.00100
1,1-Dichloropropene	U		0.000352	0.00100
1,3-Dichloropropane	U		0.000366	0.00100
cis-1,3-Dichloropropene	U		0.000418	0.00100
trans-1,3-Dichloropropene	U		0.000419	0.00100
2,2-Dichloropropane	U		0.000321	0.00100
Di-isopropyl ether	U		0.000320	0.00100
Ethylbenzene	U		0.000384	0.00100
Hexachloro-1,3-butadiene	U		0.000256	0.00100

Method Blank (MB)

(MB) R3462512-2 10/18/19 00:11

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Isopropylbenzene	U		0.000326	0.00100
p-Isopropyltoluene	U		0.000350	0.00100
2-Butanone (MEK)	U		0.00393	0.0100
Methylene Chloride	U		0.00100	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.00214	0.0100
Methyl tert-butyl ether	U		0.000367	0.00100
Naphthalene	U		0.00100	0.00500
n-Propylbenzene	U		0.000349	0.00100
Styrene	U		0.000307	0.00100
1,1,1,2-Tetrachloroethane	U		0.000385	0.00100
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100
Tetrachloroethene	0.000435	J	0.000372	0.00100
Toluene	U		0.000412	0.00100
1,1,2-Trichlorotrifluoroethane	U		0.000303	0.00100
1,2,3-Trichlorobenzene	U		0.000230	0.00100
1,2,4-Trichlorobenzene	U		0.000355	0.00100
1,1,1-Trichloroethane	U		0.000319	0.00100
1,1,2-Trichloroethane	U		0.000383	0.00100
Trichloroethene	0.000438	J	0.000398	0.00100
Trichlorofluoromethane	U		0.00120	0.00500
1,2,3-Trichloropropane	U		0.000807	0.00250
1,2,3-Trimethylbenzene	U		0.000321	0.00100
1,2,4-Trimethylbenzene	U		0.000373	0.00100
1,3,5-Trimethylbenzene	U		0.000387	0.00100
Vinyl chloride	U		0.000259	0.00100
Xylenes, Total	U		0.00106	0.00300
(S) Toluene-d8	*114*			*80.0-120*
(S) 4-Bromofluorobenzene	*105*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*99.4*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3462512-1 10/17/19 23:23

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	0.125	0.121	96.8	19.0-160	
Acrolein	0.125	0.185	148	10.0-160	
Acrylonitrile	0.125	0.108	86.4	55.0-149	
Benzene	0.0250	0.0248	99.2	70.0-123	

Laboratory Control Sample (LCS)

