Baseline Soil and Groundwater Assessment Report

Union Reservoir

Weld County Road 28

Longmont, Colorado

December 14, 2018
Terracon Project No. 22187053

Prepared for:
City of Longmont, Colorado

Prepared by:
Terracon Consultants, Inc.
Longmont, Colorado

Terracon

December 14, 2018

City of Longmont
385 Kimbark Street
Longmont, Colorado 80501

Attn: Mr. Jason Elkins
P: (303) 651-8310
E: Jason.Elkins@longmontcolorado.gov

Re: Baseline Soil and Groundwater Assessment Report
Union Reservoir
Weld County Road 28
Longmont, Colorado
Terracon Project No. 22187053

Dear Mr. Elkins:

Terracon Consultants, Inc. (Terracon) is pleased to submit our report for Baseline Soil and Groundwater Assessment activities performed at the above referenced site. The report presents data from recent field activities that included the completion of soil borings and the collection groundwater samples for laboratory analysis. Terracon conducted this assessment in general accordance with our proposal (P22187053), dated September 20, 2018.

Terracon appreciates this opportunity to provide environmental services to the City of Longmont. Should you have any questions or require additional information, please do not hesitate to contact our office.

Sincerely,
Terracon Consultants, Inc.

Jaymee L. Binion
Staff Scientist

John C. Graves, P.G.
Regional Manager/Senior Principal

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BASELINE SOIL AND GROUNDWATER ASSESSMENT
UNION RESERVOIR
WELD COUNTY ROAD 28
LONGMONT, COLORADO

Terracon Project No. 22187053
December 14, 2018

1.0 SITE DESCRIPTION

Site Name	Union Reservoir
Site Address	South of Weld County Road 28, Longmont, Colorado
Site Description	The site is located between Weld County Road 28 to the north and Union Reservoir to the south. The site is undeveloped land sloping to the south. Surrounding areas observed to be rural agricultural land, including a dairy to the northeast. Future oil and gas operations are planned to be located to the north/northeast of the site.

A Topographic Map showing the site location is included as Exhibit 1 and a Site Diagram is included as Exhibit 2 in Appendix A.

2.0 SCOPE OF SERVICES

In 2012, Terracon was retained by the City of Longmont (City) to assess seventeen plugged and abandoned oil and gas wells located within the City limits. The objective of the 2012 assessment was to provide information concerning the plugging and abandoning of 17 oil and gas (O&G) wellheads located within the City and to assess the potential presence of surficial soil impacts, methane and other gases in the subsurface near the surveyed well locations.

Since 2017, Terracon has been assisting the City with limited soil, groundwater, and soil gas assessments of plugged and abandoned (PA) and active well sites within City limits. Terracon understands that the City of Longmont would like to expand the scope of work from the 2012 and PA projects to include assessing the condition of soil, ground water, and soil gas at future well pad locations, and soil and groundwater baseline conditions of City-owned property and sensitive receptors in areas downgradient of future O&G construction.

The sampling data will be used to establish a baseline data set for the City to assess the potential presence of surficial/subsurface soil impacts and groundwater impacts hydrologically up-gradient of Union Reservoir and potentially down-gradient from the Knight and Olander O&G well pads, being considered for construction to the north/northeast of Union Reservoir. This assessment was not intended to define the extent of potential contamination, but to assess if contaminants of

concern are present in the media in the areas of assessment prior to the installation of the proposed well pads.

2.1 Standard of Care

Terracon's services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time. Terracon makes no warranties, either express or implied, regarding the findings, conclusions, or recommendations. Please note that Terracon does not warrant the work of laboratories, regulatory agencies, or other third parties supplying information used in the preparation of the report. These services were performed in accordance with the scope of work agreed with you, our client, as reflected in our proposal and were not restricted by ASTM E1903-11.

2.2 Additional Scope Limitations

Findings, conclusions, and recommendations resulting from these services are based upon information derived from the on-site activities and other services performed under this scope of work; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, non-detectable, or not present during these services. We cannot represent that the site contains no hazardous substances, toxic materials, petroleum products, or other latent conditions beyond those identified during this assessment. Subsurface conditions may vary from those encountered at specific borings or wells or during other surveys, tests, assessments, investigations, or exploratory services. The data, interpretations, findings, and our recommendations are based solely upon data obtained at the time and within the scope of these services.

2.3 Reliance

This report has been prepared for the exclusive use of the City of Longmont, and any authorization for use or reliance by any other party (except a governmental entity having jurisdiction over the site) is prohibited without the express written authorization of the City of Longmont and Terracon. Any unauthorized distribution or reuse is at the City of Longmont's sole risk. Notwithstanding the foregoing, reliance by authorized parties will be subject to the terms, conditions, and limitations stated in the proposal, Investigation report, and Terracon's Master Services Agreement (MSA) with the City of Longmont. The limitation of liability defined in the terms and conditions of the MSA is the aggregate limit of Terracon's liability to the City of Longmont and all relying parties unless otherwise agreed in writing.

3.0 FIELD INVESTIGATION

3.1 Safety and Subsurface Utilities

Terracon is committed to the safety of all its employees. As such, and in accordance with our Incident and Injury Free® safety goals, Terracon conducted the fieldwork under a site-specific health and safety plan. The plan identified site-specific job hazards and proper pre-task planning procedures. Work was performed using Occupational Safety & Health Administration (OSHA) Level D work attire consisting of hard hats, high-visibility attire, safety glasses, protective gloves, and protective boots. Terracon contacted Colorado 811 and requested location and markings for subsurface utilities that the service was responsible for before commencing intrusive activities at the site.

3.2 Sampling and Analytical Program Summary

Four soil borings were included in the proposed scope of work for this baseline assessment. During a site visit with the client, a mutual decision was reached to reduce the scope of this assessment to three soil borings based on site access. On October 29, 2018, three soil borings (SB-01 through SB-03) were advanced utilizing hand auger methodology to depths of 7 to 8.5 feet below grade surface (bgs). These soil borings were converted to monitoring wells (MW-1 through MW-3). The sample locations were selected to generally represent the areas with the highest potential for detecting constituents of concern based on the proposed location of the well pad and the presumed groundwater flow direction towards Union Reservoir. Refer to the attached Site Diagram (Exhibit 2, Appendix A) for a depiction of the sample locations and pertinent site features. The sampling and analytical program is outlined below.

SAMPLING AND ANALYTICAL PROGRAM	
Soil Borings (Total Depth)	SB-01 (8.5 feet) SB-02 (7 feet) SB-03 (7 feet)
Groundwater	MW-01, MW-02, and MW-03
Soil Analysis	VOCs/TPH-GRO – EPA 8260 TPH-DRO/ORO – EPA 8015 PAHs – EPA 8270SIM Electrical Conductivity (EC) – EPA 9050A Sodium Adsorption Ratio (SAR) – EPA 3050B pH – EPA 9045D Metals (arsenic, barium, boron, cadmium, chromium III, chromium VI, copper, lead, mercury, nickel, selenium, silver, zinc) – EPA 200.8/6020

SAMPLING AND ANALYTICAL PROGRAM	
Groundwater Analysis	VOCs – EPA 8260 Dissolved Gases – RSK 175 Dissolved Gases CO_2 – EPA 4500CO2 D2011 Metals (arsenic, barium boron, cadmium, chromium III, chromium VI, copper, lead, mercury, nickel, selenium, silver, zinc) – EPA 200.8/6020 PAHs-8270 Total Dissolved Solids (TDS) – EPA 160.1 Chloride and Sulfate – EPA 300.0

EPA = Environmental Protection Agency; SW-846 analytical methods
VOCs = volatile organic compounds
TPH = total petroleum hydrocarbons
G/D/ORO = gasoline, diesel, and oil range organics
PAH = polycyclic aromatic hydrocarbons

3.3 Field Procedures

Soil borings were advanced by a Terracon field professional using a hand auger. The hand auger was cleaned prior to beginning the project and between each soil boring. Soil samples were collected continuously and observed to document soil lithology, color, moisture content and sensory evidence of impairment. The soil samples were field-screened at approximately 1-foot intervals using a MiniRAE photoionization detector (PID) equipped with a 10.6 electron volt ultraviolet lamp source to qualitatively evaluate the potential volatile organic vapors to indicate the presence of VOCs. Terracon calibrated the PID in accordance with the manufacturer's recommendations before the field activities.

Terracon's soil sampling program involved assigning one soil sample from each soil boring for laboratory analysis. The soil sample selected for laboratory analysis was collected from the vadose zone interval directly above the groundwater table observed during boring advancement. The soil samples were collected using Terracon standard operating procedures (SOPs) and field methods.

Following the collection of soil samples, each of the three soil borings were completed as groundwater monitoring wells. Monitoring wells were constructed to approximately 7 to 8.5 feet bgs using 1.0-inch diameter polyvinyl chloride (PVC) with approximately 4 to 6 feet of machine-slotted well screen and 2.5 to 3 feet of PVC riser pipe to the near surface. A silica sand filter pack was placed around the well screen to approximately one foot above the top of well screen, followed by a hydrated bentonite seal above the sand pack filter zone to the near surface. The monitoring wells were fitted with J-plug well caps and bolt-down, flush-mounted well covers set in concrete. Groundwater was measured at depths ranging from 2.6 to 4.5 feet bgs. On October 31, 2018; one groundwater sample was collected from each monitoring well for laboratory analysis using a new, disposable, polypropylene bailer.

Soil and groundwater samples were collected and placed in laboratory-prepared glassware containing the appropriate preservative, labeled, and placed on ice in sample coolers. The sample coolers were either released via chain-of-custody directly from the sampler to a representative of the analytical laboratory or were secured with a custody seal and shipped to the selected analytical laboratory. The sample coolers and completed chain-of-custody forms were relinquished to Pace Analytical in Mount Juliet, Tennessee for analysis for normal turnaround.

4.0 RESULTS OF THE FIELD INVESTIGATION

4.1 Geology/Hydrogeology

Ground-surfacing across the site was observed to be covered with a white powdery substance, indicative of salt accumulations in the near-surface soils. In general, the lithology encountered during boring advancement consisted primarily of clay and silty clay from the ground surface to boring termination at 7 to 8.5 feet bgs. Groundwater was encountered during drilling at approximate depths between 5 to 5.5 feet bgs. Two days following drilling activities, groundwater was observed to have risen to 2.6 to 4.5 bgs. Groundwater is assumed to flow to the south, towards Union Reservoir.

4.2 Field Screening

PID readings above 1 part per million (ppm) were not observed in soil borings completed during this investigation. Staining or odors were not noted during the field investigation.

5.0 ANALYTICAL RESULTS

The laboratory analytical reports and chain-of-custody records are attached in Appendix C. The following sections describe the results of the analytical testing performed as part of this Background Assessment. The constituents of concern concentrations were compared to the May 2016, USEPA, Residential and Industrial RSLs and January 2015 COGCC Table 910-1 (Concentration Levels) for soil. Groundwater analytical results were compared to June 30, 2016 CDPHE Groundwater Quality Standards (GWQSs) and January 2015 COGCC Table 910-1 Groundwater Concentration Levels (910-1 Levels).

5.1 Soil Sample Results

The soil analytical data and corresponding action levels are summarized in Table 1 (Appendix B).

VOC, PAH, TPH-GRO, TPH-DRO, and TPH-ORO constituents were not reported at concentrations above laboratory detection limits in the soil samples collected during this investigation.

Metal concentrations were reported above laboratory detection limits in the soil samples collected. With the exception of arsenic, reported metal concentrations were observed to be below their applicable action levels and within the expected concentrations for native soils. Arsenic was reported in the soil samples collected from SB-02 (4.13 milligrams per kilogram [mg/kg]) and SB-03 (2.67 mg/kg) above EPA RSLs and COGCC screening level. The Colorado Department of Public Health and Environment (CDPHE) recognizes that arsenic can be naturally occurring and has authored the document titled: *Risk Management Guidance for Evaluating Arsenic Concentrations in Soil*, published 2011, revised in 2014 (CDPHE, 2014). This document states that arsenic has been demonstrated to be naturally occurring in Colorado soils at concentrations significantly higher than the national average. The CDPHE developed an average background concentration of arsenic found in certain native Colorado soils averaging 11 mg/Kg with measured concentrations as low as 3 mg/Kg and as high as 19 mg/Kg. Arsenic concentrations at the site are within published background concentrations.

Physical properties of the soil including the sodium adsorption ratio (SAR), electrical conductivity (EC), and pH were also measured by the laboratory. The physical (inorganic) properties measured for each soil sample are presented below:

Inorganics in Soils

Soil Boring	SAR	EC (mS/cm)	pH
SB-01	13.4	3.10	8.83
SB-02	10.8	2.28	8.74
SB-03	**24.6**	**9.60**	8.81
COGCC Levels	Less than 12	Less than 4	6-9

The sodium adsorption ratio and electrical conductivity measured in soil boring SB-03 were observed to exceed the COGCC screening levels. The SAR levels indicate that sodium is displacing calcium and magnesium in the soil profile. The measured SAR and EC levels indicate that the ability for the soil in this area to support plant growth is limited. Clay soils, such as those observed during drilling, also tend to have higher measured EC results.

5.2 Groundwater Sample Results

The groundwater analytical data and corresponding action levels are summarized in Table 2 (Appendix B).

Dissolved boron was detected in the groundwater samples from MW-01 (1,110 micrograms per liter [µg/L]), MW-02 (1,030 µg/L), and MW-03 (2,950 µg/L); exceeding the CDPHE regulatory limit of 750 µg/L. Dissolved selenium was detected in the groundwater samples from MW-02 (465 µg/L) and MW-03 (1,240 µg/L); exceeding the CDPHE regulatory limit of 50 µg/L. Other dissolved metals detected above the laboratory detection levels were reported below their respective regulatory limits.

The VOC p-Isopropyltoluene was reported above the laboratory detection level in the groundwater sample collected from MW-01. Neither CDPHE nor COGCC have established a groundwater standard for this constituent.

PAHs fluorene and phenanthrene were detected in the groundwater samples collected during this investigation; however, neither concentrations exceeded CDPHE groundwater standards.

Inorganic constituents analyzed for the groundwater samples included total dissolved solids (TDS), chlorides, and sulfates. The COGCC has defined the groundwater standard exceedance concentrations for chloride and sulfate to be a regional background concentration with a multiplier of 1.25. Terracon utilized 2018 analytical data for chloride and sulfate from the sites sampled during the City of Longmont 2018 Annual Groundwater Quality Monitoring sampling event (Terracon Project No. 22187009) to calculate respective regional background concentrations.

As shown on Table 2, a comparison of the reported concentrations of sulfates and chlorides from this investigation to the background concentrations from previous sampling events in and around the City of Longmont appears to indicate that this area of Longmont has a much higher background concentration of chloride and sulfate than previously measured at other locations. This indicates that the background concentrations may not be applicable to this site.

For TDS, the maximum allowable concentration allowed by CDPHE is also dependent on the background level but can theoretically be any concentration. A TDS concentration of 400,000 µg/L is generally used as a maximum allowable concentration as the background level is established. TDS concentrations reported during this investigation ranged from 19,700,000 to 77,700,000 µg/L.

6.0 FINDINGS AND CONCLUSIONS

6.1 Findings

Based on the scope of services described in this report and subject to the limitations described herein, Terracon's findings include the following.

- Three soil borings (SB-01 through SB-03) were advanced to approximate depths of 7 to 8.5 feet bgs on October 29, 2018, to characterize the subsurface lithology and to collect soil and groundwater samples for laboratory analysis.
- In general, the lithology encountered during drilling consisted primarily of clay and silty clay. A white powdery precipitate was observed on the ground surface within the area of the investigation. Groundwater measurements conducted two days following drilling indicated a depth to water ranging from 2.6 to 4.5 feet bgs.
- Laboratory analysis of soil samples did not indicate elevated concentrations of constituents of concern but did indicate an elevated soil adsorption ratio and electrical conductivity in SB-03 located on the western portion of the investigation area.
- Laboratory analysis of the groundwater samples indicated the presence of VOCs and PAHs above laboratory detection levels, but below regulatory action levels.
- Laboratory analysis of groundwater samples indicated that select metals including boron and selenium were detected above regulatory action levels for groundwater for use as a domestic water supply or irrigation water. Additional metals concentrations were reported above laboratory detection levels but below regulatory action levels.
- Inorganic constituents including total dissolved solids, chlorides, and sulfates were observed to be significantly higher than previous concentrations reported in and around the City of Longmont and were observed to be the highest at MW-03 located on the western portion of the investigation area.

6.2 Conclusions

Inorganic constituent analytical data that included an elevated sodium adsorption ratio and electrical conductivity in one soil sample; apparent elevated total dissolved solids, chlorides, and sulfates in the groundwater samples; and site observations of salt accumulations on the soil surface point to this area being in an alkali area of Longmont. This can be naturally occurring as this would be considered a semi-arid region and it receives relatively little rainfall to leach

naturally-occurring salts from the soil. The observed clay soils and relatively shallow depth to groundwater could also be contributors. The observed analytical results could also be the result of agricultural activities in the area up-gradient of the site including potential over-application of composts or manure on agricultural fields to the north or over-application of magnesium chloride on County Road 28.

7.0 RECOMMENDATIONS

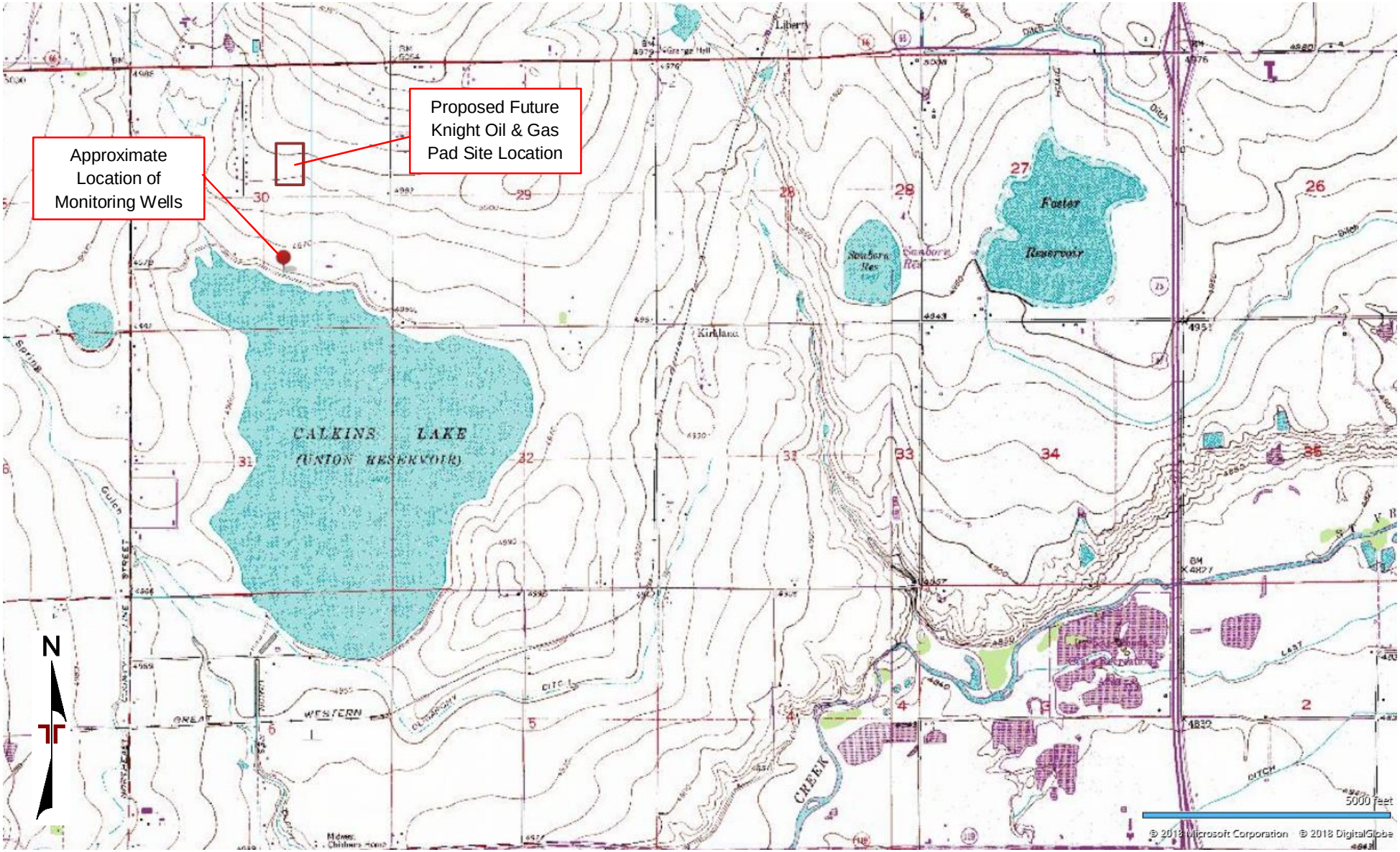
The objective of this investigation was to evaluate the presence of constituents of concern in the on-site soil and groundwater above relevant laboratory detection limits and/or regulatory limits prior to the onset of O&G operations up-gradient of the site.

Based on the scope of services, limitations, and conclusions of this assessment, Terracon recommends continued periodic groundwater monitoring to establish a baseline for the inorganic constituents reported during this investigation to establish a baseline prior to the oil and gas facilities in the area becoming operational.

APPENDIX A – EXHIBITS

Exhibit 1 – Topographic Map

Exhibit 2 – Site Diagram



TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY

Project Manager:	MJS
Drawn by:	JLB
Checked by:	MJS
Approved by:	JCG

Project No.	22187053
Scale:	SHOWN
File Name:	Site
Date:	12/5/18

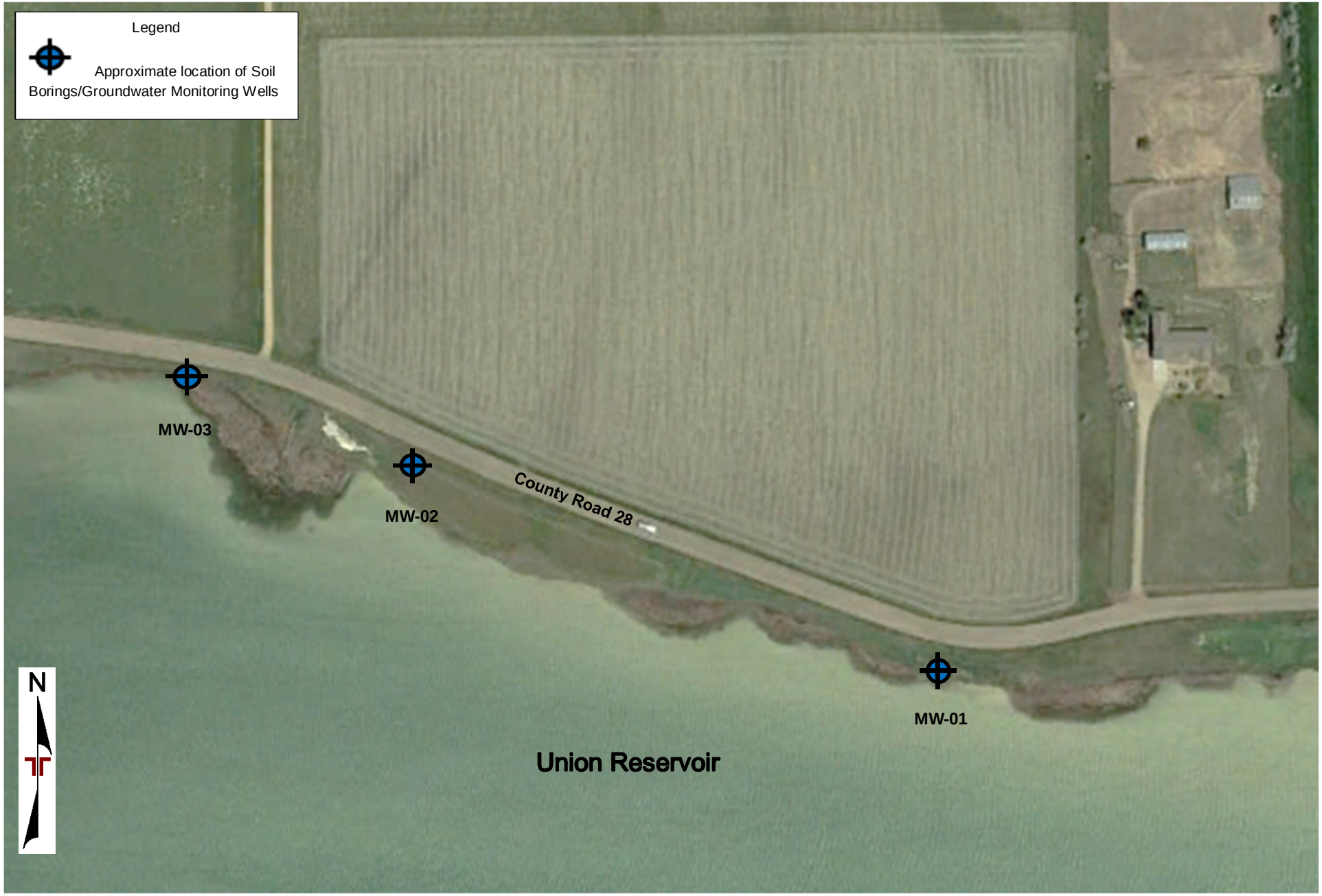
Terracon
1901 Sharp Point Dr, Ste C
Fort Collins, CO 80525-4429

TOPOGRAPHIC MAP

Union Reservoir Baseline Assessment

Weld County Road 28
Longmont, Colorado

Exhibit 1



AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	MJS
Drawn by:	JLB
Checked by:	MJS
Approved by:	JCG
Project No.	20187115
Scale:	AS SHOWN
File Name:	Site
Date:	12/5/18

Terracon
1901 Sharp Point Dr, Ste C
Fort Collins, CO 80525-4429

SITE DIAGRAM
Union Reservoir Baseline Assessment
Weld County Road 28
Longmont, Colorado

Exhibit 2

APPENDIX B – TABLES

Table 1 – Soil Analytical Summary
Table 2 – Groundwater Analytical Summary

Table 1
Summary of Soil Analytical Results
Union Reservoir Baseline Sampling
Longmont, Colorado
Terracon Project No. 22187053

Sample ID and Depth				SB-01 (5)	SB-02 (5)	SB-03 (5)
Collection Date				10/29/18	10/29/18	10/29/18
Parameter	Residential RSL	Industrial RSL	COGCC Concentration Limits	mg/kg	mg/kg	mg/kg
Metals						
Arsenic	**0.68**	**3.0**	**0.39**	<2	**4.13**	**2.67**
Barium	**15,000**	**220,000**	**15,000**	**138**	**132**	**191**
Boron	**NE**	**NE**	**NE**	**12.3**	**14.3**	**17.7**
Chromium III	**NE**	**NE**	**120,000**	**19.2**	**21**	**21.6**
Copper	**3,100**	**47,000**	**3,100**	**9.81**	**10.5**	**10.8**
Lead	**400**	**800**	**400**	**11.8**	**13.1**	**12.4**
Selenium	**390**	**5,800**	**390**	<2	**2.45**	**2.83**
Nickel	**1,500**	**22,000**	**1,600**	**15.2**	**17.9**	**17.5**
Zinc	**23,000**	**350,000**	**23,000**	**47.9**	**53.1**	**54.2**
Inorganics						
Sodium Adsorption Rate	**NE**	**NE**	**<12**	**13.4**	**10.8**	**24.6**
Electrical Conductivity (mmhos/cm)*	**NE**	**NE**	**<4**	**3.1**	**2.28**	**9.6**
pH	**NE**	**NE**	**6-9**	**8.83**	**8.74**	**8.81**

Only detected analytes shown (detected concentrations are **bold**)
RSL = EPA Regional Screening Level (November 2018)
NE = Not Established
mmhos/cm = millimhos per centimeter
* Electrical Conductivity COGCC regulatory values at <4 mmhos/cm or 2 times established background values
COGCC = Colorado Oil and Gas Conservation Comission Table 910-1 (May 2018)

Table 2
Groundwater Analytical Summary
Union Reservoir Baseline Sampling
Longmont, Colorado
Terracon Project No. 22187053

Sample ID				MW-01	MW-02	MW-03
Collection Date				10/31/18	10/31/18	10/31/18
Parameter	CDPHE Reg. 41 Groundwater - Human Health Drinking Water[1]	CDPHE Reg. 41 Groundwater - Agricultural Standard[2]	COGCC Concentration Levels[3]	µg/L	µg/L	µg/L
Metals						
Barium	**2,000**	**NE**	**NE**	**71.5**	**44.7**	**101**
Boron	**NE**	**750**	**NE**	**1,110**	**1,030**	**2,950**
Selenium	**50**	**20**	**NE**	**35.8**	**465**	**1,240**
Copper	**1,000**	**200**	**NE**	**16.7**	<10	<10
Nickel	**100**	**200**	**NE**	**10.5**	<10	<10
VOCs (8260B)						
p-Isopropyltoluene	**NE**	**NE**	**NE**	**1.22**	<1	<1
PAHs (8270)						
Fluorene	**280**	**NE**	**NE**	**0.0583**	**0.0647**	<0.05
Phenanthrene	**NE**	**NE**	**NE**	<0.05	0.0827	<0.05
Inorganic Parameters						
Total Dissolved Solids (TDS)	**400,000-no limit**	**NE**	**NE**	**20,000,000**	**19,700,000**	**77,700,000**
Chloride	**250,000**	**NE**	**76,210***	**357,000**	**569,000**	**1,830,000**
Sulfate	**250,000**	**NE**	**757,630***	**15,500,000**	**14,800,000**	**50,300,000**

1) CDPHE GW Quality Standards – Regulation 41 Table A, Ground Water Human Health Drinking Water Standards (December 2016)
2) CDPHE GW Quality Standards - Regulation 41 Table 3, Agricultural Standards
3) COGCC Concentration Levels = COGCC Table 910-1 (May 2018)

* The COGCC cleanup standard for chloride and sulfate is 1.25 x background. Background concentrations from unimpacted wells were used to average and calculate background concentrations.

Only detected analytes shown (detected concentrations are **bold**)
NE = Not Established
VOC = Volatile Organic Compounds
COGCC = Colorado Oil and Gas Conservation Comission

APPENDIX C – ANALYTICAL REPORTS AND CHAINS OF CUSTODY

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

November 07, 2018

Terracon Consultants, Inc - Longmont, CO

Sample Delivery Group:	L1039710
Samples Received:	10/31/2018
Project Number:	22187053
Description:	Union Reservoir

Report To: Michael Skridulis
1242 Bramwood Place
Longmont, CO 80501

Entire Report Reviewed By:

Olivia Studebaker
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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SB-01 (5) L1039710-01 Solid

Collected by: M. Skridulis | Collected date/time: 10/29/18 12:20 | Received date/time: 10/31/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1190126	1	11/04/18 21:47	11/05/18 17:23	ST
Calculated Results	WG1189483	1	11/01/18 13:33	11/04/18 15:19	ST
Wet Chemistry by Method 3060A/7196A	WG1190085	1	11/02/18 10:46	11/02/18 16:00	MLW
Wet Chemistry by Method 9045D	WG1190008	1	11/01/18 16:55	11/01/18 17:54	KBW
Wet Chemistry by Method 9050AMod	WG1189493	1	11/02/18 19:07	11/03/18 15:00	TCC
Mercury by Method 7471A	WG1189737	1	11/01/18 10:41	11/01/18 19:13	TCT
Metals (ICP) by Method 6010B	WG1189483	1	11/01/18 13:33	11/04/18 15:19	ST
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1191554	1	11/01/18 09:33	11/06/18 03:03	DWR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1190073	1	11/01/18 09:33	11/01/18 22:17	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1191819	1	11/05/18 20:55	11/06/18 15:52	KME
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1191152	1	11/04/18 10:56	11/04/18 21:29	DMG

SB-02 (5) L1039710-02 Solid

Collected by: M. Skridulis | Collected date/time: 10/29/18 13:05 | Received date/time: 10/31/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1190126	1	11/04/18 21:47	11/05/18 17:26	ST
Calculated Results	WG1189483	1	11/01/18 13:33	11/04/18 15:22	ST
Wet Chemistry by Method 3060A/7196A	WG1190085	1	11/02/18 10:46	11/02/18 16:00	MLW
Wet Chemistry by Method 9045D	WG1190008	1	11/01/18 16:55	11/01/18 17:54	KBW
Wet Chemistry by Method 9050AMod	WG1189493	1	11/02/18 19:07	11/03/18 15:00	TCC
Mercury by Method 7471A	WG1189737	1	11/01/18 10:41	11/01/18 19:24	TCT
Metals (ICP) by Method 6010B	WG1189483	1	11/01/18 13:33	11/04/18 15:22	ST
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1191336	1	11/01/18 09:33	11/05/18 00:58	JAH
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1190073	1	11/01/18 09:33	11/01/18 22:37	JHH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1191819	1	11/05/18 20:55	11/06/18 16:08	KME
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1191152	1	11/04/18 10:56	11/04/18 21:50	DMG

SB-03 (5) L1039710-03 Solid

Collected by: M. Skridulis | Collected date/time: 10/29/18 13:50 | Received date/time: 10/31/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1190126	1	11/04/18 21:47	11/05/18 22:30	ST
Calculated Results	WG1189483	1	11/01/18 13:33	11/04/18 15:25	ST
Wet Chemistry by Method 3060A/7196A	WG1190085	1	11/02/18 10:46	11/02/18 16:00	MLW
Wet Chemistry by Method 9045D	WG1190008	1	11/01/18 16:55	11/01/18 17:54	KBW
Wet Chemistry by Method 9050AMod	WG1189493	1	11/02/18 19:07	11/03/18 15:00	TCC
Mercury by Method 7471A	WG1189737	1	11/01/18 10:41	11/01/18 19:26	TCT
Metals (ICP) by Method 6010B	WG1189483	1	11/01/18 13:33	11/04/18 15:25	ST
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1191336	1	11/01/18 09:33	11/05/18 01:20	JAH
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1190073	1	11/01/18 09:33	11/01/18 22:57	JHH
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1192300	1	11/01/18 09:33	11/06/18 23:54	JAH
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1191819	1	11/05/18 20:55	11/06/18 16:23	KME
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1191152	1	11/04/18 10:56	11/04/18 22:11	DMG

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.

Olivia Studebaker
Project Manager

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	13.4		1	11/05/2018 17:23	WG1190126

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Trivalent	19.2		1.00	1	11/04/2018 15:19	WG1189483

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	11/02/2018 16:00	WG1190085

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.83	T8	1	11/01/2018 17:54	WG1190008

Sample Narrative:

L1039710-01 WG1190008: 8.83 at 20.3C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	3100		10.0	1	11/03/2018 15:00	WG1189493

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	11/01/2018 19:13	WG1189737

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	ND		2.00	1	11/04/2018 15:19	WG1189483
Barium	138		0.500	1	11/04/2018 15:19	WG1189483
Boron	12.3		10.0	1	11/04/2018 15:19	WG1189483
Cadmium	ND		0.500	1	11/04/2018 15:19	WG1189483
Chromium	19.2		1.00	1	11/04/2018 15:19	WG1189483
Copper	9.81		2.00	1	11/04/2018 15:19	WG1189483
Lead	11.8		0.500	1	11/04/2018 15:19	WG1189483
Nickel	15.2		2.00	1	11/04/2018 15:19	WG1189483
Selenium	ND		2.00	1	11/04/2018 15:19	WG1189483
Silver	ND		1.00	1	11/04/2018 15:19	WG1189483
Zinc	47.9		5.00	1	11/04/2018 15:19	WG1189483

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	11/06/2018 03:03	WG1191554
(S) a,a,a-Trifluorotoluene(FID)	*98.7*		*77.0-120*		*11/06/2018 03:03*	WG1191554

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND		0.0250	1	11/01/2018 22:17	WG1190073
Acrylonitrile	ND		0.0125	1	11/01/2018 22:17	WG1190073
Benzene	ND		0.00100	1	11/01/2018 22:17	WG1190073
Bromobenzene	ND		0.0125	1	11/01/2018 22:17	WG1190073
Bromodichloromethane	ND		0.00250	1	11/01/2018 22:17	WG1190073
Bromoform	ND		0.0250	1	11/01/2018 22:17	WG1190073
Bromomethane	ND		0.0125	1	11/01/2018 22:17	WG1190073
n-Butylbenzene	ND		0.0125	1	11/01/2018 22:17	WG1190073
sec-Butylbenzene	ND		0.0125	1	11/01/2018 22:17	WG1190073
tert-Butylbenzene	ND		0.00500	1	11/01/2018 22:17	WG1190073
Carbon tetrachloride	ND		0.00500	1	11/01/2018 22:17	WG1190073
Chlorobenzene	ND		0.00250	1	11/01/2018 22:17	WG1190073
Chlorodibromomethane	ND		0.00250	1	11/01/2018 22:17	WG1190073
Chloroethane	ND		0.00500	1	11/01/2018 22:17	WG1190073
Chloroform	ND		0.00250	1	11/01/2018 22:17	WG1190073
Chloromethane	ND		0.0125	1	11/01/2018 22:17	WG1190073
2-Chlorotoluene	ND		0.00250	1	11/01/2018 22:17	WG1190073
4-Chlorotoluene	ND		0.00500	1	11/01/2018 22:17	WG1190073
1,2-Dibromo-3-Chloropropane	ND		0.0250	1	11/01/2018 22:17	WG1190073
1,2-Dibromoethane	ND		0.00250	1	11/01/2018 22:17	WG1190073
Dibromomethane	ND		0.00500	1	11/01/2018 22:17	WG1190073
1,2-Dichlorobenzene	ND		0.00500	1	11/01/2018 22:17	WG1190073
1,3-Dichlorobenzene	ND		0.00500	1	11/01/2018 22:17	WG1190073
1,4-Dichlorobenzene	ND		0.00500	1	11/01/2018 22:17	WG1190073
Dichlorodifluoromethane	ND		0.00250	1	11/01/2018 22:17	WG1190073
1,1-Dichloroethane	ND		0.00250	1	11/01/2018 22:17	WG1190073
1,2-Dichloroethane	ND		0.00250	1	11/01/2018 22:17	WG1190073
1,1-Dichloroethene	ND		0.00250	1	11/01/2018 22:17	WG1190073
cis-1,2-Dichloroethene	ND		0.00250	1	11/01/2018 22:17	WG1190073
trans-1,2-Dichloroethene	ND		0.00500	1	11/01/2018 22:17	WG1190073
1,2-Dichloropropane	ND		0.00500	1	11/01/2018 22:17	WG1190073
1,1-Dichloropropene	ND		0.00250	1	11/01/2018 22:17	WG1190073
1,3-Dichloropropane	ND		0.00500	1	11/01/2018 22:17	WG1190073
cis-1,3-Dichloropropene	ND		0.00250	1	11/01/2018 22:17	WG1190073
trans-1,3-Dichloropropene	ND		0.00500	1	11/01/2018 22:17	WG1190073
2,2-Dichloropropane	ND	J4	0.00250	1	11/01/2018 22:17	WG1190073
Di-isopropyl ether	ND		0.00100	1	11/01/2018 22:17	WG1190073
Ethylbenzene	ND		0.00250	1	11/01/2018 22:17	WG1190073
Hexachloro-1,3-butadiene	ND		0.0250	1	11/01/2018 22:17	WG1190073
Isopropylbenzene	ND		0.00250	1	11/01/2018 22:17	WG1190073
p-Isopropyltoluene	ND		0.00500	1	11/01/2018 22:17	WG1190073
2-Butanone (MEK)	ND		0.0250	1	11/01/2018 22:17	WG1190073
Methylene Chloride	ND		0.0250	1	11/01/2018 22:17	WG1190073
4-Methyl-2-pentanone (MIBK)	ND		0.0250	1	11/01/2018 22:17	WG1190073
Methyl tert-butyl ether	ND	J4	0.00100	1	11/01/2018 22:17	WG1190073
Naphthalene	ND		0.0125	1	11/01/2018 22:17	WG1190073
n-Propylbenzene	ND		0.00500	1	11/01/2018 22:17	WG1190073
Styrene	ND		0.0125	1	11/01/2018 22:17	WG1190073
1,1,1,2-Tetrachloroethane	ND		0.00250	1	11/01/2018 22:17	WG1190073
1,1,2,2-Tetrachloroethane	ND		0.00250	1	11/01/2018 22:17	WG1190073
1,1,2-Trichlorotrifluoroethane	ND		0.00250	1	11/01/2018 22:17	WG1190073
Tetrachloroethene	ND		0.00250	1	11/01/2018 22:17	WG1190073
Toluene	ND		0.00500	1	11/01/2018 22:17	WG1190073
1,2,3-Trichlorobenzene	ND		0.00250	1	11/01/2018 22:17	WG1190073
1,2,4-Trichlorobenzene	ND		0.0125	1	11/01/2018 22:17	WG1190073
1,1,1-Trichloroethane	ND		0.00250	1	11/01/2018 22:17	WG1190073