(LCS) R3462512-1 10/17/19 23:23

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromobenzene	0.0250	0.0202	80.8	73.0-121	
Bromodichloromethane	0.0250	0.0241	96.4	75.0-120	
Bromoform	0.0250	0.0250	100	68.0-132	
Bromomethane	0.0250	0.0277	111	10.0-160	
n-Butylbenzene	0.0250	0.0204	81.6	73.0-125	
sec-Butylbenzene	0.0250	0.0208	83.2	75.0-125	
tert-Butylbenzene	0.0250	0.0209	83.6	76.0-124	
Carbon tetrachloride	0.0250	0.0193	77.2	68.0-126	
Chlorobenzene	0.0250	0.0251	100	80.0-121	
Chlorodibromomethane	0.0250	0.0237	94.8	77.0-125	
Chloroethane	0.0250	0.0226	90.4	47.0-150	
Chloroform	0.0250	0.0245	98.0	73.0-120	
Chloromethane	0.0250	0.0278	111	41.0-142	
2-Chlorotoluene	0.0250	0.0226	90.4	76.0-123	
4-Chlorotoluene	0.0250	0.0215	86.0	75.0-122	
1,2-Dibromo-3-Chloropropane	0.0250	0.0236	94.4	58.0-134	
1,2-Dibromoethane	0.0250	0.0264	106	80.0-122	
Dibromomethane	0.0250	0.0257	103	80.0-120	
1,2-Dichlorobenzene	0.0250	0.0240	96.0	79.0-121	
1,3-Dichlorobenzene	0.0250	0.0239	95.6	79.0-120	
1,4-Dichlorobenzene	0.0250	0.0229	91.6	79.0-120	
Dichlorodifluoromethane	0.0250	0.0204	81.6	51.0-149	
1,1-Dichloroethane	0.0250	0.0229	91.6	70.0-126	
1,2-Dichloroethane	0.0250	0.0216	86.4	70.0-128	
1,1-Dichloroethene	0.0250	0.0273	109	71.0-124	
cis-1,2-Dichloroethene	0.0250	0.0251	100	73.0-120	
trans-1,2-Dichloroethene	0.0250	0.0283	113	73.0-120	
1,2-Dichloropropane	0.0250	0.0223	89.2	77.0-125	
1,1-Dichloropropene	0.0250	0.0222	88.8	74.0-126	
1,3-Dichloropropane	0.0250	0.0248	99.2	80.0-120	
cis-1,3-Dichloropropene	0.0250	0.0222	88.8	80.0-123	
trans-1,3-Dichloropropene	0.0250	0.0224	89.6	78.0-124	
2,2-Dichloropropane	0.0250	0.0180	72.0	58.0-130	
Di-isopropyl ether	0.0250	0.0179	71.6	58.0-138	
Ethylbenzene	0.0250	0.0242	96.8	79.0-123	
Hexachloro-1,3-butadiene	0.0250	0.0204	81.6	54.0-138	
Isopropylbenzene	0.0250	0.0244	97.6	76.0-127	
p-Isopropyltoluene	0.0250	0.0217	86.8	76.0-125	
2-Butanone (MEK)	0.125	0.0968	77.4	44.0-160	
Methylene Chloride	0.0250	0.0281	112	67.0-120	

Laboratory Control Sample (LCS)

(LCS) R3462512-1 10/17/19 23:23

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
4-Methyl-2-pentanone (MIBK)	0.125	0.0961	76.9	68.0-142	
Methyl tert-butyl ether	0.0250	0.0267	107	68.0-125	
Naphthalene	0.0250	0.0184	73.6	54.0-135	
n-Propylbenzene	0.0250	0.0201	80.4	77.0-124	
Styrene	0.0250	0.0266	106	73.0-130	
1,1,1,2-Tetrachloroethane	0.0250	0.0237	94.8	75.0-125	
1,1,2,2-Tetrachloroethane	0.0250	0.0205	82.0	65.0-130	
Tetrachloroethene	0.0250	0.0246	98.4	72.0-132	
Toluene	0.0250	0.0236	94.4	79.0-120	
1,1,2-Trichlorotrifluoroethane	0.0250	0.0256	102	69.0-132	
1,2,3-Trichlorobenzene	0.0250	0.0192	76.8	50.0-138	
1,2,4-Trichlorobenzene	0.0250	0.0180	72.0	57.0-137	
1,1,1-Trichloroethane	0.0250	0.0234	93.6	73.0-124	
1,1,2-Trichloroethane	0.0250	0.0255	102	80.0-120	
Trichloroethene	0.0250	0.0280	112	78.0-124	
Trichlorofluoromethane	0.0250	0.0237	94.8	59.0-147	
1,2,3-Trichloropropane	0.0250	0.0246	98.4	73.0-130	
1,2,3-Trimethylbenzene	0.0250	0.0224	89.6	77.0-120	
1,2,4-Trimethylbenzene	0.0250	0.0221	88.4	76.0-121	
1,3,5-Trimethylbenzene	0.0250	0.0201	80.4	76.0-122	
Vinyl chloride	0.0250	0.0219	87.6	67.0-131	
Xylenes, Total	0.0750	0.0748	99.7	79.0-123	
(S) Toluene-d8			*109*	*80.0-120*	
(S) 4-Bromofluorobenzene			*108*	*77.0-126*	
(S) 1,2-Dichloroethane-d4			*98.8*	*70.0-130*	