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00250	1	11/01/2018 22:17	WG1190073
Trichloroethene	ND		0.00100	1	11/01/2018 22:17	WG1190073
Trichlorofluoromethane	ND		0.00250	1	11/01/2018 22:17	WG1190073
1,2,3-Trichloropropane	ND		0.0125	1	11/01/2018 22:17	WG1190073
1,2,4-Trimethylbenzene	ND		0.00500	1	11/01/2018 22:17	WG1190073
1,2,3-Trimethylbenzene	ND		0.00500	1	11/01/2018 22:17	WG1190073
1,3,5-Trimethylbenzene	ND		0.00500	1	11/01/2018 22:17	WG1190073
Vinyl chloride	ND		0.00250	1	11/01/2018 22:17	WG1190073
Xylenes, Total	ND		0.00650	1	11/01/2018 22:17	WG1190073
(S) Toluene-d8	*121*		*75.0-131*		*11/01/2018 22:17*	WG1190073
(S) Dibromofluoromethane	*99.4*		*65.0-129*		*11/01/2018 22:17*	WG1190073
(S) 4-Bromofluorobenzene	*80.4*		*67.0-138*		*11/01/2018 22:17*	WG1190073

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	11/06/2018 15:52	WG1191819
C28-C40 Oil Range	ND		4.00	1	11/06/2018 15:52	WG1191819
(S) o-Terphenyl	*69.8*		*18.0-148*		*11/06/2018 15:52*	WG1191819

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	11/04/2018 21:29	WG1191152
Acenaphthene	ND		0.00600	1	11/04/2018 21:29	WG1191152
Acenaphthylene	ND		0.00600	1	11/04/2018 21:29	WG1191152
Benzo(a)anthracene	ND		0.00600	1	11/04/2018 21:29	WG1191152
Benzo(a)pyrene	ND		0.00600	1	11/04/2018 21:29	WG1191152
Benzo(b)fluoranthene	ND		0.00600	1	11/04/2018 21:29	WG1191152
Benzo(g,h,i)perylene	ND		0.00600	1	11/04/2018 21:29	WG1191152
Benzo(k)fluoranthene	ND		0.00600	1	11/04/2018 21:29	WG1191152
Chrysene	ND		0.00600	1	11/04/2018 21:29	WG1191152
Dibenz(a,h)anthracene	ND		0.00600	1	11/04/2018 21:29	WG1191152
Fluoranthene	ND		0.00600	1	11/04/2018 21:29	WG1191152
Fluorene	ND		0.00600	1	11/04/2018 21:29	WG1191152
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	11/04/2018 21:29	WG1191152
Naphthalene	ND		0.0200	1	11/04/2018 21:29	WG1191152
Phenanthrene	ND		0.00600	1	11/04/2018 21:29	WG1191152
Pyrene	ND		0.00600	1	11/04/2018 21:29	WG1191152
1-Methylnaphthalene	ND		0.0200	1	11/04/2018 21:29	WG1191152
2-Methylnaphthalene	ND		0.0200	1	11/04/2018 21:29	WG1191152
2-Chloronaphthalene	ND		0.0200	1	11/04/2018 21:29	WG1191152
(S) p-Terphenyl-d14	*71.6*		*23.0-120*		*11/04/2018 21:29*	WG1191152
(S) Nitrobenzene-d5	*88.5*		*14.0-149*		*11/04/2018 21:29*	WG1191152
(S) 2-Fluorobiphenyl	*79.9*		*34.0-125*		*11/04/2018 21:29*	WG1191152

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	10.8		1	11/05/2018 17:26	WG1190126

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Trivalent	21.0		1.00	1	11/04/2018 15:22	WG1189483

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	11/02/2018 16:00	WG1190085

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.74	T8	1	11/01/2018 17:54	WG1190008

Sample Narrative:

L1039710-02 WG1190008: 8.74 at 20.3C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	2280		10.0	1	11/03/2018 15:00	WG1189493

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	11/01/2018 19:24	WG1189737

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	4.13		2.00	1	11/04/2018 15:22	WG1189483
Barium	132		0.500	1	11/04/2018 15:22	WG1189483
Boron	14.3		10.0	1	11/04/2018 15:22	WG1189483
Cadmium	ND		0.500	1	11/04/2018 15:22	WG1189483
Chromium	21.0		1.00	1	11/04/2018 15:22	WG1189483
Copper	10.5		2.00	1	11/04/2018 15:22	WG1189483
Lead	13.1		0.500	1	11/04/2018 15:22	WG1189483
Nickel	17.9		2.00	1	11/04/2018 15:22	WG1189483
Selenium	2.45		2.00	1	11/04/2018 15:22	WG1189483
Silver	ND		1.00	1	11/04/2018 15:22	WG1189483
Zinc	53.1		5.00	1	11/04/2018 15:22	WG1189483

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	11/05/2018 00:58	WG1191336
(S) a,a,a-Trifluorotoluene(FID)	*94.7*		*77.0-120*		*11/05/2018 00:58*	WG1191336

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND		0.0250	1	11/01/2018 22:37	WG1190073
Acrylonitrile	ND		0.0125	1	11/01/2018 22:37	WG1190073
Benzene	ND		0.00100	1	11/01/2018 22:37	WG1190073
Bromobenzene	ND		0.0125	1	11/01/2018 22:37	WG1190073
Bromodichloromethane	ND		0.00250	1	11/01/2018 22:37	WG1190073
Bromoform	ND		0.0250	1	11/01/2018 22:37	WG1190073
Bromomethane	ND		0.0125	1	11/01/2018 22:37	WG1190073
n-Butylbenzene	ND		0.0125	1	11/01/2018 22:37	WG1190073
sec-Butylbenzene	ND		0.0125	1	11/01/2018 22:37	WG1190073
tert-Butylbenzene	ND		0.00500	1	11/01/2018 22:37	WG1190073
Carbon tetrachloride	ND		0.00500	1	11/01/2018 22:37	WG1190073
Chlorobenzene	ND		0.00250	1	11/01/2018 22:37	WG1190073
Chlorodibromomethane	ND		0.00250	1	11/01/2018 22:37	WG1190073
Chloroethane	ND		0.00500	1	11/01/2018 22:37	WG1190073
Chloroform	ND		0.00250	1	11/01/2018 22:37	WG1190073
Chloromethane	ND		0.0125	1	11/01/2018 22:37	WG1190073
2-Chlorotoluene	ND		0.00250	1	11/01/2018 22:37	WG1190073
4-Chlorotoluene	ND		0.00500	1	11/01/2018 22:37	WG1190073
1,2-Dibromo-3-Chloropropane	ND		0.0250	1	11/01/2018 22:37	WG1190073
1,2-Dibromoethane	ND		0.00250	1	11/01/2018 22:37	WG1190073
Dibromomethane	ND		0.00500	1	11/01/2018 22:37	WG1190073
1,2-Dichlorobenzene	ND		0.00500	1	11/01/2018 22:37	WG1190073
1,3-Dichlorobenzene	ND		0.00500	1	11/01/2018 22:37	WG1190073
1,4-Dichlorobenzene	ND		0.00500	1	11/01/2018 22:37	WG1190073
Dichlorodifluoromethane	ND		0.00250	1	11/01/2018 22:37	WG1190073
1,1-Dichloroethane	ND		0.00250	1	11/01/2018 22:37	WG1190073
1,2-Dichloroethane	ND		0.00250	1	11/01/2018 22:37	WG1190073
1,1-Dichloroethene	ND		0.00250	1	11/01/2018 22:37	WG1190073
cis-1,2-Dichloroethene	ND		0.00250	1	11/01/2018 22:37	WG1190073
trans-1,2-Dichloroethene	ND		0.00500	1	11/01/2018 22:37	WG1190073
1,2-Dichloropropane	ND		0.00500	1	11/01/2018 22:37	WG1190073
1,1-Dichloropropene	ND		0.00250	1	11/01/2018 22:37	WG1190073
1,3-Dichloropropane	ND		0.00500	1	11/01/2018 22:37	WG1190073
cis-1,3-Dichloropropene	ND		0.00250	1	11/01/2018 22:37	WG1190073
trans-1,3-Dichloropropene	ND		0.00500	1	11/01/2018 22:37	WG1190073
2,2-Dichloropropane	ND	J4	0.00250	1	11/01/2018 22:37	WG1190073
Di-isopropyl ether	ND		0.00100	1	11/01/2018 22:37	WG1190073
Ethylbenzene	ND		0.00250	1	11/01/2018 22:37	WG1190073
Hexachloro-1,3-butadiene	ND		0.0250	1	11/01/2018 22:37	WG1190073
Isopropylbenzene	ND		0.00250	1	11/01/2018 22:37	WG1190073
p-Isopropyltoluene	ND		0.00500	1	11/01/2018 22:37	WG1190073
2-Butanone (MEK)	ND		0.0250	1	11/01/2018 22:37	WG1190073
Methylene Chloride	ND		0.0250	1	11/01/2018 22:37	WG1190073
4-Methyl-2-pentanone (MIBK)	ND		0.0250	1	11/01/2018 22:37	WG1190073
Methyl tert-butyl ether	ND	J4	0.00100	1	11/01/2018 22:37	WG1190073
Naphthalene	ND		0.0125	1	11/01/2018 22:37	WG1190073
n-Propylbenzene	ND		0.00500	1	11/01/2018 22:37	WG1190073
Styrene	ND		0.0125	1	11/01/2018 22:37	WG1190073
1,1,1,2-Tetrachloroethane	ND		0.00250	1	11/01/2018 22:37	WG1190073
1,1,2,2-Tetrachloroethane	ND		0.00250	1	11/01/2018 22:37	WG1190073
1,1,2-Trichlorotrifluoroethane	ND		0.00250	1	11/01/2018 22:37	WG1190073
Tetrachloroethene	ND		0.00250	1	11/01/2018 22:37	WG1190073
Toluene	ND		0.00500	1	11/01/2018 22:37	WG1190073
1,2,3-Trichlorobenzene	ND		0.00250	1	11/01/2018 22:37	WG1190073
1,2,4-Trichlorobenzene	ND		0.0125	1	11/01/2018 22:37	WG1190073
1,1,1-Trichloroethane	ND		0.00250	1	11/01/2018 22:37	WG1190073

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00250	1	11/01/2018 22:37	WG1190073
Trichloroethene	ND		0.00100	1	11/01/2018 22:37	WG1190073
Trichlorofluoromethane	ND		0.00250	1	11/01/2018 22:37	WG1190073
1,2,3-Trichloropropane	ND		0.0125	1	11/01/2018 22:37	WG1190073
1,2,4-Trimethylbenzene	ND		0.00500	1	11/01/2018 22:37	WG1190073
1,2,3-Trimethylbenzene	ND		0.00500	1	11/01/2018 22:37	WG1190073
1,3,5-Trimethylbenzene	ND		0.00500	1	11/01/2018 22:37	WG1190073
Vinyl chloride	ND		0.00250	1	11/01/2018 22:37	WG1190073
Xylenes, Total	ND		0.00650	1	11/01/2018 22:37	WG1190073
(S) Toluene-d8	*124*		*75.0-131*		*11/01/2018 22:37*	WG1190073
(S) Dibromofluoromethane	*101*		*65.0-129*		*11/01/2018 22:37*	WG1190073
(S) 4-Bromofluorobenzene	*84.6*		*67.0-138*		*11/01/2018 22:37*	WG1190073

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	11/06/2018 16:08	WG1191819
C28-C40 Oil Range	ND		4.00	1	11/06/2018 16:08	WG1191819
(S) o-Terphenyl	*61.8*		*18.0-148*		*11/06/2018 16:08*	WG1191819

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	11/04/2018 21:50	WG1191152
Acenaphthene	ND		0.00600	1	11/04/2018 21:50	WG1191152
Acenaphthylene	ND		0.00600	1	11/04/2018 21:50	WG1191152
Benzo(a)anthracene	ND		0.00600	1	11/04/2018 21:50	WG1191152
Benzo(a)pyrene	ND		0.00600	1	11/04/2018 21:50	WG1191152
Benzo(b)fluoranthene	ND		0.00600	1	11/04/2018 21:50	WG1191152
Benzo(g,h,i)perylene	ND		0.00600	1	11/04/2018 21:50	WG1191152
Benzo(k)fluoranthene	ND		0.00600	1	11/04/2018 21:50	WG1191152
Chrysene	ND		0.00600	1	11/04/2018 21:50	WG1191152
Dibenz(a,h)anthracene	ND		0.00600	1	11/04/2018 21:50	WG1191152
Fluoranthene	ND		0.00600	1	11/04/2018 21:50	WG1191152
Fluorene	ND		0.00600	1	11/04/2018 21:50	WG1191152
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	11/04/2018 21:50	WG1191152
Naphthalene	ND		0.0200	1	11/04/2018 21:50	WG1191152
Phenanthrene	ND		0.00600	1	11/04/2018 21:50	WG1191152
Pyrene	ND		0.00600	1	11/04/2018 21:50	WG1191152
1-Methylnaphthalene	ND		0.0200	1	11/04/2018 21:50	WG1191152
2-Methylnaphthalene	ND		0.0200	1	11/04/2018 21:50	WG1191152
2-Chloronaphthalene	ND		0.0200	1	11/04/2018 21:50	WG1191152
(S) p-Terphenyl-d14	*72.8*		*23.0-120*		*11/04/2018 21:50*	WG1191152
(S) Nitrobenzene-d5	*86.1*		*14.0-149*		*11/04/2018 21:50*	WG1191152
(S) 2-Fluorobiphenyl	*79.2*		*34.0-125*		*11/04/2018 21:50*	WG1191152

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	24.6		1	11/05/2018 22:30	WG1190126

Calculated Results

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Trivalent	21.6		1.00	1	11/04/2018 15:25	WG1189483

Wet Chemistry by Method 3060A/7196A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	11/02/2018 16:00	WG1190085

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.81	T8	1	11/01/2018 17:54	WG1190008

Sample Narrative:

L1039710-03 WG1190008: 8.81 at 20.2C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	9600		10.0	1	11/03/2018 15:00	WG1189493

Mercury by Method 7471A

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	11/01/2018 19:26	WG1189737

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	2.67		2.00	1	11/04/2018 15:25	WG1189483
Barium	191		0.500	1	11/04/2018 15:25	WG1189483
Boron	17.7		10.0	1	11/04/2018 15:25	WG1189483
Cadmium	ND		0.500	1	11/04/2018 15:25	WG1189483
Chromium	21.6		1.00	1	11/04/2018 15:25	WG1189483
Copper	10.8		2.00	1	11/04/2018 15:25	WG1189483
Lead	12.4		0.500	1	11/04/2018 15:25	WG1189483
Nickel	17.5		2.00	1	11/04/2018 15:25	WG1189483
Selenium	2.83		2.00	1	11/04/2018 15:25	WG1189483
Silver	ND		1.00	1	11/04/2018 15:25	WG1189483
Zinc	54.2		5.00	1	11/04/2018 15:25	WG1189483

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	11/05/2018 01:20	WG1191336
(S) a,a,a-Trifluorotoluene(FID)	*94.1*		*77.0-120*		*11/05/2018 01:20*	WG1191336

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Acetone	ND		0.0250	1	11/01/2018 22:57	WG1190073
Acrylonitrile	ND		0.0125	1	11/01/2018 22:57	WG1190073
Benzene	ND		0.00100	1	11/06/2018 23:54	WG1192300
Bromobenzene	ND		0.0125	1	11/01/2018 22:57	WG1190073
Bromodichloromethane	ND		0.00250	1	11/01/2018 22:57	WG1190073
Bromoform	ND		0.0250	1	11/01/2018 22:57	WG1190073
Bromomethane	ND		0.0125	1	11/01/2018 22:57	WG1190073
n-Butylbenzene	ND		0.0125	1	11/01/2018 22:57	WG1190073
sec-Butylbenzene	ND		0.0125	1	11/01/2018 22:57	WG1190073
tert-Butylbenzene	ND		0.00500	1	11/01/2018 22:57	WG1190073
Carbon tetrachloride	ND		0.00500	1	11/01/2018 22:57	WG1190073
Chlorobenzene	ND		0.00250	1	11/01/2018 22:57	WG1190073
Chlorodibromomethane	ND		0.00250	1	11/01/2018 22:57	WG1190073
Chloroethane	ND		0.00500	1	11/01/2018 22:57	WG1190073
Chloroform	ND		0.00250	1	11/01/2018 22:57	WG1190073
Chloromethane	ND		0.0125	1	11/01/2018 22:57	WG1190073
2-Chlorotoluene	ND		0.00250	1	11/01/2018 22:57	WG1190073
4-Chlorotoluene	ND		0.00500	1	11/01/2018 22:57	WG1190073
1,2-Dibromo-3-Chloropropane	ND		0.0250	1	11/01/2018 22:57	WG1190073
1,2-Dibromoethane	ND		0.00250	1	11/01/2018 22:57	WG1190073
Dibromomethane	ND		0.00500	1	11/01/2018 22:57	WG1190073
1,2-Dichlorobenzene	ND		0.00500	1	11/01/2018 22:57	WG1190073
1,3-Dichlorobenzene	ND		0.00500	1	11/01/2018 22:57	WG1190073
1,4-Dichlorobenzene	ND		0.00500	1	11/01/2018 22:57	WG1190073
Dichlorodifluoromethane	ND		0.00250	1	11/01/2018 22:57	WG1190073
1,1-Dichloroethane	ND		0.00250	1	11/01/2018 22:57	WG1190073
1,2-Dichloroethane	ND		0.00250	1	11/01/2018 22:57	WG1190073
1,1-Dichloroethene	ND		0.00250	1	11/01/2018 22:57	WG1190073
cis-1,2-Dichloroethene	ND		0.00250	1	11/01/2018 22:57	WG1190073
trans-1,2-Dichloroethene	ND		0.00500	1	11/01/2018 22:57	WG1190073
1,2-Dichloropropane	ND		0.00500	1	11/01/2018 22:57	WG1190073
1,1-Dichloropropene	ND		0.00250	1	11/01/2018 22:57	WG1190073
1,3-Dichloropropane	ND		0.00500	1	11/01/2018 22:57	WG1190073
cis-1,3-Dichloropropene	ND		0.00250	1	11/01/2018 22:57	WG1190073
trans-1,3-Dichloropropene	ND		0.00500	1	11/01/2018 22:57	WG1190073
2,2-Dichloropropane	ND	J4	0.00250	1	11/01/2018 22:57	WG1190073
Di-isopropyl ether	ND		0.00100	1	11/01/2018 22:57	WG1190073
Ethylbenzene	ND		0.00250	1	11/01/2018 22:57	WG1190073
Hexachloro-1,3-butadiene	ND		0.0250	1	11/01/2018 22:57	WG1190073
Isopropylbenzene	ND		0.00250	1	11/01/2018 22:57	WG1190073
p-Isopropyltoluene	ND		0.00500	1	11/01/2018 22:57	WG1190073
2-Butanone (MEK)	ND		0.0250	1	11/01/2018 22:57	WG1190073
Methylene Chloride	ND		0.0250	1	11/01/2018 22:57	WG1190073
4-Methyl-2-pentanone (MIBK)	ND		0.0250	1	11/01/2018 22:57	WG1190073
Methyl tert-butyl ether	ND	J4	0.00100	1	11/01/2018 22:57	WG1190073
Naphthalene	ND		0.0125	1	11/01/2018 22:57	WG1190073
n-Propylbenzene	ND		0.00500	1	11/01/2018 22:57	WG1190073
Styrene	ND		0.0125	1	11/01/2018 22:57	WG1190073
1,1,1,2-Tetrachloroethane	ND		0.00250	1	11/01/2018 22:57	WG1190073
1,1,2,2-Tetrachloroethane	ND		0.00250	1	11/01/2018 22:57	WG1190073
1,1,2-Trichlorotrifluoroethane	ND		0.00250	1	11/01/2018 22:57	WG1190073
Tetrachloroethene	ND		0.00250	1	11/01/2018 22:57	WG1190073
Toluene	ND		0.00500	1	11/01/2018 22:57	WG1190073
1,2,3-Trichlorobenzene	ND		0.00250	1	11/01/2018 22:57	WG1190073
1,2,4-Trichlorobenzene	ND		0.0125	1	11/01/2018 22:57	WG1190073
1,1,1-Trichloroethane	ND		0.00250	1	11/01/2018 22:57	WG1190073