Method Blank (MB)

(MB) R3460635-3 10/13/19 20:06

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Anthracene	U		0.0000140	0.0000500
Acenaphthene	U		0.0000100	0.0000500
Acenaphthylene	U		0.0000120	0.0000500
Benzo(a)anthracene	U		0.00000410	0.0000500
Benzo(a)pyrene	U		0.0000116	0.0000500
Benzo(b)fluoranthene	U		0.00000212	0.0000500
Benzo(g,h,i)perylene	U		0.00000227	0.0000500
Benzo(k)fluoranthene	U		0.0000136	0.0000500
Chrysene	U		0.0000108	0.0000500
Dibenz(a,h)anthracene	U		0.00000396	0.0000500
Fluoranthene	U		0.0000157	0.0000500
Fluorene	U		0.00000850	0.0000500
Indeno(1,2,3-cd)pyrene	U		0.0000148	0.0000500
Naphthalene	U		0.0000198	0.000250
Phenanthrene	U		0.00000820	0.0000500
Pyrene	U		0.0000117	0.0000500
1-Methylnaphthalene	U		0.00000821	0.000250
2-Methylnaphthalene	U		0.00000902	0.000250
2-Chloronaphthalene	U		0.00000647	0.000250
(S) Nitrobenzene-d5	*102*			*31.0-160*
(S) 2-Fluorobiphenyl	*96.0*			*48.0-148*
(S) p-Terphenyl-d14	*94.0*			*37.0-146*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3460635-1 10/13/19 19:22 • (LCSD) R3460635-2 10/13/19 19:44

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Anthracene	0.00200	0.00180	0.00177	90.0	88.5	67.0-150			1.68	20
Acenaphthene	0.00200	0.00176	0.00179	88.0	89.5	65.0-138			1.69	20
Acenaphthylene	0.00200	0.00198	0.00199	99.0	99.5	66.0-140			0.504	20
Benzo(a)anthracene	0.00200	0.00185	0.00195	92.5	97.5	61.0-140			5.26	20
Benzo(a)pyrene	0.00200	0.00167	0.00176	83.5	88.0	60.0-143			5.25	20
Benzo(b)fluoranthene	0.00200	0.00152	0.00161	76.0	80.5	58.0-141			5.75	20
Benzo(g,h,i)perylene	0.00200	0.00172	0.00180	86.0	90.0	52.0-153			4.55	20
Benzo(k)fluoranthene	0.00200	0.00165	0.00173	82.5	86.5	58.0-148			4.73	20
Chrysene	0.00200	0.00172	0.00184	86.0	92.0	64.0-144			6.74	20
Dibenz(a,h)anthracene	0.00200	0.00167	0.00175	83.5	87.5	52.0-155			4.68	20
Fluoranthene	0.00200	0.00192	0.00195	96.0	97.5	69.0-153			1.55	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3460635-1 10/13/19 19:22 • (LCSD) R3460635-2 10/13/19 19:44

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Fluorene	0.00200	0.00186	0.00178	93.0	89.0	64.0-136			4.40	20
Indeno(1,2,3-cd)pyrene	0.00200	0.00166	0.00174	83.0	87.0	54.0-153			4.71	20
Naphthalene	0.00200	0.00167	0.00169	83.5	84.5	61.0-137			1.19	20
Phenanthrene	0.00200	0.00176	0.00177	88.0	88.5	62.0-137			0.567	20
Pyrene	0.00200	0.00162	0.00171	81.0	85.5	60.0-142			5.41	20
1-Methylnaphthalene	0.00200	0.00175	0.00177	87.5	88.5	66.0-142			1.14	20
2-Methylnaphthalene	0.00200	0.00166	0.00167	83.0	83.5	62.0-136			0.601	20
2-Chloronaphthalene	0.00200	0.00182	0.00183	91.0	91.5	64.0-140			0.548	20
(S) Nitrobenzene-d5				*99.5*	*100*	*31.0-160*				
(S) 2-Fluorobiphenyl				*94.0*	*93.5*	*48.0-148*				
(S) p-Terphenyl-d14				*90.0*	*91.0*	*37.0-146*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.

ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia [1]	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
Iowa	364
Kansas	E-10277
Kentucky [1 6]	90010
Kentucky [2]	16
Louisiana	AI30792
Louisiana [1]	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086
Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey–NELAP	TN002
New Mexico [1]	n/a
New York	11742
North Carolina	Env375
North Carolina [1]	DW21704
North Carolina [3]	41
North Dakota	R-140
Ohio–VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LA000356
South Carolina	84004
South Dakota	n/a
Tennessee [1 4]	2006
Texas	T104704245-18-15
Texas [5]	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA – ISO 17025 [5]	1461.02
Canada	1461.01
EPA–Crypto	TN00003
AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.

Highland Technical Services, Inc.

528 Mineral Trace
Hoover, AL 35244

Billing Information:
Accounts Payable
528 Mineral Trace
Hoover, AL 35244

Report to: Mr. David Wall

Email To: dwall@htsienv.com

Project Description: Munger Site Birmingham, AL

City/State Collected: B'ham, AL

Phone: 205-985-4874

Fax:

Client Project # 19-132114.01

Lab Project # HIGTEHAL-19132114O1

Collected by (print): Adam Hughes

Site/Facility ID #

P.O. #

Collected by (signature): Adam Hughes

Immediately
Packed on Ice N ___ Y ___

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Pres Chk

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	6010C 250ml HDPE - NoPres Dissolved	7470/7471B 120ml HDPE-NoPres Dissolved	PAHSIMLVI 40ml Amb - No Pres - WT	8260 40ml Amb - HCl
MW-4	G	GW	N/A	10/9/19	1503	7	X	X	X	X

Chain of Custody Page 1 of 1

Pace Analytical®
National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L1148331

E191

Acctnum: HIGTEHAL

Template:

Prelogin:

TSR: 034 - Craig Cothron

PB:

Shipped Via:

Remarks	Sample # (lab only)
	-01

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking # 1203 5784 7436

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N
RAD SCREEN: <0.5 mR/hr

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Adam Hughes	10/9/19	1815	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Carol Kemp

Trip Blank Received: Yes (No) HCL / MeoH TBR

Temp: A3RA °C Bottles Received: 7

20-0220

Date: 10/10/19 Time: 8:45

If preservation required by Login: Date/Time

Hold:

Condition: (NCF) / OK

TO

Troy Dunlap

Pace Analytical®
National Center for Testing & Innovation

Login #: L1148331	Client: HIGTEHAL	Date: 10/10/19	Evaluated by: Troy Dunlap

Non-Conformance (check applicable items)

	Sample Integrity		Chain of Custody Clarification		
	Parameter(s) past holding time	X	Login Clarification Needed		**If Broken Container:**
	Temperature not in range		Chain of custody is incomplete		Insufficient packing material around container
	Improper container type		Please specify Metals requested.		Insufficient packing material inside cooler
	pH not in range.		Please specify TCLP requested.		Improper handling by carrier (FedEx / UPS / Cour
	Insufficient sample volume.		Received additional samples not listed on coc.		Sample was frozen
	Sample is biphasic.		Sample ids on containers do not match ids on coc		Container lid not intact
	Vials received with headspace.		Trip Blank not received.		**If no Chain of Custody:**
	Broken container		Client did not "X" analysis.		Received by:
	Broken container:		Chain of Custody is missing		Date/Time:
	Sufficient sample remains				Temp./Cont. Rec./pH:
					Carrier:
					Tracking#

Login Comments: Dissolved metals received preserved with HNO3. COC says no pres. No metntion of being fieldm filtered. Please advise.