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00250	1	11/01/2018 22:57	WG1190073
Trichloroethene	ND		0.00100	1	11/01/2018 22:57	WG1190073
Trichlorofluoromethane	ND		0.00250	1	11/01/2018 22:57	WG1190073
1,2,3-Trichloropropane	ND		0.0125	1	11/01/2018 22:57	WG1190073
1,2,4-Trimethylbenzene	ND		0.00500	1	11/01/2018 22:57	WG1190073
1,2,3-Trimethylbenzene	ND		0.00500	1	11/01/2018 22:57	WG1190073
1,3,5-Trimethylbenzene	ND		0.00500	1	11/01/2018 22:57	WG1190073
Vinyl chloride	ND		0.00250	1	11/01/2018 22:57	WG1190073
Xylenes, Total	ND		0.00650	1	11/01/2018 22:57	WG1190073
(S) Toluene-d8	*126*		*75.0-131*		*11/01/2018 22:57*	WG1190073
(S) Toluene-d8	*97.2*		*75.0-131*		*11/06/2018 23:54*	WG1192300
(S) Dibromofluoromethane	*99.4*		*65.0-129*		*11/01/2018 22:57*	WG1190073
(S) Dibromofluoromethane	*122*		*65.0-129*		*11/06/2018 23:54*	WG1192300
(S) 4-Bromofluorobenzene	*84.1*		*67.0-138*		*11/01/2018 22:57*	WG1190073
(S) 4-Bromofluorobenzene	*104*		*67.0-138*		*11/06/2018 23:54*	WG1192300

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	ND		4.00	1	11/06/2018 16:23	WG1191819
C28-C40 Oil Range	ND		4.00	1	11/06/2018 16:23	WG1191819
(S) o-Terphenyl	*79.4*		*18.0-148*		*11/06/2018 16:23*	WG1191819

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

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Anthracene	ND		0.00600	1	11/04/2018 22:11	WG1191152
Acenaphthene	ND		0.00600	1	11/04/2018 22:11	WG1191152
Acenaphthylene	ND		0.00600	1	11/04/2018 22:11	WG1191152
Benzo(a)anthracene	ND		0.00600	1	11/04/2018 22:11	WG1191152
Benzo(a)pyrene	ND		0.00600	1	11/04/2018 22:11	WG1191152
Benzo(b)fluoranthene	ND		0.00600	1	11/04/2018 22:11	WG1191152
Benzo(g,h,i)perylene	ND		0.00600	1	11/04/2018 22:11	WG1191152
Benzo(k)fluoranthene	ND		0.00600	1	11/04/2018 22:11	WG1191152
Chrysene	ND		0.00600	1	11/04/2018 22:11	WG1191152
Dibenz(a,h)anthracene	ND		0.00600	1	11/04/2018 22:11	WG1191152
Fluoranthene	ND		0.00600	1	11/04/2018 22:11	WG1191152
Fluorene	ND		0.00600	1	11/04/2018 22:11	WG1191152
Indeno(1,2,3-cd)pyrene	ND		0.00600	1	11/04/2018 22:11	WG1191152
Naphthalene	ND		0.0200	1	11/04/2018 22:11	WG1191152
Phenanthrene	ND		0.00600	1	11/04/2018 22:11	WG1191152
Pyrene	ND		0.00600	1	11/04/2018 22:11	WG1191152
1-Methylnaphthalene	ND		0.0200	1	11/04/2018 22:11	WG1191152
2-Methylnaphthalene	ND		0.0200	1	11/04/2018 22:11	WG1191152
2-Chloronaphthalene	ND		0.0200	1	11/04/2018 22:11	WG1191152
(S) p-Terphenyl-d14	*76.0*		*23.0-120*		*11/04/2018 22:11*	WG1191152
(S) Nitrobenzene-d5	*88.2*		*14.0-149*		*11/04/2018 22:11*	WG1191152
(S) 2-Fluorobiphenyl	*80.4*		*34.0-125*		*11/04/2018 22:11*	WG1191152

Method Blank (MB)

(MB) R3356436-1 11/02/18 15:50

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Chromium,Hexavalent	U		0.640	2.00

L1039204-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1039204-04 11/02/18 15:52 • (DUP) R3356436-3 11/02/18 15:52

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

L1039719-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1039719-01 11/02/18 16:01 • (DUP) R3356436-8 11/02/18 16:02

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

Laboratory Control Sample (LCS)

(LCS) R3356436-2 11/02/18 15:51

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chromium,Hexavalent	24.0	23.0	95.8	80.0-120	

L1039278-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1039278-04 11/02/18 15:55 • (MS) R3356436-4 11/02/18 15:56 • (MSD) R3356436-5 11/02/18 15:56

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chromium,Hexavalent	23.3	U	15.8	16.1	68.0	69.2	1	75.0-125	J6	J6	1.75	20

L1039278-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1039278-04 11/02/18 15:55 • (MS) R3356436-7 11/02/18 15:57

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chromium,Hexavalent	794	U	781	98.3	50	75.0-125	

L1039670-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1039670-05 11/01/18 17:54 • (DUP) R3356129-2 11/01/18 17:54

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	8.41	8.37	1	0.477		1

Sample Narrative:

OS: 8.41 at 20.7C

DUP: 8.37 at 20.5C

L1039742-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1039742-02 11/01/18 17:54 • (DUP) R3356129-3 11/01/18 17:54

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	6.05	6.02	1	0.497		1

Sample Narrative:

OS: 6.05 at 20.2C

DUP: 6.02 at 19.9C

Laboratory Control Sample (LCS)

(LCS) R3356129-1 11/01/18 17:54

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	9.95	99.5	99.0-101	

Sample Narrative:

LCS: 9.95 at 18.7C

Method Blank (MB)

(MB) R3356621-1 11/03/18 15:00

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	umhos/cm		umhos/cm	umhos/cm
Specific Conductance	U		10.0	10.0

L1039204-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1039204-06 11/03/18 15:00 • (DUP) R3356621-3 11/03/18 15:00

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	umhos/cm	umhos/cm		%		%
Specific Conductance	10300	10400	1	0.966		20

Laboratory Control Sample (LCS)

(LCS) R3356621-2 11/03/18 15:00

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	umhos/cm	umhos/cm	%	%	
Specific Conductance	1160	1170	101	85.0-115	

Method Blank (MB)

(MB) R3356158-1 11/01/18 18:55

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Mercury	U		0.00280	0.0200

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

(LCS) R3356158-2 11/01/18 18:58 • (LCSD) R3356158-3 11/01/18 19:00

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 %
Mercury	0.300	0.242	0.242	80.5	80.8	80.0-120			0.301	20

L1039759-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1039759-03 11/01/18 19:03 • (MS) R3356158-4 11/01/18 19:05 • (MSD) R3356158-5 11/01/18 19:08

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 %
Mercury	0.300	0.0236	0.216	0.229	64.2	68.3	1	75.0-125	J6	J6	5.46	20

Method Blank (MB)

(MB) R3356764-1 11/04/18 14:40

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
Boron	U		1.26	10.0
Cadmium	U		0.0700	0.500
Chromium	U		0.140	1.00
Copper	U		0.530	2.00
Lead	U		0.190	0.500
Nickel	U		0.490	2.00
Selenium	U		0.620	2.00
Silver	U		0.120	1.00
Zinc	U		0.590	5.00

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

(LCS) R3356764-2 11/04/18 14:42 • (LCSD) R3356764-3 11/04/18 14:45

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	101	101	101	101	80.0-120			0.601	20
Barium	100	103	103	103	103	80.0-120			0.0200	20
Boron	100	95.6	96.1	95.6	96.1	80.0-120			0.527	20
Cadmium	100	102	102	102	102	80.0-120			0.00246	20
Chromium	100	95.8	96.6	95.8	96.6	80.0-120			0.821	20
Copper	100	97.1	97.8	97.1	97.8	80.0-120			0.676	20
Lead	100	99.0	99.3	99.0	99.3	80.0-120			0.316	20
Nickel	100	99.2	99.3	99.2	99.3	80.0-120			0.131	20
Selenium	100	101	101	101	101	80.0-120			0.127	20
Silver	20.0	17.8	18.0	88.8	89.8	80.0-120			1.13	20
Zinc	100	99.0	99.0	99.0	99.0	80.0-120			0.0345	20

L1039694-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1039694-01 11/04/18 14:47 • (MS) R3356764-6 11/04/18 14:55 • (MSD) R3356764-7 11/04/18 14:58

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	106	U	98.9	99.9	93.0	93.9	1	75.0-125			1.02	20
Barium	106	98.8	205	216	99.8	110	1	75.0-125			5.13	20
Boron	106	U	93.4	93.9	87.9	88.3	1	75.0-125			0.482	20
Cadmium	106	0.120	101	102	95.3	95.9	1	75.0-125			0.630	20

L1039694-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1039694-01 11/04/18 14:47 • (MS) R3356764-6 11/04/18 14:55 • (MSD) R3356764-7 11/04/18 14:58

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chromium	106	19.0	111	115	86.1	89.9	1	75.0-125			3.57	20
Copper	106	8.00	110	111	95.9	96.4	1	75.0-125			0.496	20
Lead	106	60.3	164	168	97.5	101	1	75.0-125			2.42	20
Nickel	106	4.71	110	111	98.7	100	1	75.0-125			1.34	20
Selenium	106	U	98.3	99.0	92.5	93.2	1	75.0-125			0.743	20
Silver	21.3	U	18.1	18.1	85.2	85.0	1	75.0-125			0.319	20
Zinc	106	77.8	171	173	87.7	89.7	1	75.0-125			1.25	20

Method Blank (MB)

(MB) R3356926-3 11/04/18 20:30

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0463	J	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*98.2*			*77.0-120*

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

(LCS) R3356926-1 11/04/18 19:24 • (LCSD) R3356926-2 11/04/18 19:46

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 %
TPH (GC/FID) Low Fraction	5.50	5.75	5.58	104	101	72.0-127			2.91	20
(S) a,a,a-Trifluorotoluene(FID)				*102*	*102*	*77.0-120*				

L1039465-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1039465-01 11/05/18 05:03 • (MS) R3356926-4 11/05/18 05:25 • (MSD) R3356926-5 11/05/18 05:47

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 %
TPH (GC/FID) Low Fraction	5.50	ND	50.1	52.4	34.3	35.9	26	10.0-151			4.55	28
(S) a,a,a-Trifluorotoluene(FID)					*94.4*	*94.6*		*77.0-120*				

Sample Narrative:

OS: Only received a MEOH vial.

Method Blank (MB)

(MB) R3357277-3 11/06/18 01:02

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	*100*			*77.0-120*

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

(LCS) R3357277-1 11/05/18 23:49 • (LCSD) R3357277-2 11/06/18 00:13

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 %
TPH (GC/FID) Low Fraction	5.50	5.81	5.74	106	104	72.0-127			1.20	20
(S) a,a,a-Trifluorotoluene(FID)				*105*	*105*	*77.0-120*				

Method Blank (MB)

(MB) R3357449-2 11/01/18 20:46

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	0.000967	J	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) R3357449-2 11/01/18 20:46

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	*125*			*75.0-131*
(S) Dibromofluoromethane	*98.2*			*65.0-129*
(S) 4-Bromofluorobenzene	*84.2*			*67.0-138*

Laboratory Control Sample (LCS)

(LCS) R3357449-1 11/01/18 19:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acetone	0.625	0.692	111	10.0-160	
Acrylonitrile	0.625	0.677	108	45.0-153	
Benzene	0.125	0.126	101	70.0-123	
Bromobenzene	0.125	0.115	92.3	73.0-121	
Bromodichloromethane	0.125	0.124	99.5	73.0-121	

Laboratory Control Sample (LCS)

(LCS) R3357449-1 11/01/18 19:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromoform	0.125	0.0839	67.1	64.0-132	
Bromomethane	0.125	0.135	108	56.0-147	
n-Butylbenzene	0.125	0.129	103	68.0-135	
sec-Butylbenzene	0.125	0.128	102	74.0-130	
tert-Butylbenzene	0.125	0.121	97.1	75.0-127	
Carbon tetrachloride	0.125	0.121	97.2	66.0-128	
Chlorobenzene	0.125	0.125	99.7	76.0-128	
Chlorodibromomethane	0.125	0.107	86.0	74.0-127	
Chloroethane	0.125	0.131	105	61.0-134	
Chloroform	0.125	0.138	111	72.0-123	
Chloromethane	0.125	0.133	106	51.0-138	
2-Chlorotoluene	0.125	0.116	92.6	75.0-124	
4-Chlorotoluene	0.125	0.124	99.0	75.0-124	
1,2-Dibromo-3-Chloropropane	0.125	0.112	90.0	59.0-130	
1,2-Dibromoethane	0.125	0.126	101	74.0-128	
Dibromomethane	0.125	0.126	101	75.0-122	
1,2-Dichlorobenzene	0.125	0.138	110	76.0-124	
1,3-Dichlorobenzene	0.125	0.124	99.6	76.0-125	
1,4-Dichlorobenzene	0.125	0.117	93.9	77.0-121	
Dichlorodifluoromethane	0.125	0.149	120	43.0-156	
1,1-Dichloroethane	0.125	0.145	116	70.0-127	
1,2-Dichloroethane	0.125	0.118	94.5	65.0-131	
1,1-Dichloroethene	0.125	0.136	108	65.0-131	
cis-1,2-Dichloroethene	0.125	0.145	116	73.0-125	
trans-1,2-Dichloroethene	0.125	0.133	106	71.0-125	
1,2-Dichloropropane	0.125	0.130	104	74.0-125	
1,1-Dichloropropene	0.125	0.130	104	73.0-125	
1,3-Dichloropropane	0.125	0.131	105	80.0-125	
cis-1,3-Dichloropropene	0.125	0.117	94.0	76.0-127	
trans-1,3-Dichloropropene	0.125	0.107	86.0	73.0-127	
2,2-Dichloropropane	0.125	0.176	140	59.0-135	J4
Di-isopropyl ether	0.125	0.141	113	60.0-136	
Ethylbenzene	0.125	0.147	118	74.0-126	
Hexachloro-1,3-butadiene	0.125	0.133	107	57.0-150	
Isopropylbenzene	0.125	0.119	94.9	72.0-127	
p-Isopropyltoluene	0.125	0.128	103	72.0-133	
2-Butanone (MEK)	0.625	0.601	96.1	30.0-160	
Methylene Chloride	0.125	0.135	108	68.0-123	
4-Methyl-2-pentanone (MIBK)	0.625	0.665	106	56.0-143	
Methyl tert-butyl ether	0.125	0.166	133	66.0-132	J4

Laboratory Control Sample (LCS)

(LCS) R3357449-1 11/01/18 19:36

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Naphthalene	0.125	0.155	124	59.0-130	
n-Propylbenzene	0.125	0.120	96.3	74.0-126	
Styrene	0.125	0.0991	79.3	72.0-127	
1,1,1,2-Tetrachloroethane	0.125	0.137	110	74.0-129	
1,1,2,2-Tetrachloroethane	0.125	0.119	94.9	68.0-128	
Tetrachloroethene	0.125	0.144	115	70.0-136	
Toluene	0.125	0.141	113	75.0-121	
1,1,2-Trichlorotrifluoroethane	0.125	0.153	122	61.0-139	
1,2,3-Trichlorobenzene	0.125	0.171	136	59.0-139	
1,2,4-Trichlorobenzene	0.125	0.142	113	62.0-137	
1,1,1-Trichloroethane	0.125	0.126	101	69.0-126	
1,1,2-Trichloroethane	0.125	0.134	107	78.0-123	
Trichloroethene	0.125	0.106	84.9	76.0-126	
Trichlorofluoromethane	0.125	0.153	123	61.0-142	
1,2,3-Trichloropropane	0.125	0.122	97.6	67.0-129	
1,2,3-Trimethylbenzene	0.125	0.130	104	74.0-124	
1,2,4-Trimethylbenzene	0.125	0.123	98.2	70.0-126	
1,3,5-Trimethylbenzene	0.125	0.121	96.7	73.0-127	
Vinyl chloride	0.125	0.132	106	63.0-134	
Xylenes, Total	0.375	0.407	109	72.0-127	
(S) Toluene-d8			*113*	*75.0-131*	
(S) Dibromofluoromethane			*110*	*65.0-129*	
(S) 4-Bromofluorobenzene			*87.3*	*67.0-138*	

L1039759-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1039759-03 11/02/18 02:00 • (MS) R3357449-3 11/01/18 21:06 • (MSD) R3357449-4 11/01/18 21:36

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acetone	0.751	U	0.653	0.686	86.9	91.4	1	10.0-160			5.02	40
Acrylonitrile	0.751	U	0.589	0.602	78.5	80.2	1	10.0-160			2.18	40
Benzene	0.150	0.000667	0.120	0.124	79.2	82.1	1	10.0-149			3.58	37
Bromobenzene	0.150	U	0.101	0.111	67.6	74.2	1	10.0-156			9.32	38
Bromodichloromethane	0.150	U	0.115	0.119	76.6	79.3	1	10.0-143			3.53	37
Bromoform	0.150	U	0.0699	0.0749	46.5	49.9	1	10.0-146			6.96	36
Bromomethane	0.150	U	0.0752	0.0843	50.1	56.1	1	10.0-149			11.4	38
n-Butylbenzene	0.150	U	0.122	0.134	81.5	89.5	1	10.0-160			9.38	40
sec-Butylbenzene	0.150	U	0.123	0.130	81.8	86.5	1	10.0-159			5.63	39
tert-Butylbenzene	0.150	U	0.111	0.119	74.1	79.4	1	10.0-156			7.00	39