Client informed by:		Call	x	Email		Voice Mail		Date:10/10/19	Time:857
TSR Initials:cc	Client Contact: David Wall								

Login Instructions:

This needs to be logged for MDRCRA8 using the CR6IC container.
make sure the CR6IC is done before MDRCRA8

APPENDIX F

Default VISL Results
Resident Equation Inputs

Output generated 14NOV2019:09:03:07

Variable	Value
Exposure Scenario	Resident
Temperature for Groundwater Vapor Concentration C	25
ED_{res} (exposure duration) years	26
TR (target risk) unitless	1E-06
THQ (target hazard quotient) unitless	0.1
LT (lifetime) years	70
EF_{res} (exposure frequency) days/year	350
ED_{0-2} (mutagenic exposure duration first phase) years	2
ED_{2-6} (mutagenic exposure duration second phase) years	4
ED_{6-16} (mutagenic exposure duration third phase) years	10
ED_{16-26} (mutagenic exposure duration fourth phase) years	10
EF_{0-2} (mutagenic exposure frequency first phase) days/year	350
EF_{2-6} (mutagenic exposure frequency second phase) days/year	350
EF_{6-16} (mutagenic exposure frequency third phase) days/year	350
EF_{16-26} (mutagenic exposure frequency fourth phase) days/year	350
ET_{res} (exposure time) hours/day	24
ET_{0-2} (mutagenic exposure time first phase) hours/day	24
ET_{2-6} (mutagenic exposure time second phase) hours/day	24
ET_{6-16} (mutagenic exposure time third phase) hours/day	24
ET_{16-26} (mutagenic exposure time fourth phase) hours/day	24
AF_{gw} (Attenuation Factor Groundwater) unitless	0.001
AF_{ss} (Attenuation Factor Sub-Slab) unitless	0.03

Resident Vapor Intrusion Screening Levels (VISL)

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; U = user provided; G = see RSL User's Guide Section 5; CA = cancer; NC = noncancer.

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Soil Source? ($C_{vp} > C_{i,a}$,Target?)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Groundwater Source? ($C_{hc} > C_{i,a}$,Target?)	Target Indoor Air Concentration (TCR=1E-06 or THQ=0.1) MIN($C_{ia,c}$,$C_{ia,nc}$) (µg/m³)	Toxicity Basis	Target Sub-Slab and Near-source Soil Gas Concentration (TCR=1E-06 or THQ=0.1) C_{sg},Target (µg/m³)	Target Groundwater Concentration (TCR=1E-06 or THQ=0.1) C_{gw},Target (µg/L)	Is Target Groundwater Concentration < MCL? (C_{gw} < MCL?)
Benzene	71-43-2	Yes	Yes	Yes	Yes	3.60E-01	CA	1.20E+01	1.59E+00	Yes (5)
Ethylbenzene	100-41-4	Yes	Yes	Yes	Yes	1.12E+00	CA	3.74E+01	3.49E+00	Yes (700)
Tetrachloroethylene	127-18-4	Yes	Yes	Yes	Yes	4.17E+00	NC	1.39E+02	5.76E+00	No (5)
Toluene	108-88-3	Yes	Yes	Yes	Yes	5.21E+02	NC	1.74E+04	1.92E+03	No (1000)
Trichloroethylene	79-01-6	Yes	Yes	Yes	Yes	2.09E-01	NC	6.95E+00	5.18E-01	Yes (5)
Xylenes	1330-20-7	Yes	Yes	Yes	Yes	1.04E+01	NC	3.48E+02	3.85E+01	Yes (10000)

Chemical	Pure Phase Vapor Concentration C_{vp} \ (25 °C)\ (µg/m³)	Maximum Groundwater Vapor Concentration C_{hc} \ (µg/m³)	Temperature for Maximum Groundwater Vapor Concentration (°C)	Lower Explosive Limit LEL (% by volume)	LEL Ref	IUR (ug/m³)⁻¹	IUR Ref	RfC (mg/m³)	RfC Ref	Mutagenic Indicator	Carcinogenic VISL TCR=1E-06 $C_{ia,c}$ (µg/m³)	Noncarcinogenic VISL THQ=0.1 $C_{ia,nc}$ (µg/m³)
Benzene	3.98E+08	4.06E+08	25	1.20	CRC89	7.80E-06	I	3.00E-02	I	No	3.60E-01	3.13E+00
Ethylbenzene	5.48E+07	5.44E+07	25	0.80	CRC89	2.50E-06	C	1.00E+00	I	No	1.12E+00	1.04E+02
Tetrachloroethylene	1.65E+08	1.49E+08	25	-		2.60E-07	I	4.00E-02	I	No	1.08E+01	4.17E+00
Toluene	1.41E+08	1.43E+08	25	1.10	CRC89	-		5.00E+00	I	No	-	5.21E+02
Trichloroethylene	4.88E+08	5.15E+08	25	8.00	CRC89	4.10E-06	I	2.00E-03	I	Mut	4.78E-01	2.09E-01
Xylenes	4.56E+07	2.87E+07	25	-		-		1.00E-01	I	No	-	1.04E+01

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	MW	MW Ref	Vapor Pressure VP (mm Hg)	VP Ref	S (mg/L)	S Ref	MCL (ug/L)	HLC (atm-m³/mole)	Henry's Law Constant (unitless)
Benzene	71-43-2	Yes	Yes	78.115	PHYSPROP	9.48E+01	PHYSPROP	1.79E+03	PHYSPROP	5	5.55E-03	2.27E-01
Ethylbenzene	100-41-4	Yes	Yes	106.17	PHYSPROP	9.60E+00	PHYSPROP	1.69E+02	PHYSPROP	700	7.88E-03	3.22E-01
Tetrachloroethylene	127-18-4	Yes	Yes	165.83	PHYSPROP	1.85E+01	PHYSPROP	2.06E+02	PHYSPROP	5	1.77E-02	7.24E-01
Toluene	108-88-3	Yes	Yes	92.142	PHYSPROP	2.84E+01	PHYSPROP	5.26E+02	PHYSPROP	1000	6.64E-03	2.71E-01
Trichloroethylene	79-01-6	Yes	Yes	131.39	PHYSPROP	6.90E+01	PHYSPROP	1.28E+03	PHYSPROP	5	9.85E-03	4.03E-01
Xylenes	1330-20-7	Yes	Yes	106.17	PHYSPROP	7.99E+00	PHYSPROP	1.06E+02	PHYSPROP	10000	6.63E-03	2.71E-01

Chemical	H` and HLC Ref	Henry's Law Constant Used in Calcs (unitless)	Normal Boiling Point BP (K)	BP Ref	Critical Temperature TC (K)	TC Ref	Enthalpy of vaporization at the normal boiling point $\Delta H_{v,b}$ \ (cal/mol)	$\Delta H_{v,b}$ \ Ref	Lower Explosive Limit LEL (% by volume)	LEL Ref
Benzene	PHYSPROP	2.27E-01	353.15	PHYSPROP	5.62E+02	CRC89	7.34E+03	CRC89	1.2	CRC89
Ethylbenzene	PHYSPROP	3.22E-01	409.25	PHYSPROP	6.17E+02	CRC89	8.50E+03	CRC89	0.8	CRC89
Tetrachloroethylene	PHYSPROP	7.24E-01	394.45	PHYSPROP	6.20E+02	YAWS	8.29E+03	Weast	-	
Toluene	PHYSPROP	2.71E-01	383.75	PHYSPROP	5.92E+02	CRC89	7.93E+03	Weast	1.1	CRC89
Trichloroethylene	PHYSPROP	4.03E-01	360.35	PHYSPROP	5.71E+02	YAWS	7.51E+03	Weast	8	CRC89
Xylenes	PHYSPROP	2.71E-01	411.65	PHYSPROP	6.20E+02	YAWS	8.52E+03	Weast	-	