L1039759-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1039759-03 11/02/18 02:00 • (MS) R3357449-3 11/01/18 21:06 • (MSD) R3357449-4 11/01/18 21:36

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Carbon tetrachloride	0.150	U	0.108	0.109	71.6	72.8	1	10.0-145			1.61	37
Chlorobenzene	0.150	U	0.117	0.127	77.8	84.3	1	10.0-152			8.01	39
Chlorodibromomethane	0.150	U	0.0916	0.100	61.0	66.9	1	10.0-146			9.24	37
Chloroethane	0.150	U	0.0869	0.0874	57.8	58.2	1	10.0-146			0.618	40
Chloroform	0.150	U	0.124	0.128	82.3	85.2	1	10.0-146			3.47	37
Chloromethane	0.150	U	0.120	0.111	79.8	73.6	1	10.0-159			8.08	37
2-Chlorotoluene	0.150	U	0.104	0.110	69.5	73.5	1	10.0-159			5.59	38
4-Chlorotoluene	0.150	U	0.109	0.117	72.3	78.2	1	10.0-155			7.89	39
1,2-Dibromo-3-Chloropropane	0.150	U	0.0852	0.0899	56.7	59.8	1	10.0-151			5.40	39
1,2-Dibromoethane	0.150	U	0.114	0.120	75.6	79.9	1	10.0-148			5.46	34
Dibromomethane	0.150	U	0.115	0.119	76.5	79.1	1	10.0-147			3.40	35
1,2-Dichlorobenzene	0.150	U	0.124	0.132	82.3	88.1	1	10.0-155			6.73	37
1,3-Dichlorobenzene	0.150	U	0.117	0.125	77.6	83.3	1	10.0-153			7.12	38
1,4-Dichlorobenzene	0.150	U	0.110	0.120	73.4	80.2	1	10.0-151			8.91	38
Dichlorodifluoromethane	0.150	U	0.181	0.155	120	103	1	10.0-160			15.7	35
1,1-Dichloroethane	0.150	U	0.126	0.133	83.9	88.7	1	10.0-147			5.54	37
1,2-Dichloroethane	0.150	U	0.109	0.113	72.8	75.3	1	10.0-148			3.39	35
1,1-Dichloroethene	0.150	U	0.116	0.122	77.5	81.5	1	10.0-155			4.96	37
cis-1,2-Dichloroethene	0.150	U	0.127	0.131	84.9	87.5	1	10.0-149			3.01	37
trans-1,2-Dichloroethene	0.150	U	0.116	0.122	77.1	81.3	1	10.0-150			5.37	37
1,2-Dichloropropane	0.150	U	0.130	0.125	86.6	82.9	1	10.0-148			4.37	37
1,1-Dichloropropene	0.150	U	0.121	0.118	80.5	78.5	1	10.0-153			2.41	35
1,3-Dichloropropane	0.150	U	0.122	0.133	81.4	88.3	1	10.0-154			8.20	35
cis-1,3-Dichloropropene	0.150	U	0.105	0.118	70.2	78.5	1	10.0-151			11.2	37
trans-1,3-Dichloropropene	0.150	U	0.0991	0.105	66.0	70.1	1	10.0-148			5.99	37
2,2-Dichloropropane	0.150	U	0.145	0.160	96.7	106	1	10.0-138			9.47	36
Di-isopropyl ether	0.150	U	0.122	0.133	81.4	88.8	1	10.0-147			8.72	36
Ethylbenzene	0.150	U	0.136	0.140	90.5	93.3	1	10.0-160			2.98	38
Hexachloro-1,3-butadiene	0.150	U	0.126	0.145	83.6	96.8	1	10.0-160			14.6	40
Isopropylbenzene	0.150	U	0.109	0.117	72.8	77.6	1	10.0-155			6.39	38
p-Isopropyltoluene	0.150	U	0.122	0.131	81.4	87.2	1	10.0-160			6.85	40
2-Butanone (MEK)	0.751	U	0.605	0.638	80.5	84.9	1	10.0-160			5.33	40
Methylene Chloride	0.150	U	0.121	0.127	80.5	84.4	1	10.0-141			4.73	37
4-Methyl-2-pentanone (MIBK)	0.751	U	0.544	0.550	72.5	73.2	1	10.0-160			1.02	35
Methyl tert-butyl ether	0.150	U	0.144	0.148	95.8	98.2	1	11.0-147			2.53	35
Naphthalene	0.150	U	0.133	0.137	88.4	91.4	1	10.0-160			3.33	36
n-Propylbenzene	0.150	U	0.109	0.118	72.7	78.4	1	10.0-158			7.62	38
Styrene	0.150	U	0.0919	0.103	61.2	68.8	1	10.0-160			11.7	40
1,1,1,2-Tetrachloroethane	0.150	U	0.120	0.123	79.7	81.9	1	10.0-149			2.67	39

L1039759-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1039759-03 11/02/18 02:00 • (MS) R3357449-3 11/01/18 21:06 • (MSD) R3357449-4 11/01/18 21:36

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
1,1,2,2-Tetrachloroethane	0.150	U	0.101	0.105	67.5	70.0	1	10.0-160			3.62	35
Tetrachloroethene	0.150	U	0.142	0.153	94.8	102	1	10.0-156			7.34	39
Toluene	0.150	U	0.138	0.144	91.8	95.7	1	10.0-156			4.18	38
1,1,2-Trichlorotrifluoroethane	0.150	U	0.126	0.129	83.9	86.1	1	10.0-160			2.59	36
1,2,3-Trichlorobenzene	0.150	U	0.154	0.171	103	114	1	10.0-160			10.5	40
1,2,4-Trichlorobenzene	0.150	U	0.129	0.141	85.9	94.1	1	10.0-160			9.18	40
1,1,1-Trichloroethane	0.150	U	0.109	0.113	72.3	75.2	1	10.0-144			3.98	35
1,1,2-Trichloroethane	0.150	U	0.121	0.136	80.5	90.3	1	10.0-160			11.5	35
Trichloroethene	0.150	U	0.0983	0.0995	65.5	66.2	1	10.0-156			1.17	38
Trichlorofluoromethane	0.150	U	0.132	0.138	88.0	91.8	1	10.0-160			4.24	40
1,2,3-Trichloropropane	0.150	U	0.104	0.103	68.9	68.3	1	10.0-156			0.974	35
1,2,3-Trimethylbenzene	0.150	U	0.109	0.117	72.9	77.6	1	10.0-160			6.32	36
1,2,4-Trimethylbenzene	0.150	U	0.109	0.119	72.6	78.9	1	10.0-160			8.33	36
1,3,5-Trimethylbenzene	0.150	U	0.108	0.117	71.9	77.7	1	10.0-160			7.74	38
Vinyl chloride	0.150	U	0.0604	0.0611	40.2	40.7	1	10.0-160			1.05	37
Xylenes, Total	0.451	U	0.374	0.385	82.9	85.3	1	10.0-160			2.85	38
(S) Toluene-d8					*112*	*119*		*75.0-131*				
(S) Dibromofluoromethane					*94.8*	*105*		*65.0-129*				
(S) 4-Bromofluorobenzene					*83.0*	*88.9*		*67.0-138*				

Method Blank (MB)

(MB) R3357599-2 11/06/18 23:24

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000400	0.00100
(S) Toluene-d8	*98.3*			*75.0-131*
(S) Dibromofluoromethane	*122*			*65.0-129*
(S) 4-Bromofluorobenzene	*101*			*67.0-138*

Laboratory Control Sample (LCS)

(LCS) R3357599-1 11/06/18 21:59

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.132	106	70.0-123	
(S) Toluene-d8			*97.8*	*75.0-131*	
(S) Dibromofluoromethane			*121*	*65.0-129*	
(S) 4-Bromofluorobenzene			*101*	*67.0-138*	

Method Blank (MB)

(MB) R3357494-1 11/06/18 15:09

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	*83.2*			*18.0-148*

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

(LCS) R3357494-2 11/06/18 15:22 • (LCSD) R3357494-3 11/06/18 15:38

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 %
C10-C28 Diesel Range	50.0	32.1	34.6	64.2	69.2	50.0-150			7.50	20
(S) o-Terphenyl				*80.6*	*91.0*	*18.0-148*				

Method Blank (MB)

(MB) R3356952-3 11/04/18 19:43

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	*89.8*			*14.0-149*
(S) 2-Fluorobiphenyl	*83.6*			*34.0-125*
(S) p-Terphenyl-d14	*76.3*			*23.0-120*

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

(LCS) R3356952-1 11/04/18 19:00 • (LCSD) R3356952-2 11/04/18 19:22

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 %
Anthracene	0.0800	0.0662	0.0640	82.8	80.0	50.0-126			3.38	20
Acenaphthene	0.0800	0.0643	0.0629	80.4	78.6	50.0-120			2.20	20
Acenaphthylene	0.0800	0.0653	0.0638	81.6	79.8	50.0-120			2.32	20
Benzo(a)anthracene	0.0800	0.0629	0.0606	78.6	75.8	45.0-120			3.72	20
Benzo(a)pyrene	0.0800	0.0540	0.0506	67.5	63.3	42.0-120			6.50	20
Benzo(b)fluoranthene	0.0800	0.0597	0.0616	74.6	77.0	42.0-121			3.13	20
Benzo(g,h,i)perylene	0.0800	0.0621	0.0598	77.6	74.8	45.0-125			3.77	20
Benzo(k)fluoranthene	0.0800	0.0685	0.0638	85.6	79.8	49.0-125			7.11	20
Chrysene	0.0800	0.0674	0.0654	84.3	81.8	49.0-122			3.01	20
Dibenz(a,h)anthracene	0.0800	0.0626	0.0607	78.3	75.9	47.0-125			3.08	20
Fluoranthene	0.0800	0.0723	0.0700	90.4	87.5	49.0-129			3.23	20

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

(LCS) R3356952-1 11/04/18 19:00 • (LCSD) R3356952-2 11/04/18 19:22

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 %
Fluorene	0.0800	0.0636	0.0626	79.5	78.3	49.0-120			1.58	20
Indeno(1,2,3-cd)pyrene	0.0800	0.0633	0.0614	79.1	76.8	46.0-125			3.05	20
Naphthalene	0.0800	0.0631	0.0614	78.9	76.8	50.0-120			2.73	20
Phenanthrene	0.0800	0.0653	0.0629	81.6	78.6	47.0-120			3.74	20
Pyrene	0.0800	0.0608	0.0585	76.0	73.1	43.0-123			3.86	20
1-Methylnaphthalene	0.0800	0.0672	0.0658	84.0	82.3	51.0-121			2.11	20
2-Methylnaphthalene	0.0800	0.0623	0.0605	77.9	75.6	50.0-120			2.93	20
2-Chloronaphthalene	0.0800	0.0656	0.0645	82.0	80.6	50.0-120			1.69	20
(S) Nitrobenzene-d5				*92.6*	*95.7*	*14.0-149*				
(S) 2-Fluorobiphenyl				*83.9*	*87.4*	*34.0-125*				
(S) p-Terphenyl-d14				*77.6*	*78.9*	*23.0-120*				

L1039723-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1039723-01 11/05/18 01:42 • (MS) R3356952-4 11/05/18 02:04 • (MSD) R3356952-5 11/05/18 02:25

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Anthracene	0.0932	ND	0.0795	0.0626	85.4	67.3	1	10.0-145			23.8	30
Acenaphthene	0.0932	ND	0.0735	0.0589	78.9	63.3	1	14.0-127			22.0	27
Acenaphthylene	0.0932	ND	0.0752	0.0600	80.7	64.4	1	21.0-124			22.6	25
Benzo(a)anthracene	0.0932	ND	0.0718	0.0554	77.1	59.5	1	10.0-139			25.8	30
Benzo(a)pyrene	0.0932	ND	0.0738	0.0583	79.3	62.6	1	10.0-141			23.4	31
Benzo(b)fluoranthene	0.0932	ND	0.0687	0.0571	73.8	61.3	1	10.0-140			18.5	36
Benzo(g,h,i)perylene	0.0932	ND	0.0684	0.0532	73.4	57.1	1	10.0-140			24.9	33
Benzo(k)fluoranthene	0.0932	ND	0.0749	0.0571	80.4	61.3	1	10.0-137			27.0	31
Chrysene	0.0932	ND	0.0750	0.0590	80.5	63.4	1	10.0-145			23.8	30
Dibenz(a,h)anthracene	0.0932	ND	0.0701	0.0541	75.3	58.1	1	10.0-132			25.7	31
Fluoranthene	0.0932	ND	0.0837	0.0653	89.9	70.1	1	10.0-153			24.7	33
Fluorene	0.0932	ND	0.0722	0.0579	77.5	62.1	1	11.0-130			22.0	29
Indeno(1,2,3-cd)pyrene	0.0932	ND	0.0696	0.0540	74.8	58.0	1	10.0-137			25.2	32
Naphthalene	0.0932	ND	0.0734	0.0589	78.8	63.3	1	10.0-135			21.8	27
Phenanthrene	0.0932	ND	0.0744	0.0586	79.9	62.9	1	10.0-144			23.8	31
Pyrene	0.0932	ND	0.0695	0.0548	74.6	58.9	1	10.0-148			23.6	35
1-Methylnaphthalene	0.0932	ND	0.0774	0.0617	83.1	66.3	1	10.0-142			22.6	28
2-Methylnaphthalene	0.0932	ND	0.0711	0.0566	76.4	60.8	1	10.0-137			22.8	28
2-Chloronaphthalene	0.0932	ND	0.0755	0.0612	81.0	65.8	1	29.0-120			20.8	24
(S) Nitrobenzene-d5					*95.2*	*79.0*		*14.0-149*				
(S) 2-Fluorobiphenyl					*86.7*	*73.4*		*34.0-125*				
(S) p-Terphenyl-d14					*79.4*	*64.5*		*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.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
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.
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.
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.
T8	Sample(s) received past/too close to holding time expiration.

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	T 104704245-17-14
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

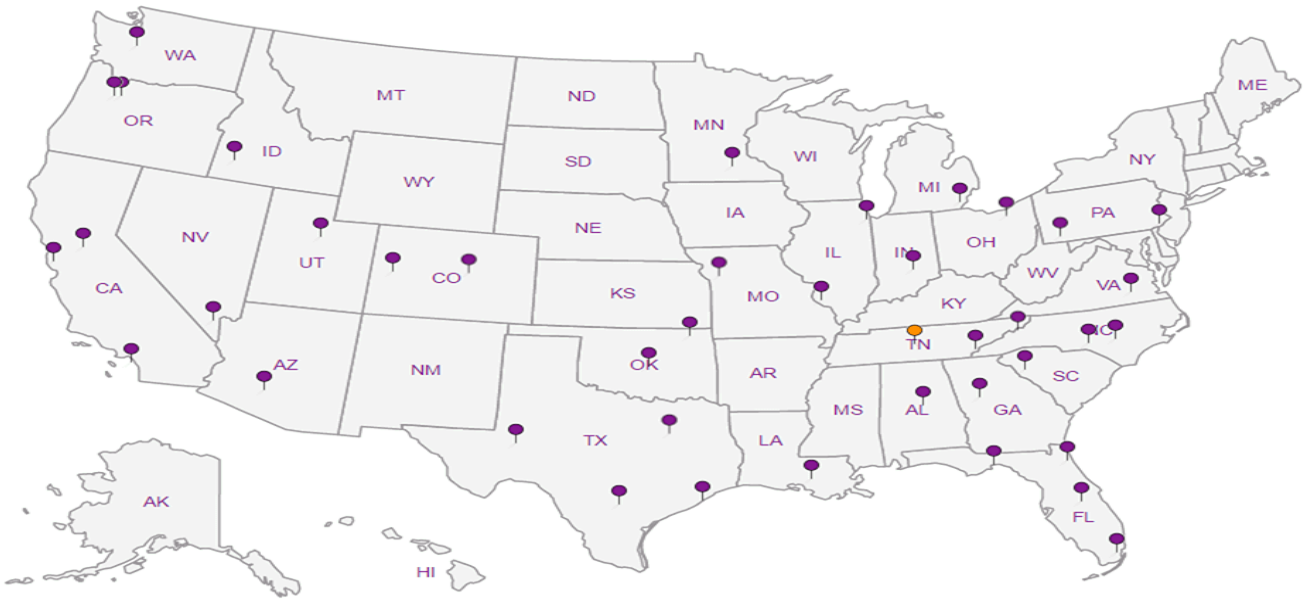
Third Party Federal Accreditations

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.



Terracon - Longmont
12831 Lefthand Circle, Suite C
Longmont, CO 80501

Billing Information: **Same as Address**

Pres Chk

Analysis / Container / Preservative

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

Report to: Mike Skridulis
Email To: mike.skridulis@terracon.com
Project Description: **Union Reservoir**
City/State Collected: Longmont, CO
Phone: **303-454-5249**
Fax: **970-484-0454**
Client Project # **22187053**
Lab Project #
Collected by (print): M.Skridulis
Site/Facility ID #
P.O. #
Collected by (signature): M.S
Immediately Packed on Ice N ___ Y X
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: STANDARD

L# L1039710
E032
Acctnum: **TERRALCO**
Template:
Prelogin:
TSR: **Daphne Richards**
PB:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC8260, TPH-GRO - 4oz Soil Jar	TPH-DRO/TPH-ORO - 4oz Soil Jar	PAHSIM - 4oz Soil Jar	SPCON, pH - 4oz Soil Jar	SAR - 4oz Soil Jar	Metals - 4oz Soil Jar * See Remarks	Remarks	Sample # (lab only)
SB-01 (5)	G	SS	5	10/29/18	1220	4	X	X	X	X	X	X		-01
SB-02 (5)	↓	↓	↓	↓	1305	4	X	X	X	X	X	X		02
SB-03 (5)	↓	↓	↓	↓	1350	4	X	X	X	X	X	X		03

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

Remarks: * Metals: Arsenic, barium, boron, cadmium, chrom III, chrome VI, copper, lead, mercury, nickel, selenium, silver, zinc
pH _____ Temp _____
Flow _____ Other _____

Samples returned via: __ UPS __ FedEx __ Courier _____
Tracking # 4510 1654 8124

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)	Trip Blank Received: Yes / (No) HCL / MeoH TBR	If preservation required by Login: Date/Time
M.S / TT	10/30/18	1600			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 1.2 °C Bottles Received: 12	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) SCL	Date: 10/31/18 Time: 8:45	Hold: Condition: NCF / (OK)

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

November 09, 2018

Terracon Consultants, Inc - Longmont, CO

Sample Delivery Group:	L1040168
Samples Received:	11/01/2018
Project Number:	22187053
Description:	Union Reservior

Report To: Michael Skridulis
1242 Bramwood Place
Longmont, CO 80501

Entire Report Reviewed By:

Olivia Studebaker
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

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MW-01 L1040168-01 GW

Collected by: Charles Covington
Collected date/time: 10/31/18 11:55
Received date/time: 11/01/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1190852	1	11/04/18 08:00	11/04/18 11:31	ST
Gravimetric Analysis by Method 2540 C-2011	WG1192072	1	11/07/18 17:26	11/07/18 18:20	MMF
Wet Chemistry by Method 4500CO2 D-2011	WG1191793	1	11/07/18 13:25	11/07/18 13:25	GB
Wet Chemistry by Method 7196A	WG1190723	1	11/02/18 18:30	11/02/18 18:30	MLW
Wet Chemistry by Method 9056A	WG1190237	10	11/02/18 23:35	11/02/18 23:35	ELN
Wet Chemistry by Method 9056A	WG1190237	500	11/03/18 10:40	11/03/18 10:40	ELN
Mercury by Method 7470A	WG1191176	1	11/05/18 11:43	11/05/18 17:50	TCT
Metals (ICP) by Method 6010B	WG1190852	1	11/04/18 08:00	11/04/18 11:31	ST
Metals (ICP) by Method 6010B	WG1190863	1	11/03/18 15:06	11/05/18 13:27	ST
Volatile Organic Compounds (GC) by Method RSK175	WG1190587	1	11/03/18 07:43	11/03/18 07:43	MEL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1190163	1	11/02/18 03:19	11/02/18 03:19	PP
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1192224	1	11/07/18 07:25	11/07/18 16:39	CJR