Default VISL Results
Commercial Equation Inputs

Output generated 14NOV2019:09:09:56

Variable	Value
Exposure Scenario	Commercial
Temperature for Groundwater Vapor Concentration C	25
THQ (target hazard quotient) unitless	0.1
TR (target risk) unitless	1E-06
AT_w (averaging time - composite worker)	365
EF_w (exposure frequency - composite worker) day/yr	250
ED_w (exposure duration - composite worker) yr	25
ET_w (exposure time - composite worker) hr	8
LT (lifetime) yr	70
AF_{gw} (Attenuation Factor Groundwater) unitless	0.001
AF_{ss} (Attenuation Factor Sub-Slab) unitless	0.03

Commercial Vapor Intrusion Screening Levels (VISL)

Key: I = IRIS; P = PPRTV; O = OPP; A = ATSDR; C = Cal EPA; X = PPRTV Screening Level; H = HEAST; D = DWSHA; W = TEF applied; E = RPF applied; U = user provided; G = see RSL User's Guide Section 5; CA = cancer; NC = noncancer.

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Soil Source? ($C_{vp} > C_{i,a}$,Target?)	Is Chemical Sufficiently Volatile and Toxic to Pose Inhalation Risk Via Vapor Intrusion from Groundwater Source? ($C_{hc} > C_{i,a}$,Target?)	Target Indoor Air Concentration (TCR=1E-06 or THQ=0.1) MIN($C_{ia,c}$,$C_{ia,nc}$) ($\mu g/m^3$)	Toxicity Basis	Target Sub-Slab and Near-source Soil Gas Concentration (TCR=1E-06 or THQ=0.1) C_{sg},Target ($\mu g/m^3$)	Target Groundwater Concentration (TCR=1E-06 or THQ=0.1) C_{gw},Target ($\mu g/L$)	Is Target Groundwater Concentration < MCL? (C_{gw} < MCL?)
Benzene	71-43-2	Yes	Yes	Yes	Yes	1.57E+00	CA	5.24E+01	6.93E+00	No (5)
Ethylbenzene	100-41-4	Yes	Yes	Yes	Yes	4.91E+00	CA	1.64E+02	1.52E+01	Yes (700)
Tetrachloroethylene	127-18-4	Yes	Yes	Yes	Yes	1.75E+01	NC	5.84E+02	2.42E+01	No (5)
Toluene	108-88-3	Yes	Yes	Yes	Yes	2.19E+03	NC	7.30E+04	8.07E+03	No (1000)
Trichloroethylene	79-01-6	Yes	Yes	Yes	Yes	8.76E-01	NC	2.92E+01	2.18E+00	Yes (5)
Xylenes	1330-20-7	Yes	Yes	Yes	Yes	4.38E+01	NC	1.46E+03	1.62E+02	Yes (10000)

Chemical	Pure Phase Vapor Concentration C_{vp} \ (25 °C)\ ($\mu g/m^3$)	Maximum Groundwater Vapor Concentration C_{hc} \ ($\mu g/m^3$)	Temperature for Maximum Groundwater Vapor Concentration (°C)	Lower Explosive Limit LEL (% by volume)	LEL Ref	IUR $(ug/m^3)^{-1}$	IUR Ref	RfC (mg/m^3)	RfC Ref	Mutagenic Indicator	Carcinogenic VISL TCR=1E-06 $C_{ia,c}$ ($\mu g/m^3$)	Noncarcinogenic VISL THQ=0.1 $C_{ia,nc}$ ($\mu g/m^3$)
Benzene	3.98E+08	4.06E+08	25	1.20	CRC89	7.80E-06	I	3.00E-02	I	No	1.57E+00	1.31E+01
Ethylbenzene	5.48E+07	5.44E+07	25	0.80	CRC89	2.50E-06	C	1.00E+00	I	No	4.91E+00	4.38E+02
Tetrachloroethylene	1.65E+08	1.49E+08	25	-		2.60E-07	I	4.00E-02	I	No	4.72E+01	1.75E+01
Toluene	1.41E+08	1.43E+08	25	1.10	CRC89	-		5.00E+00	I	No	-	2.19E+03
Trichloroethylene	4.88E+08	5.15E+08	25	8.00	CRC89	4.10E-06	I	2.00E-03	I	Mut	2.99E+00	8.76E-01
Xylenes	4.56E+07	2.87E+07	25	-		-		1.00E-01	I	No	-	4.38E+01

Chemical Properties
Output generated 14NOV2019:09:09:56

Chemical	CAS Number	Does the chemical meet the definition for volatility? (HLC>1E-5 or VP>1)	Does the chemical have inhalation toxicity data? (IUR and/or RfC)	MW	MW Ref	Vapor Pressure VP (mm Hg)	VP Ref	S (mg/L)	S Ref	MCL (ug/L)	HLC (atm-m³/mole)	Henry's Law Constant (unitless)
Benzene	71-43-2	Yes	Yes	78.115	PHYSPROP	9.48E+01	PHYSPROP	1.79E+03	PHYSPROP	5	5.55E-03	2.27E-01
Ethylbenzene	100-41-4	Yes	Yes	106.17	PHYSPROP	9.60E+00	PHYSPROP	1.69E+02	PHYSPROP	700	7.88E-03	3.22E-01
Tetrachloroethylene	127-18-4	Yes	Yes	165.83	PHYSPROP	1.85E+01	PHYSPROP	2.06E+02	PHYSPROP	5	1.77E-02	7.24E-01
Toluene	108-88-3	Yes	Yes	92.142	PHYSPROP	2.84E+01	PHYSPROP	5.26E+02	PHYSPROP	1000	6.64E-03	2.71E-01
Trichloroethylene	79-01-6	Yes	Yes	131.39	PHYSPROP	6.90E+01	PHYSPROP	1.28E+03	PHYSPROP	5	9.85E-03	4.03E-01
Xylenes	1330-20-7	Yes	Yes	106.17	PHYSPROP	7.99E+00	PHYSPROP	1.06E+02	PHYSPROP	10000	6.63E-03	2.71E-01

Chemical	H` and HLC Ref	Henry's Law Constant Used in Calcs (unitless)	Normal Boiling Point BP (K)	BP Ref	Critical Temperature TC (K)	TC Ref	Enthalpy of vaporization at the normal boiling point $\Delta H_{v,b}$ \ (cal/mol)	$\Delta H_{v,b}$ \ Ref	Lower Explosive Limit LEL (% by volume)	LEL Ref
Benzene	PHYSPROP	2.27E-01	353.15	PHYSPROP	5.62E+02	CRC89	7.34E+03	CRC89	1.2	CRC89
Ethylbenzene	PHYSPROP	3.22E-01	409.25	PHYSPROP	6.17E+02	CRC89	8.50E+03	CRC89	0.8	CRC89
Tetrachloroethylene	PHYSPROP	7.24E-01	394.45	PHYSPROP	6.20E+02	YAWS	8.29E+03	Weast	-	
Toluene	PHYSPROP	2.71E-01	383.75	PHYSPROP	5.92E+02	CRC89	7.93E+03	Weast	1.1	CRC89
Trichloroethylene	PHYSPROP	4.03E-01	360.35	PHYSPROP	5.71E+02	YAWS	7.51E+03	Weast	8	CRC89
Xylenes	PHYSPROP	2.71E-01	411.65	PHYSPROP	6.20E+02	YAWS	8.52E+03	Weast	-	