MW-02 L1040168-02 GW

Collected by: Charles Covington
Collected date/time: 10/31/18 12:35
Received date/time: 11/01/18 08:45

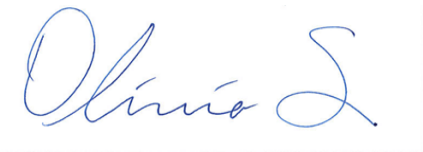
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1190852	1	11/04/18 08:00	11/04/18 11:45	ST
Gravimetric Analysis by Method 2540 C-2011	WG1192072	1	11/07/18 17:26	11/07/18 18:20	MMF
Wet Chemistry by Method 4500CO2 D-2011	WG1191793	1	11/07/18 13:34	11/07/18 13:34	GB
Wet Chemistry by Method 7196A	WG1190723	1	11/02/18 18:30	11/02/18 18:30	MLW
Wet Chemistry by Method 9056A	WG1190237	10	11/03/18 00:11	11/03/18 00:11	ELN
Wet Chemistry by Method 9056A	WG1190237	500	11/03/18 10:57	11/03/18 10:57	ELN
Mercury by Method 7470A	WG1191176	1	11/05/18 11:43	11/05/18 17:52	TCT
Metals (ICP) by Method 6010B	WG1190852	1	11/04/18 08:00	11/04/18 11:45	ST
Metals (ICP) by Method 6010B	WG1190863	1	11/03/18 15:06	11/05/18 13:30	ST
Volatile Organic Compounds (GC) by Method RSK175	WG1190587	1	11/03/18 07:47	11/03/18 07:47	MEL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1190163	1	11/02/18 03:41	11/02/18 03:41	PP
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1192224	1	11/07/18 07:25	11/07/18 17:01	CJR

MW-03 L1040168-03 GW

Collected by: Charles Covington
Collected date/time: 10/31/18 13:25
Received date/time: 11/01/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG1190852	1	11/04/18 08:00	11/04/18 11:48	ST
Gravimetric Analysis by Method 2540 C-2011	WG1192072	1	11/07/18 17:26	11/07/18 18:20	MMF
Wet Chemistry by Method 4500CO2 D-2011	WG1191793	1	11/07/18 13:42	11/07/18 13:42	GB
Wet Chemistry by Method 7196A	WG1190723	1	11/02/18 18:31	11/02/18 18:31	MLW
Wet Chemistry by Method 9056A	WG1190237	1000	11/03/18 11:42	11/03/18 11:42	ELN
Wet Chemistry by Method 9056A	WG1190237	20	11/03/18 00:48	11/03/18 00:48	ELN
Mercury by Method 7470A	WG1191176	1	11/05/18 11:43	11/05/18 17:55	TCT
Metals (ICP) by Method 6010B	WG1190852	1	11/04/18 08:00	11/04/18 11:48	ST
Metals (ICP) by Method 6010B	WG1190863	10	11/03/18 15:06	11/05/18 22:38	ST
Volatile Organic Compounds (GC) by Method RSK175	WG1190587	1	11/03/18 07:53	11/03/18 07:53	MEL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1190163	1	11/02/18 04:03	11/02/18 04:03	PP
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1192224	1	11/07/18 07:25	11/07/18 17:23	CJR

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.



Olivia Studebaker
Project Manager

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chromium,Trivalent	ND		0.0100	1	11/04/2018 11:31	WG1190852

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Dissolved Solids	20000		200	1	11/07/2018 18:20	WG1192072

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Free Carbon Dioxide	ND	T8	20.0	1	11/07/2018 13:25	WG1191793

Sample Narrative:

L1040168-01 WG1191793: Endpoint pH 4.5

Wet Chemistry by Method 7196A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND	T8	0.0100	1	11/02/2018 18:30	WG1190723

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloride	357		10.0	10	11/02/2018 23:35	WG1190237
Sulfate	15500		2500	500	11/03/2018 10:40	WG1190237

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury,Dissolved	ND		0.000200	1	11/05/2018 17:50	WG1191176

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	ND		0.0100	1	11/05/2018 13:27	WG1190863
Barium,Dissolved	0.0715		0.00500	1	11/05/2018 13:27	WG1190863
Boron,Dissolved	1.11		0.200	1	11/05/2018 13:27	WG1190863
Cadmium,Dissolved	ND		0.00200	1	11/05/2018 13:27	WG1190863
Chromium	ND		0.0100	1	11/04/2018 11:31	WG1190852
Chromium,Dissolved	ND		0.0100	1	11/05/2018 13:27	WG1190863
Copper,Dissolved	0.0167		0.0100	1	11/05/2018 13:27	WG1190863
Lead,Dissolved	ND		0.00500	1	11/05/2018 13:27	WG1190863
Nickel,Dissolved	0.0105		0.0100	1	11/05/2018 13:27	WG1190863
Selenium,Dissolved	0.0358		0.0100	1	11/05/2018 13:27	WG1190863
Silver,Dissolved	ND		0.00500	1	11/05/2018 13:27	WG1190863
Zinc,Dissolved	ND		0.0500	1	11/05/2018 13:27	WG1190863

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Methane	ND		0.0100	1	11/03/2018 07:43	WG1190587
Ethane	ND		0.0130	1	11/03/2018 07:43	WG1190587

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethene	ND		0.0130	1	11/03/2018 07:43	WG1190587

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/02/2018 03:19	WG1190163
Acrolein	ND		0.0500	1	11/02/2018 03:19	WG1190163
Acrylonitrile	ND		0.0100	1	11/02/2018 03:19	WG1190163
Benzene	ND		0.00100	1	11/02/2018 03:19	WG1190163
Bromobenzene	ND		0.00100	1	11/02/2018 03:19	WG1190163
Bromodichloromethane	ND		0.00100	1	11/02/2018 03:19	WG1190163
Bromoform	ND		0.00100	1	11/02/2018 03:19	WG1190163
Bromomethane	ND		0.00500	1	11/02/2018 03:19	WG1190163
n-Butylbenzene	ND		0.00100	1	11/02/2018 03:19	WG1190163
sec-Butylbenzene	ND		0.00100	1	11/02/2018 03:19	WG1190163
tert-Butylbenzene	ND		0.00100	1	11/02/2018 03:19	WG1190163
Carbon tetrachloride	ND		0.00100	1	11/02/2018 03:19	WG1190163
Chlorobenzene	ND		0.00100	1	11/02/2018 03:19	WG1190163
Chlorodibromomethane	ND		0.00100	1	11/02/2018 03:19	WG1190163
Chloroethane	ND		0.00500	1	11/02/2018 03:19	WG1190163
Chloroform	ND		0.00500	1	11/02/2018 03:19	WG1190163
Chloromethane	ND		0.00250	1	11/02/2018 03:19	WG1190163
2-Chlorotoluene	ND		0.00100	1	11/02/2018 03:19	WG1190163
4-Chlorotoluene	ND		0.00100	1	11/02/2018 03:19	WG1190163
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/02/2018 03:19	WG1190163
1,2-Dibromoethane	ND		0.00100	1	11/02/2018 03:19	WG1190163
Dibromomethane	ND		0.00100	1	11/02/2018 03:19	WG1190163
1,2-Dichlorobenzene	ND		0.00100	1	11/02/2018 03:19	WG1190163
1,3-Dichlorobenzene	ND		0.00100	1	11/02/2018 03:19	WG1190163
1,4-Dichlorobenzene	ND		0.00100	1	11/02/2018 03:19	WG1190163
Dichlorodifluoromethane	ND		0.00500	1	11/02/2018 03:19	WG1190163
1,1-Dichloroethane	ND		0.00100	1	11/02/2018 03:19	WG1190163
1,2-Dichloroethane	ND		0.00100	1	11/02/2018 03:19	WG1190163
1,1-Dichloroethene	ND		0.00100	1	11/02/2018 03:19	WG1190163
cis-1,2-Dichloroethene	ND		0.00100	1	11/02/2018 03:19	WG1190163
trans-1,2-Dichloroethene	ND		0.00100	1	11/02/2018 03:19	WG1190163
1,2-Dichloropropane	ND		0.00100	1	11/02/2018 03:19	WG1190163
1,1-Dichloropropene	ND		0.00100	1	11/02/2018 03:19	WG1190163
1,3-Dichloropropane	ND		0.00100	1	11/02/2018 03:19	WG1190163
cis-1,3-Dichloropropene	ND		0.00100	1	11/02/2018 03:19	WG1190163
trans-1,3-Dichloropropene	ND		0.00100	1	11/02/2018 03:19	WG1190163
2,2-Dichloropropane	ND		0.00100	1	11/02/2018 03:19	WG1190163
Di-isopropyl ether	ND		0.00100	1	11/02/2018 03:19	WG1190163
Ethylbenzene	ND		0.00100	1	11/02/2018 03:19	WG1190163
Hexachloro-1,3-butadiene	ND		0.00100	1	11/02/2018 03:19	WG1190163
Isopropylbenzene	ND		0.00100	1	11/02/2018 03:19	WG1190163
p-Isopropyltoluene	0.00122		0.00100	1	11/02/2018 03:19	WG1190163
2-Butanone (MEK)	ND		0.0100	1	11/02/2018 03:19	WG1190163
Methylene Chloride	ND		0.00500	1	11/02/2018 03:19	WG1190163
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/02/2018 03:19	WG1190163
Methyl tert-butyl ether	ND		0.00100	1	11/02/2018 03:19	WG1190163
Naphthalene	ND		0.00500	1	11/02/2018 03:19	WG1190163
n-Propylbenzene	ND		0.00100	1	11/02/2018 03:19	WG1190163
Styrene	ND		0.00100	1	11/02/2018 03:19	WG1190163
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/02/2018 03:19	WG1190163
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/02/2018 03:19	WG1190163

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

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	11/02/2018 03:19	WG1190163
Tetrachloroethene	ND		0.00100	1	11/02/2018 03:19	WG1190163
Toluene	ND		0.00100	1	11/02/2018 03:19	WG1190163
1,2,3-Trichlorobenzene	ND		0.00100	1	11/02/2018 03:19	WG1190163
1,2,4-Trichlorobenzene	ND		0.00100	1	11/02/2018 03:19	WG1190163
1,1,1-Trichloroethane	ND		0.00100	1	11/02/2018 03:19	WG1190163
1,1,2-Trichloroethane	ND		0.00100	1	11/02/2018 03:19	WG1190163
Trichloroethene	ND		0.00100	1	11/02/2018 03:19	WG1190163
Trichlorofluoromethane	ND		0.00500	1	11/02/2018 03:19	WG1190163
1,2,3-Trichloropropane	ND		0.00250	1	11/02/2018 03:19	WG1190163
1,2,4-Trimethylbenzene	ND		0.00100	1	11/02/2018 03:19	WG1190163
1,2,3-Trimethylbenzene	ND		0.00100	1	11/02/2018 03:19	WG1190163
1,3,5-Trimethylbenzene	ND		0.00100	1	11/02/2018 03:19	WG1190163
Vinyl chloride	ND		0.00100	1	11/02/2018 03:19	WG1190163
Xylenes, Total	ND		0.00300	1	11/02/2018 03:19	WG1190163
(S) Toluene-d8	*99.3*		*80.0-120*		*11/02/2018 03:19*	WG1190163
(S) Dibromofluoromethane	*108*		*75.0-120*		*11/02/2018 03:19*	WG1190163
(S) 4-Bromofluorobenzene	*106*		*77.0-126*		*11/02/2018 03:19*	WG1190163

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	11/07/2018 16:39	WG1192224
Acenaphthene	ND		0.0000500	1	11/07/2018 16:39	WG1192224
Acenaphthylene	ND		0.0000500	1	11/07/2018 16:39	WG1192224
Benzo(a)anthracene	ND		0.0000500	1	11/07/2018 16:39	WG1192224
Benzo(a)pyrene	ND		0.0000500	1	11/07/2018 16:39	WG1192224
Benzo(b)fluoranthene	ND		0.0000500	1	11/07/2018 16:39	WG1192224
Benzo(g,h,i)perylene	ND		0.0000500	1	11/07/2018 16:39	WG1192224
Benzo(k)fluoranthene	ND		0.0000500	1	11/07/2018 16:39	WG1192224
Chrysene	ND		0.0000500	1	11/07/2018 16:39	WG1192224
Dibenz(a,h)anthracene	ND		0.0000500	1	11/07/2018 16:39	WG1192224
Fluoranthene	ND		0.0000500	1	11/07/2018 16:39	WG1192224
Fluorene	0.0000583		0.0000500	1	11/07/2018 16:39	WG1192224
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	11/07/2018 16:39	WG1192224
Naphthalene	ND		0.000250	1	11/07/2018 16:39	WG1192224
Phenanthrene	ND		0.0000500	1	11/07/2018 16:39	WG1192224
Pyrene	ND		0.0000500	1	11/07/2018 16:39	WG1192224
1-Methylnaphthalene	ND		0.000250	1	11/07/2018 16:39	WG1192224
2-Methylnaphthalene	ND		0.000250	1	11/07/2018 16:39	WG1192224
2-Chloronaphthalene	ND		0.000250	1	11/07/2018 16:39	WG1192224
(S) Nitrobenzene-d5	*99.5*		*31.0-160*		*11/07/2018 16:39*	WG1192224
(S) 2-Fluorobiphenyl	*106*		*48.0-148*		*11/07/2018 16:39*	WG1192224
(S) p-Terphenyl-d14	*115*		*37.0-146*		*11/07/2018 16:39*	WG1192224

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chromium,Trivalent	ND		0.0100	1	11/04/2018 11:45	WG1190852

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	19700		200	1	11/07/2018 18:20	WG1192072

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Free Carbon Dioxide	ND	T8	20.0	1	11/07/2018 13:34	WG1191793

Sample Narrative:

L1040168-02 WG1191793: Endpoint pH 4.5

Wet Chemistry by Method 7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chromium,Hexavalent	ND	T8	0.0100	1	11/02/2018 18:30	WG1190723

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	569		10.0	10	11/03/2018 00:11	WG1190237
Sulfate	14800		2500	500	11/03/2018 10:57	WG1190237

Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Mercury,Dissolved	ND		0.000200	1	11/05/2018 17:52	WG1191176

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Arsenic,Dissolved	ND		0.0100	1	11/05/2018 13:30	WG1190863
Barium,Dissolved	0.0447		0.00500	1	11/05/2018 13:30	WG1190863
Boron,Dissolved	1.03		0.200	1	11/05/2018 13:30	WG1190863
Cadmium,Dissolved	ND		0.00200	1	11/05/2018 13:30	WG1190863
Chromium	ND		0.0100	1	11/04/2018 11:45	WG1190852
Chromium,Dissolved	ND		0.0100	1	11/05/2018 13:30	WG1190863
Copper,Dissolved	ND		0.0100	1	11/05/2018 13:30	WG1190863
Lead,Dissolved	ND		0.00500	1	11/05/2018 13:30	WG1190863
Nickel,Dissolved	ND		0.0100	1	11/05/2018 13:30	WG1190863
Selenium,Dissolved	0.465		0.0100	1	11/05/2018 13:30	WG1190863
Silver,Dissolved	ND		0.00500	1	11/05/2018 13:30	WG1190863
Zinc,Dissolved	ND		0.0500	1	11/05/2018 13:30	WG1190863

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	ND		0.0100	1	11/03/2018 07:47	WG1190587
Ethane	ND		0.0130	1	11/03/2018 07:47	WG1190587

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethene	ND		0.0130	1	11/03/2018 07:47	WG1190587

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/02/2018 03:41	WG1190163
Acrolein	ND		0.0500	1	11/02/2018 03:41	WG1190163
Acrylonitrile	ND		0.0100	1	11/02/2018 03:41	WG1190163
Benzene	ND		0.00100	1	11/02/2018 03:41	WG1190163
Bromobenzene	ND		0.00100	1	11/02/2018 03:41	WG1190163
Bromodichloromethane	ND		0.00100	1	11/02/2018 03:41	WG1190163
Bromoform	ND		0.00100	1	11/02/2018 03:41	WG1190163
Bromomethane	ND		0.00500	1	11/02/2018 03:41	WG1190163
n-Butylbenzene	ND		0.00100	1	11/02/2018 03:41	WG1190163
sec-Butylbenzene	ND		0.00100	1	11/02/2018 03:41	WG1190163
tert-Butylbenzene	ND		0.00100	1	11/02/2018 03:41	WG1190163
Carbon tetrachloride	ND		0.00100	1	11/02/2018 03:41	WG1190163
Chlorobenzene	ND		0.00100	1	11/02/2018 03:41	WG1190163
Chlorodibromomethane	ND		0.00100	1	11/02/2018 03:41	WG1190163
Chloroethane	ND		0.00500	1	11/02/2018 03:41	WG1190163
Chloroform	ND		0.00500	1	11/02/2018 03:41	WG1190163
Chloromethane	ND		0.00250	1	11/02/2018 03:41	WG1190163
2-Chlorotoluene	ND		0.00100	1	11/02/2018 03:41	WG1190163
4-Chlorotoluene	ND		0.00100	1	11/02/2018 03:41	WG1190163
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/02/2018 03:41	WG1190163
1,2-Dibromoethane	ND		0.00100	1	11/02/2018 03:41	WG1190163
Dibromomethane	ND		0.00100	1	11/02/2018 03:41	WG1190163
1,2-Dichlorobenzene	ND		0.00100	1	11/02/2018 03:41	WG1190163
1,3-Dichlorobenzene	ND		0.00100	1	11/02/2018 03:41	WG1190163
1,4-Dichlorobenzene	ND		0.00100	1	11/02/2018 03:41	WG1190163
Dichlorodifluoromethane	ND		0.00500	1	11/02/2018 03:41	WG1190163
1,1-Dichloroethane	ND		0.00100	1	11/02/2018 03:41	WG1190163
1,2-Dichloroethane	ND		0.00100	1	11/02/2018 03:41	WG1190163
1,1-Dichloroethene	ND		0.00100	1	11/02/2018 03:41	WG1190163
cis-1,2-Dichloroethene	ND		0.00100	1	11/02/2018 03:41	WG1190163
trans-1,2-Dichloroethene	ND		0.00100	1	11/02/2018 03:41	WG1190163
1,2-Dichloropropane	ND		0.00100	1	11/02/2018 03:41	WG1190163
1,1-Dichloropropene	ND		0.00100	1	11/02/2018 03:41	WG1190163
1,3-Dichloropropane	ND		0.00100	1	11/02/2018 03:41	WG1190163
cis-1,3-Dichloropropene	ND		0.00100	1	11/02/2018 03:41	WG1190163
trans-1,3-Dichloropropene	ND		0.00100	1	11/02/2018 03:41	WG1190163
2,2-Dichloropropane	ND		0.00100	1	11/02/2018 03:41	WG1190163
Di-isopropyl ether	ND		0.00100	1	11/02/2018 03:41	WG1190163
Ethylbenzene	ND		0.00100	1	11/02/2018 03:41	WG1190163
Hexachloro-1,3-butadiene	ND		0.00100	1	11/02/2018 03:41	WG1190163
Isopropylbenzene	ND		0.00100	1	11/02/2018 03:41	WG1190163
p-Isopropyltoluene	ND		0.00100	1	11/02/2018 03:41	WG1190163
2-Butanone (MEK)	ND		0.0100	1	11/02/2018 03:41	WG1190163
Methylene Chloride	ND		0.00500	1	11/02/2018 03:41	WG1190163
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/02/2018 03:41	WG1190163
Methyl tert-butyl ether	ND		0.00100	1	11/02/2018 03:41	WG1190163
Naphthalene	ND		0.00500	1	11/02/2018 03:41	WG1190163
n-Propylbenzene	ND		0.00100	1	11/02/2018 03:41	WG1190163
Styrene	ND		0.00100	1	11/02/2018 03:41	WG1190163
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/02/2018 03:41	WG1190163
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/02/2018 03:41	WG1190163

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

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	11/02/2018 03:41	WG1190163
Tetrachloroethene	ND		0.00100	1	11/02/2018 03:41	WG1190163
Toluene	ND		0.00100	1	11/02/2018 03:41	WG1190163
1,2,3-Trichlorobenzene	ND		0.00100	1	11/02/2018 03:41	WG1190163
1,2,4-Trichlorobenzene	ND		0.00100	1	11/02/2018 03:41	WG1190163
1,1,1-Trichloroethane	ND		0.00100	1	11/02/2018 03:41	WG1190163
1,1,2-Trichloroethane	ND		0.00100	1	11/02/2018 03:41	WG1190163
Trichloroethene	ND		0.00100	1	11/02/2018 03:41	WG1190163
Trichlorofluoromethane	ND		0.00500	1	11/02/2018 03:41	WG1190163
1,2,3-Trichloropropane	ND		0.00250	1	11/02/2018 03:41	WG1190163
1,2,4-Trimethylbenzene	ND		0.00100	1	11/02/2018 03:41	WG1190163
1,2,3-Trimethylbenzene	ND		0.00100	1	11/02/2018 03:41	WG1190163
1,3,5-Trimethylbenzene	ND		0.00100	1	11/02/2018 03:41	WG1190163
Vinyl chloride	ND		0.00100	1	11/02/2018 03:41	WG1190163
Xylenes, Total	ND		0.00300	1	11/02/2018 03:41	WG1190163
(S) Toluene-d8	*97.9*		*80.0-120*		*11/02/2018 03:41*	WG1190163
(S) Dibromofluoromethane	*107*		*75.0-120*		*11/02/2018 03:41*	WG1190163
(S) 4-Bromofluorobenzene	*110*		*77.0-126*		*11/02/2018 03:41*	WG1190163

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	11/07/2018 17:01	WG1192224
Acenaphthene	ND		0.0000500	1	11/07/2018 17:01	WG1192224
Acenaphthylene	ND		0.0000500	1	11/07/2018 17:01	WG1192224
Benzo(a)anthracene	ND		0.0000500	1	11/07/2018 17:01	WG1192224
Benzo(a)pyrene	ND		0.0000500	1	11/07/2018 17:01	WG1192224
Benzo(b)fluoranthene	ND		0.0000500	1	11/07/2018 17:01	WG1192224
Benzo(g,h,i)perylene	ND		0.0000500	1	11/07/2018 17:01	WG1192224
Benzo(k)fluoranthene	ND		0.0000500	1	11/07/2018 17:01	WG1192224
Chrysene	ND		0.0000500	1	11/07/2018 17:01	WG1192224
Dibenz(a,h)anthracene	ND		0.0000500	1	11/07/2018 17:01	WG1192224
Fluoranthene	ND		0.0000500	1	11/07/2018 17:01	WG1192224
Fluorene	0.0000647		0.0000500	1	11/07/2018 17:01	WG1192224
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	11/07/2018 17:01	WG1192224
Naphthalene	ND		0.000250	1	11/07/2018 17:01	WG1192224
Phenanthrene	0.0000827		0.0000500	1	11/07/2018 17:01	WG1192224
Pyrene	ND		0.0000500	1	11/07/2018 17:01	WG1192224
1-Methylnaphthalene	ND		0.000250	1	11/07/2018 17:01	WG1192224
2-Methylnaphthalene	ND		0.000250	1	11/07/2018 17:01	WG1192224
2-Chloronaphthalene	ND		0.000250	1	11/07/2018 17:01	WG1192224
(S) Nitrobenzene-d5	*104*		*31.0-160*		*11/07/2018 17:01*	WG1192224
(S) 2-Fluorobiphenyl	*106*		*48.0-148*		*11/07/2018 17:01*	WG1192224
(S) p-Terphenyl-d14	*106*		*37.0-146*		*11/07/2018 17:01*	WG1192224

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chromium,Trivalent	ND		0.0100	1	11/04/2018 11:48	WG1190852

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	77700		500	1	11/07/2018 18:20	WG1192072

Wet Chemistry by Method 4500CO2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Free Carbon Dioxide	21.5	T8	20.0	1	11/07/2018 13:42	WG1191793

Sample Narrative:

L1040168-03 WG1191793: Endpoint pH 4.5

Wet Chemistry by Method 7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chromium,Hexavalent	ND	T8	0.0100	1	11/02/2018 18:31	WG1190723

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	1830		20.0	20	11/03/2018 00:48	WG1190237
Sulfate	50300		5000	1000	11/03/2018 11:42	WG1190237

Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Mercury,Dissolved	ND		0.000200	1	11/05/2018 17:55	WG1191176

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Arsenic,Dissolved	ND		0.100	10	11/05/2018 22:38	WG1190863
Barium,Dissolved	0.101		0.0500	10	11/05/2018 22:38	WG1190863
Boron,Dissolved	2.95		2.00	10	11/05/2018 22:38	WG1190863
Cadmium,Dissolved	ND		0.0200	10	11/05/2018 22:38	WG1190863
Chromium	ND		0.0100	1	11/04/2018 11:48	WG1190852
Chromium,Dissolved	ND		0.100	10	11/05/2018 22:38	WG1190863
Copper,Dissolved	ND		0.100	10	11/05/2018 22:38	WG1190863
Lead,Dissolved	ND		0.0500	10	11/05/2018 22:38	WG1190863
Nickel,Dissolved	ND		0.100	10	11/05/2018 22:38	WG1190863
Selenium,Dissolved	1.24		0.100	10	11/05/2018 22:38	WG1190863
Silver,Dissolved	ND		0.0500	10	11/05/2018 22:38	WG1190863
Zinc,Dissolved	ND		0.500	10	11/05/2018 22:38	WG1190863

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Methane	ND		0.0100	1	11/03/2018 07:53	WG1190587
Ethane	ND		0.0130	1	11/03/2018 07:53	WG1190587

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethene	ND		0.0130	1	11/03/2018 07:53	WG1190587

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/02/2018 04:03	WG1190163
Acrolein	ND		0.0500	1	11/02/2018 04:03	WG1190163
Acrylonitrile	ND		0.0100	1	11/02/2018 04:03	WG1190163
Benzene	ND		0.00100	1	11/02/2018 04:03	WG1190163
Bromobenzene	ND		0.00100	1	11/02/2018 04:03	WG1190163
Bromodichloromethane	ND		0.00100	1	11/02/2018 04:03	WG1190163
Bromoform	ND		0.00100	1	11/02/2018 04:03	WG1190163
Bromomethane	ND		0.00500	1	11/02/2018 04:03	WG1190163
n-Butylbenzene	ND		0.00100	1	11/02/2018 04:03	WG1190163
sec-Butylbenzene	ND		0.00100	1	11/02/2018 04:03	WG1190163
tert-Butylbenzene	ND		0.00100	1	11/02/2018 04:03	WG1190163
Carbon tetrachloride	ND		0.00100	1	11/02/2018 04:03	WG1190163
Chlorobenzene	ND		0.00100	1	11/02/2018 04:03	WG1190163
Chlorodibromomethane	ND		0.00100	1	11/02/2018 04:03	WG1190163
Chloroethane	ND		0.00500	1	11/02/2018 04:03	WG1190163
Chloroform	ND		0.00500	1	11/02/2018 04:03	WG1190163
Chloromethane	ND		0.00250	1	11/02/2018 04:03	WG1190163
2-Chlorotoluene	ND		0.00100	1	11/02/2018 04:03	WG1190163
4-Chlorotoluene	ND		0.00100	1	11/02/2018 04:03	WG1190163
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/02/2018 04:03	WG1190163
1,2-Dibromoethane	ND		0.00100	1	11/02/2018 04:03	WG1190163
Dibromomethane	ND		0.00100	1	11/02/2018 04:03	WG1190163
1,2-Dichlorobenzene	ND		0.00100	1	11/02/2018 04:03	WG1190163
1,3-Dichlorobenzene	ND		0.00100	1	11/02/2018 04:03	WG1190163
1,4-Dichlorobenzene	ND		0.00100	1	11/02/2018 04:03	WG1190163
Dichlorodifluoromethane	ND		0.00500	1	11/02/2018 04:03	WG1190163
1,1-Dichloroethane	ND		0.00100	1	11/02/2018 04:03	WG1190163
1,2-Dichloroethane	ND		0.00100	1	11/02/2018 04:03	WG1190163
1,1-Dichloroethene	ND		0.00100	1	11/02/2018 04:03	WG1190163
cis-1,2-Dichloroethene	ND		0.00100	1	11/02/2018 04:03	WG1190163
trans-1,2-Dichloroethene	ND		0.00100	1	11/02/2018 04:03	WG1190163
1,2-Dichloropropane	ND		0.00100	1	11/02/2018 04:03	WG1190163
1,1-Dichloropropene	ND		0.00100	1	11/02/2018 04:03	WG1190163
1,3-Dichloropropane	ND		0.00100	1	11/02/2018 04:03	WG1190163
cis-1,3-Dichloropropene	ND		0.00100	1	11/02/2018 04:03	WG1190163
trans-1,3-Dichloropropene	ND		0.00100	1	11/02/2018 04:03	WG1190163
2,2-Dichloropropane	ND		0.00100	1	11/02/2018 04:03	WG1190163
Di-isopropyl ether	ND		0.00100	1	11/02/2018 04:03	WG1190163
Ethylbenzene	ND		0.00100	1	11/02/2018 04:03	WG1190163
Hexachloro-1,3-butadiene	ND		0.00100	1	11/02/2018 04:03	WG1190163
Isopropylbenzene	ND		0.00100	1	11/02/2018 04:03	WG1190163
p-Isopropyltoluene	ND		0.00100	1	11/02/2018 04:03	WG1190163
2-Butanone (MEK)	ND		0.0100	1	11/02/2018 04:03	WG1190163
Methylene Chloride	ND		0.00500	1	11/02/2018 04:03	WG1190163
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/02/2018 04:03	WG1190163
Methyl tert-butyl ether	ND		0.00100	1	11/02/2018 04:03	WG1190163
Naphthalene	ND		0.00500	1	11/02/2018 04:03	WG1190163
n-Propylbenzene	ND		0.00100	1	11/02/2018 04:03	WG1190163
Styrene	ND		0.00100	1	11/02/2018 04:03	WG1190163
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/02/2018 04:03	WG1190163
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/02/2018 04:03	WG1190163

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

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	11/02/2018 04:03	WG1190163
Tetrachloroethene	ND		0.00100	1	11/02/2018 04:03	WG1190163
Toluene	ND		0.00100	1	11/02/2018 04:03	WG1190163
1,2,3-Trichlorobenzene	ND		0.00100	1	11/02/2018 04:03	WG1190163
1,2,4-Trichlorobenzene	ND		0.00100	1	11/02/2018 04:03	WG1190163
1,1,1-Trichloroethane	ND		0.00100	1	11/02/2018 04:03	WG1190163
1,1,2-Trichloroethane	ND		0.00100	1	11/02/2018 04:03	WG1190163
Trichloroethene	ND		0.00100	1	11/02/2018 04:03	WG1190163
Trichlorofluoromethane	ND		0.00500	1	11/02/2018 04:03	WG1190163
1,2,3-Trichloropropane	ND		0.00250	1	11/02/2018 04:03	WG1190163
1,2,4-Trimethylbenzene	ND		0.00100	1	11/02/2018 04:03	WG1190163
1,2,3-Trimethylbenzene	ND		0.00100	1	11/02/2018 04:03	WG1190163
1,3,5-Trimethylbenzene	ND		0.00100	1	11/02/2018 04:03	WG1190163
Vinyl chloride	ND		0.00100	1	11/02/2018 04:03	WG1190163
Xylenes, Total	ND		0.00300	1	11/02/2018 04:03	WG1190163
(S) Toluene-d8	*95.2*		*80.0-120*		*11/02/2018 04:03*	WG1190163
(S) Dibromofluoromethane	*107*		*75.0-120*		*11/02/2018 04:03*	WG1190163
(S) 4-Bromofluorobenzene	*105*		*77.0-126*		*11/02/2018 04:03*	WG1190163

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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Anthracene	ND		0.0000500	1	11/07/2018 17:23	WG1192224
Acenaphthene	ND		0.0000500	1	11/07/2018 17:23	WG1192224
Acenaphthylene	ND		0.0000500	1	11/07/2018 17:23	WG1192224
Benzo(a)anthracene	ND		0.0000500	1	11/07/2018 17:23	WG1192224
Benzo(a)pyrene	ND		0.0000500	1	11/07/2018 17:23	WG1192224
Benzo(b)fluoranthene	ND		0.0000500	1	11/07/2018 17:23	WG1192224
Benzo(g,h,i)perylene	ND		0.0000500	1	11/07/2018 17:23	WG1192224
Benzo(k)fluoranthene	ND		0.0000500	1	11/07/2018 17:23	WG1192224
Chrysene	ND		0.0000500	1	11/07/2018 17:23	WG1192224
Dibenz(a,h)anthracene	ND		0.0000500	1	11/07/2018 17:23	WG1192224
Fluoranthene	ND		0.0000500	1	11/07/2018 17:23	WG1192224
Fluorene	ND		0.0000500	1	11/07/2018 17:23	WG1192224
Indeno(1,2,3-cd)pyrene	ND		0.0000500	1	11/07/2018 17:23	WG1192224
Naphthalene	ND		0.000250	1	11/07/2018 17:23	WG1192224
Phenanthrene	ND		0.0000500	1	11/07/2018 17:23	WG1192224
Pyrene	ND		0.0000500	1	11/07/2018 17:23	WG1192224
1-Methylnaphthalene	ND		0.000250	1	11/07/2018 17:23	WG1192224
2-Methylnaphthalene	ND		0.000250	1	11/07/2018 17:23	WG1192224
2-Chloronaphthalene	ND		0.000250	1	11/07/2018 17:23	WG1192224
(S) Nitrobenzene-d5	*109*		*31.0-160*		*11/07/2018 17:23*	WG1192224
(S) 2-Fluorobiphenyl	*99.5*		*48.0-148*		*11/07/2018 17:23*	WG1192224
(S) p-Terphenyl-d14	*108*		*37.0-146*		*11/07/2018 17:23*	WG1192224

Method Blank (MB)

(MB) R3358295-1 11/07/18 18:20

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		2.82	10.0

L1040168-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1040168-01 11/07/18 18:20 • (DUP) R3358295-3 11/07/18 18:20

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	20000	19700	1	1.51		5

Laboratory Control Sample (LCS)

(LCS) R3358295-2 11/07/18 18:20

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8530	96.9	85.0-115	

Method Blank (MB)

(MB) R3357760-2 11/06/18 17:06

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Free Carbon Dioxide	U		6.67	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1040178-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1040178-01 11/06/18 17:15 • (DUP) R3357760-4 11/06/18 17:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
		mg/l		%		%
Free Carbon Dioxide		ND	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 headspace

DUP: Endpoint pH 4.5

L1040178-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1040178-04 11/06/18 20:03 • (DUP) R3357760-7 11/06/18 20:11

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
		mg/l		%		%
Free Carbon Dioxide		ND	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 headspace

DUP: Endpoint pH 4.5

Method Blank (MB)

(MB) R3356474-1 11/02/18 18:16

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chromium,Hexavalent	U		0.00300	0.0100

L1040409-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1040409-01 11/02/18 18:17 • (DUP) R3356474-3 11/02/18 18:20

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chromium,Hexavalent	ND	0.0160	5	0.000		20

Sample Narrative:

OS: Diluted due to matrix

Laboratory Control Sample (LCS)

(LCS) R3356474-2 11/02/18 18:16

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chromium,Hexavalent	0.600	0.594	99.0	80.0-120	

L1040409-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1040409-01 11/02/18 18:17 • (MS) R3356474-4 11/02/18 18:20 • (MSD) R3356474-5 11/02/18 18:21

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 %
Chromium,Hexavalent	0.500	ND	1.60	1.58	63.3	62.6	5	85.0-115	J6	J6	1.07	20

Sample Narrative:

OS: Diluted due to matrix

Method Blank (MB)

(MB) R3356614-1 11/02/18 18:32

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	0.0668	J	0.0519	1.00
Sulfate	0.117	J	0.0774	5.00

L1039944-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1039944-01 11/02/18 20:33 • (DUP) R3356614-3 11/02/18 20:52

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	8.25	8.37	1	1.47		15
Sulfate	19.9	20.1	1	0.819		15

L1040213-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1040213-08 11/03/18 04:26 • (DUP) R3356614-6 11/03/18 04:44

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	4.33	4.30	1	0.679		15
Sulfate	21.6	21.5	1	0.256		15

Laboratory Control Sample (LCS)

(LCS) R3356614-2 11/02/18 18:50

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40.0	39.4	98.5	80.0-120	
Sulfate	40.0	39.6	99.1	80.0-120	

L1039944-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1039944-01 11/02/18 20:33 • (MS) R3356614-4 11/02/18 21:10 • (MSD) R3356614-5 11/02/18 21:28

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 %
Chloride	50.0	8.25	60.3	62.5	104	108	1	80.0-120			3.55	15
Sulfate	50.0	19.9	71.2	73.1	102	106	1	80.0-120			2.60	15

L1040213-08 Original Sample (OS) • Matrix Spike (MS)

(OS) L1040213-08 11/03/18 04:26 • (MS) R3356614-7 11/03/18 05:02

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50.0	4.33	53.2	97.7	1	80.0-120	
Sulfate	50.0	21.6	68.7	94.3	1	80.0-120	

Method Blank (MB)

(MB) R3357117-1 11/05/18 17:30

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

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

(LCS) R3357117-2 11/05/18 17:33 • (LCSD) R3357117-3 11/05/18 17:35

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 %
Mercury,Dissolved	0.00300	0.00302	0.00289	101	96.3	80.0-120			4.58	20

L1040453-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1040453-01 11/05/18 17:38 • (MS) R3357117-4 11/05/18 17:45 • (MSD) R3357117-5 11/05/18 17:47

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 %
Mercury,Dissolved	0.00300	U	0.00303	0.00311	101	104	1	75.0-125			2.66	20

Method Blank (MB)

(MB) R3356760-1 11/04/18 11:06

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chromium	U		0.00140	0.0100

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

(LCS) R3356760-2 11/04/18 11:09 • (LCSD) R3356760-3 11/04/18 11:11

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 %
Chromium	1.00	0.971	0.967	97.1	96.7	80.0-120			0.325	20

L1040345-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1040345-01 11/04/18 11:14 • (MS) R3356760-5 11/04/18 11:19 • (MSD) R3356760-6 11/04/18 11:22

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 %
Chromium	1.00	ND	0.983	0.976	98.3	97.6	1	75.0-125			0.683	20

Method Blank (MB)

(MB) R3357093-1 11/05/18 12:54

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
Boron,Dissolved	U		0.0126	0.200
Cadmium,Dissolved	U		0.000700	0.00200
Chromium,Dissolved	U		0.00140	0.0100
Copper,Dissolved	U		0.00530	0.0100
Lead,Dissolved	U		0.00190	0.00500
Nickel,Dissolved	U		0.00490	0.0100
Selenium,Dissolved	U		0.00740	0.0100
Silver,Dissolved	U		0.00280	0.00500
Zinc,Dissolved	0.00943	J	0.00590	0.0500

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

(LCS) R3357093-2 11/05/18 12:56 • (LCSD) R3357093-3 11/05/18 12:59

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	1.02	1.01	102	101	80.0-120			1.08	20
Barium,Dissolved	1.00	1.09	1.08	109	108	80.0-120			1.03	20
Boron,Dissolved	1.00	1.04	1.04	104	104	80.0-120			0.151	20
Cadmium,Dissolved	1.00	0.998	0.989	99.8	98.9	80.0-120			0.949	20
Chromium,Dissolved	1.00	1.00	0.986	100	98.6	80.0-120			1.44	20
Copper,Dissolved	1.00	1.02	1.01	102	101	80.0-120			1.34	20
Lead,Dissolved	1.00	1.06	1.05	106	105	80.0-120			1.17	20
Nickel,Dissolved	1.00	1.05	1.04	105	104	80.0-120			1.15	20
Selenium,Dissolved	1.00	0.996	0.985	99.6	98.5	80.0-120			1.15	20
Silver,Dissolved	0.200	0.187	0.185	93.4	92.4	80.0-120			1.14	20
Zinc,Dissolved	1.00	1.02	1.01	102	101	80.0-120			1.07	20

L1040218-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1040218-01 11/05/18 13:02 • (MS) R3357093-5 11/05/18 13:07 • (MSD) R3357093-6 11/05/18 13:09

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	0.0103	1.06	1.04	105	103	1	75.0-125			2.11	20
Barium,Dissolved	1.00	0.709	1.77	1.75	106	104	1	75.0-125			1.32	20
Boron,Dissolved	1.00	ND	1.09	1.08	104	104	1	75.0-125			0.767	20
Cadmium,Dissolved	1.00	ND	1.02	0.999	102	99.9	1	75.0-125			2.05	20
Chromium,Dissolved	1.00	ND	1.00	0.976	100	97.6	1	75.0-125			2.61	20

L1040218-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1040218-01 11/05/18 13:02 • (MS) R3357093-5 11/05/18 13:07 • (MSD) R3357093-6 11/05/18 13:09

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 %
Copper,Dissolved	1.00	ND	1.04	1.02	104	102	1	75.0-125			2.21	20
Lead,Dissolved	1.00	0.00740	1.07	1.05	106	104	1	75.0-125			2.18	20
Nickel,Dissolved	1.00	ND	1.05	1.03	105	103	1	75.0-125			1.94	20
Selenium,Dissolved	1.00	ND	1.03	1.02	103	102	1	75.0-125			1.63	20
Silver,Dissolved	0.200	ND	0.191	0.186	95.3	93.2	1	75.0-125			2.23	20
Zinc,Dissolved	1.00	ND	1.02	0.997	101	98.4	1	75.0-125			2.10	20

Method Blank (MB)

(MB) R3356511-1 11/03/18 07:17

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Methane	U		0.00291	0.0100
Ethane	U		0.00407	0.0130
Ethene	U		0.00426	0.0130

L1039927-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1039927-01 11/03/18 07:27 • (DUP) R3356511-2 11/03/18 08:19

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Methane	0.0714	0.0711	1	0.484		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20

L1039951-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1039951-01 11/03/18 07:41 • (DUP) R3356511-3 11/03/18 08:32

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Methane	0.0466	0.0511	1	9.11		20
Ethane	ND	0.000	1	0.000		20
Ethene	ND	0.000	1	0.000		20

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

(LCS) R3356511-4 11/03/18 09:12 • (LCSD) R3356511-5 11/03/18 09:16

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 %
Methane	0.0678	0.0740	0.0733	109	108	85.0-115			0.867	20
Ethane	0.129	0.114	0.114	88.1	88.6	85.0-115			0.581	20
Ethene	0.127	0.114	0.113	89.7	89.0	85.0-115			0.738	20

Method Blank (MB)

(MB) R3357484-3 11/01/18 23:00

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	0.000498	J	0.000256	0.00100

Method Blank (MB)

(MB) R3357484-3 11/01/18 23:00

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	0.000516	J	0.000230	0.00100
1,2,4-Trichlorobenzene	0.000364	J	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	*95.5*			*80.0-120*
(S) Dibromofluoromethane	*112*			*75.0-120*
(S) 4-Bromofluorobenzene	*105*			*77.0-126*

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

(LCS) R3357484-1 11/01/18 21:54 • (LCSD) R3357484-2 11/01/18 22:16

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	0.137	0.140	109	112	19.0-160			2.61	27
Acrolein	0.125	0.0890	0.0895	71.2	71.6	10.0-160			0.512	26
Acrylonitrile	0.125	0.136	0.137	109	109	55.0-149			0.487	20
Benzene	0.0250	0.0236	0.0236	94.2	94.2	70.0-123			0.0338	20

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

(LCS) R3357484-1 11/01/18 21:54 • (LCSD) R3357484-2 11/01/18 22:16

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	0.0235	0.0255	94.1	102	73.0-121			8.03	20
Bromodichloromethane	0.0250	0.0255	0.0269	102	108	75.0-120			5.40	20
Bromoform	0.0250	0.0251	0.0276	101	110	68.0-132			9.15	20
Bromomethane	0.0250	0.0234	0.0240	93.5	96.2	10.0-160			2.85	25
n-Butylbenzene	0.0250	0.0224	0.0233	89.6	93.1	73.0-125			3.93	20
sec-Butylbenzene	0.0250	0.0229	0.0242	91.8	96.7	75.0-125			5.29	20
tert-Butylbenzene	0.0250	0.0233	0.0249	93.1	99.8	76.0-124			6.88	20
Carbon tetrachloride	0.0250	0.0259	0.0270	103	108	68.0-126			4.39	20
Chlorobenzene	0.0250	0.0221	0.0231	88.4	92.5	80.0-121			4.52	20
Chlorodibromomethane	0.0250	0.0243	0.0252	97.2	101	77.0-125			3.53	20
Chloroethane	0.0250	0.0246	0.0251	98.3	100	47.0-150			2.10	20
Chloroform	0.0250	0.0255	0.0258	102	103	73.0-120			1.32	20
Chloromethane	0.0250	0.0266	0.0267	107	107	41.0-142			0.0504	20
2-Chlorotoluene	0.0250	0.0239	0.0254	95.5	102	76.0-123			6.19	20
4-Chlorotoluene	0.0250	0.0238	0.0258	95.3	103	75.0-122			7.90	20
1,2-Dibromo-3-Chloropropane	0.0250	0.0212	0.0233	84.8	93.1	58.0-134			9.39	20
1,2-Dibromoethane	0.0250	0.0229	0.0237	91.8	94.7	80.0-122			3.17	20
Dibromomethane	0.0250	0.0247	0.0254	98.9	102	80.0-120			2.70	20
1,2-Dichlorobenzene	0.0250	0.0217	0.0225	86.9	90.0	79.0-121			3.51	20
1,3-Dichlorobenzene	0.0250	0.0218	0.0232	87.1	92.9	79.0-120			6.44	20
1,4-Dichlorobenzene	0.0250	0.0216	0.0227	86.4	90.6	79.0-120			4.79	20
Dichlorodifluoromethane	0.0250	0.0261	0.0268	104	107	51.0-149			2.64	20
1,1-Dichloroethane	0.0250	0.0258	0.0264	103	106	70.0-126			2.26	20
1,2-Dichloroethane	0.0250	0.0280	0.0285	112	114	70.0-128			1.64	20
1,1-Dichloroethene	0.0250	0.0232	0.0237	92.9	94.7	71.0-124			1.92	20
cis-1,2-Dichloroethene	0.0250	0.0230	0.0238	92.2	95.1	73.0-120			3.15	20
trans-1,2-Dichloroethene	0.0250	0.0246	0.0251	98.4	100	73.0-120			2.05	20
1,2-Dichloropropane	0.0250	0.0238	0.0239	95.3	95.7	77.0-125			0.442	20
1,1-Dichloropropene	0.0250	0.0248	0.0252	99.3	101	74.0-126			1.46	20
1,3-Dichloropropane	0.0250	0.0228	0.0232	91.0	92.8	80.0-120			1.90	20
cis-1,3-Dichloropropene	0.0250	0.0228	0.0237	91.1	94.7	80.0-123			3.85	20
trans-1,3-Dichloropropene	0.0250	0.0235	0.0246	94.1	98.5	78.0-124			4.56	20
2,2-Dichloropropane	0.0250	0.0263	0.0261	105	105	58.0-130			0.686	20
Di-isopropyl ether	0.0250	0.0271	0.0274	108	110	58.0-138			1.11	20
Ethylbenzene	0.0250	0.0222	0.0227	88.8	90.9	79.0-123			2.43	20
Hexachloro-1,3-butadiene	0.0250	0.0192	0.0221	76.9	88.3	54.0-138			13.8	20
Isopropylbenzene	0.0250	0.0236	0.0258	94.2	103	76.0-127			9.08	20
p-Isopropyltoluene	0.0250	0.0230	0.0240	91.9	96.1	76.0-125			4.56	20
2-Butanone (MEK)	0.125	0.141	0.140	113	112	44.0-160			0.613	20
Methylene Chloride	0.0250	0.0229	0.0238	91.7	95.3	67.0-120			3.82	20

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

(LCS) R3357484-1 11/01/18 21:54 • (LCSD) R3357484-2 11/01/18 22:16

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	0.133	0.137	107	110	68.0-142			2.62	20
Methyl tert-butyl ether	0.0250	0.0245	0.0252	97.9	101	68.0-125			2.82	20
Naphthalene	0.0250	0.0197	0.0216	78.7	86.5	54.0-135			9.51	20
n-Propylbenzene	0.0250	0.0235	0.0252	94.2	101	77.0-124			6.98	20
Styrene	0.0250	0.0240	0.0263	95.8	105	73.0-130			9.33	20
1,1,1,2-Tetrachloroethane	0.0250	0.0233	0.0246	93.2	98.4	75.0-125			5.40	20
1,1,2,2-Tetrachloroethane	0.0250	0.0231	0.0246	92.3	98.2	65.0-130			6.29	20
Tetrachloroethene	0.0250	0.0209	0.0213	83.4	85.1	72.0-132			1.99	20
Toluene	0.0250	0.0219	0.0226	87.7	90.3	79.0-120			2.91	20
1,1,2-Trichlorotrifluoroethane	0.0250	0.0246	0.0256	98.2	102	69.0-132			4.10	20
1,2,3-Trichlorobenzene	0.0250	0.0184	0.0213	73.7	85.4	50.0-138			14.7	20
1,2,4-Trichlorobenzene	0.0250	0.0187	0.0209	74.7	83.8	57.0-137			11.5	20
1,1,1-Trichloroethane	0.0250	0.0275	0.0280	110	112	73.0-124			1.73	20
1,1,2-Trichloroethane	0.0250	0.0224	0.0228	89.8	91.1	80.0-120			1.50	20
Trichloroethene	0.0250	0.0228	0.0237	91.4	94.8	78.0-124			3.71	20
Trichlorofluoromethane	0.0250	0.0294	0.0299	118	120	59.0-147			1.63	20
1,2,3-Trichloropropane	0.0250	0.0256	0.0274	102	109	73.0-130			6.82	20
1,2,3-Trimethylbenzene	0.0250	0.0229	0.0245	91.7	98.0	77.0-120			6.60	20
1,2,4-Trimethylbenzene	0.0250	0.0235	0.0245	94.0	98.1	76.0-121			4.23	20
1,3,5-Trimethylbenzene	0.0250	0.0241	0.0256	96.3	103	76.0-122			6.35	20
Vinyl chloride	0.0250	0.0252	0.0254	101	102	67.0-131			0.896	20
Xylenes, Total	0.0750	0.0663	0.0684	88.4	91.2	79.0-123			3.12	20
(S) Toluene-d8				*96.0*	*98.1*	*80.0-120*				
(S) Dibromofluoromethane				*108*	*108*	*75.0-120*				
(S) 4-Bromofluorobenzene				*102*	*110*	*77.0-126*				

Method Blank (MB)

(MB) R3357755-3 11/07/18 13:23

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	*142*			*31.0-160*
(S) 2-Fluorobiphenyl	*103*			*48.0-148*
(S) p-Terphenyl-d14	*108*			*37.0-146*

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

(LCS) R3357755-1 11/07/18 12:39 • (LCSD) R3357755-2 11/07/18 13:01

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	0.00203	0.00213	102	106	67.0-150			4.81	20
Acenaphthene	0.00200	0.00186	0.00191	93.0	95.5	65.0-138			2.65	20
Acenaphthylene	0.00200	0.00197	0.00202	98.5	101	66.0-140			2.51	20
Benzo(a)anthracene	0.00200	0.00202	0.00208	101	104	61.0-140			2.93	20
Benzo(a)pyrene	0.00200	0.00210	0.00199	105	99.5	60.0-143			5.38	20
Benzo(b)fluoranthene	0.00200	0.00205	0.00190	102	95.0	58.0-141			7.59	20
Benzo(g,h,i)perylene	0.00200	0.00214	0.00242	107	121	52.0-153			12.3	20
Benzo(k)fluoranthene	0.00200	0.00202	0.00187	101	93.5	58.0-148			7.71	20
Chrysene	0.00200	0.00205	0.00213	102	106	64.0-144			3.83	20
Dibenz(a,h)anthracene	0.00200	0.00205	0.00231	102	115	52.0-155			11.9	20
Fluoranthene	0.00200	0.00216	0.00211	108	105	69.0-153			2.34	20

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

(LCS) R3357755-1 11/07/18 12:39 • (LCSD) R3357755-2 11/07/18 13:01

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	0.00193	0.00196	96.5	98.0	64.0-136			1.54	20
Indeno(1,2,3-cd)pyrene	0.00200	0.00211	0.00238	105	119	54.0-153			12.0	20
Naphthalene	0.00200	0.00206	0.00209	103	105	61.0-137			1.45	20
Phenanthrene	0.00200	0.00189	0.00199	94.5	99.5	62.0-137			5.15	20
Pyrene	0.00200	0.00189	0.00210	94.5	105	60.0-142			10.5	20
1-Methylnaphthalene	0.00200	0.00232	0.00228	116	114	66.0-142			1.74	20
2-Methylnaphthalene	0.00200	0.00210	0.00207	105	103	62.0-136			1.44	20
2-Chloronaphthalene	0.00200	0.00197	0.00204	98.5	102	64.0-140			3.49	20
(S) Nitrobenzene-d5				*150*	*144*	*31.0-160*				
(S) 2-Fluorobiphenyl				*105*	*103*	*48.0-148*				
(S) p-Terphenyl-d14				*111*	*106*	*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.

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.
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.
T8	Sample(s) received past/too close to holding time expiration.

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	T 104704245-17-14
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

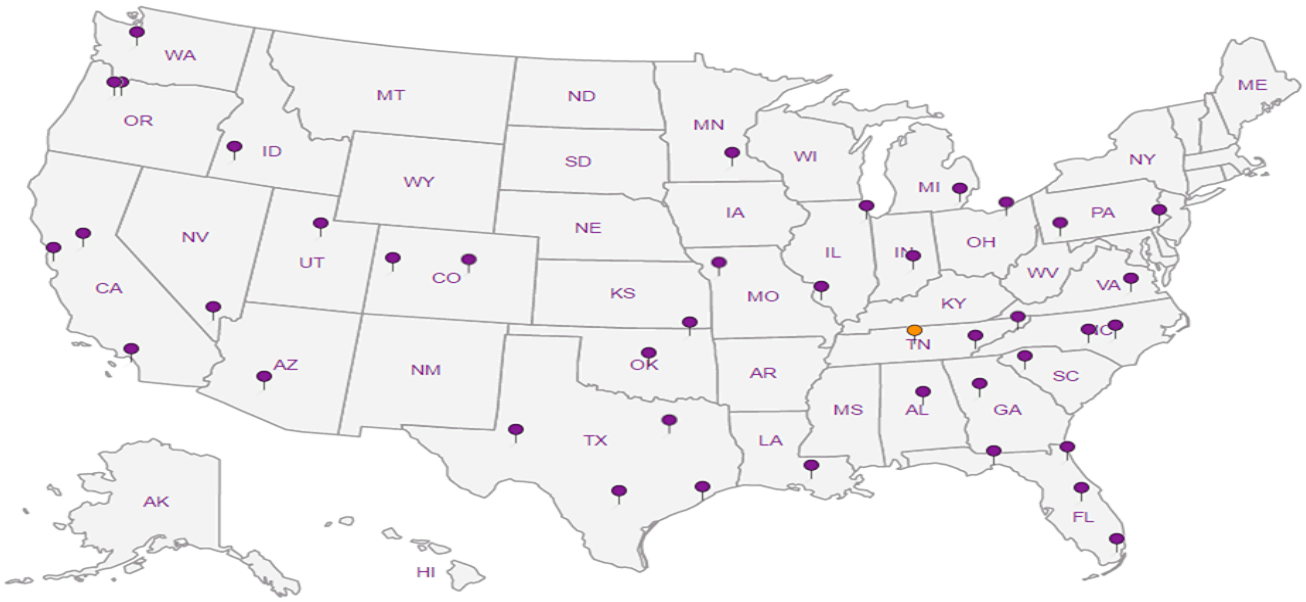
Third Party Federal Accreditations

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.



Terracon - Longmont
12831 Lefthand Circle, Suite C
Longmont, CO 80501

Billing Information: **Same as Address**

Pres Chk

Report to: Mike Skridulis

Email To: mike.skridulis@terracon.com

Project Description: **Union Reservoir**

City/State Collected: Longmont, CO

Phone: **303-454-5249**
Fax: **970-484-0454**

Client Project # **22187053**

Lab Project #

Collected by (print): Charles Covington

Site/Facility ID #

P.O. #

Collected by (signature): Chas A. Cov

Immediately Packed on Ice N ___ Y X

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

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# L1040168

F005

Acctnum: **TERRALCO**
Template:
Prelogin:
TSR: **Daphne Richards**
PB:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	VOC8260 (2) 40ml Amber wHCl	Diss. Methane, Ethane, Ethylene (2) 40ml	CO2 - 125ml HDPE No Pres	Diss. Metals - 250ml HDPE No Pres	PAHSIM (2) 40ml Amber No Pres	Cl, S04, TDS - 250ml HDPE No Pres	Remarks	Sample # (lab only)
MW-01	Grab	GW		10/31/18	1155	9	X	X	X	X	X	X		-01
MW-02	Grab	GW		10/31/18	1235	9	X	X	X	X	X	X		02
MW-03	Grab	GW		10/31/18	1325	9	X	X	X	X	X	X		03

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

Remarks:

PAD SCREEN: <0.5 mR/hr

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier __ _____

Tracking # 4510 1654 8135

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

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: -0.1 °C 2.01.9 Bottles Received: 27
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 11/1/18 Time: 845

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Andy Vann

Pace Analytical®
National Center for Testing & Innovation

Login #:L1040168	Client: TERRALCO	Date:11/01/18	Evaluated by:Andy Vann

Non-Conformance (check applicable items)

	Sample Integrity		Chain of Custody Clarification		
	Parameter(s) past holding time		Login Clarification Needed		**If Broken Container:**
	Improper temperature		Chain of custody is incomplete		Insufficient packing material around container
	Improper container type	x	Please specify Metals requested.		Insufficient packing material inside cooler
	Improper preservation		Please specify TCLP requested.		Improper handling by carrier (FedEx / UPS / Couri
	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: What metals?

Client informed by:		Call		Email		Voice Mail		Date:	Time:
TSR Initials:	Client Contact:								

Login Instructions:

Please log dissolved metals for AGDICP, ASDICP, BADICP, BDICP, CDDICP, CRDICP, CUDICP, PBDICP, HGD, NIDICP, SEDICP, and ZNDICP.
CRICP(total) and CR3 and CR6