VISTA GEOENVIRONMENTAL SERVICES

OFFICE: 311 B AVENUE, SUITE S, LAKE OSWEGO, OR 97034
MAILING: P.O. BOX 388, LAKE OSWEGO, OR 97034

January 22, 2020

Mr. Mikel Diwan, Public Works Director
Hood River County Public Works
918 18th Street
Hood River, Oregon 97031

Subject: **2019 Annual Environmental Monitoring Report**
Hood River County Landfill
Hood River, Oregon

Dear Mr. Diwan:

Vista GeoEnvironmental Services, LLC (Vista) has prepared this 2019 Annual Environmental Monitoring Report (AEMR) for the environmental monitoring performed during 2019 at the closed Hood River County Landfill (Landfill), in Hood River, Oregon. The Landfill property and locations of the environmental monitoring locations are shown on the Site Plan in **Appendix A**.

1 INTRODUCTION

Environmental monitoring was performed at the Landfill as follows:

- May 23, 2019 - representing the second quarter monitoring event [Q2 Event], which included the following:
  - Confirming that monitoring wells MW-1 and MW-2 were dry;
  - Measuring the depth to water in monitoring well MW-3 and collecting a groundwater sample;
  - Collecting a leachate sample and duplicate leachate sample from the leachate discharge downgradient of the Landfill, above the lower pond;
  - Confirming that stormwater monitoring location SW-3 was dry; and
  - Measuring the concentrations of methane, carbon dioxide and oxygen in the ten vapor probes (VP-1S and VP-1D to VP-5, VP-6S and VP-6D, VP-7 and VP-8).
- August 13, 2019 – representing the second quarter resampling monitoring event [Q2 Resampling Event], which was required to resample monitoring well MW-3 following the detection of two volatile organic compounds (VOCs), chlorobenzene and 1,4 dichlorobenzene, during the Q2 Event.
- November 15, 2019 - representing the fourth quarter monitoring event [Q4 Event], to measure concentrations of methane, carbon dioxide and oxygen in the ten vapor probes (VP-1S and VP-1D to VP-5, VP-6S and VP-6D, VP-7 and VP-8).

The environmental monitoring was performed in accordance with the following:

- The Landfill's Solid Waste Disposal Site Closure Permit #168 (Permit) issued by the Oregon Department of Environmental Quality (DEQ) on May 29, 2013; and
- The Landfill's 2014 Draft Environmental Monitoring Plan (DEMP) (Mark Yinger Associates, 2014)[1].

2 GROUNDWATER MONITORING

Groundwater monitoring data collected in the field, including groundwater level measurements, and sampling data, are reported on the Field Sampling Data (FSD) sheets contained in **Appendix B**.

2.1 GROUNDWATER LEVEL MEASUREMENTS

Prior to performing any other groundwater monitoring activity during both the Q2 Event and the Q2 Resampling Event, the depth to groundwater was measured in MW-3 to the nearest 0.01 foot using an electric tape that had been washed in an Alconox™ detergent solution and rinsed in potable water. Since the monitoring well is essentially open to the atmosphere, each measurement was made after opening the locked protective casing and removing the loose-fitting cap.

The measurements were as follows:

- May 23, 2019 (Q2 Event) – depth to groundwater = 133.7 feet, representing approximately 2.3 feet from the bottom of MW-3; and
- August 13, 2019 (Q2 Resampling Event) – depth to groundwater = 133.0 feet, representing approximately 3.0 feet from the bottom of MW-3.

A groundwater contour and flow direction map cannot be developed for the 2019 AEMR since groundwater was not present in MW-1 and MW-2 during the Q2 Event.

2.2 GROUNDWATER SAMPLING

Groundwater samples were obtained from MW-3 during both the Q2 Event and the Q2 Resampling Event using disposable bailers after purging three times the volume of groundwater in the monitoring well. During the purging and sampling, a calibrated Horiba U-53 meter (calibration records are presented in **Appendix C**) was used to measure the following Group 1a parameters, as required by Section 18.1 of the Permit.

Group 1a – Field Indicators

[1] This is the plan recognized by DEQ as the standing Environmental Monitoring Plan (EMP) until a determination is made regarding the future requirements for the groundwater monitoring well network.

Specific conductance	Temperature	pH	Dissolved oxygen	Redox potential/ORP/Eh

In addition, although not required by the Permit, turbidity was also measured and recorded.

The initial purging data and the sample data is shown on the Field Sampling Data (FSD) sheets and the final data is included in the summary tables in **Appendix E**. The groundwater samples were collected in labeled, laboratory-supplied containers with appropriate preservatives, placed immediately in a cooler packed with ice, and sent by courier with a chain of custody (CoC) form to Pace Analytical (PACE), in Mt. Juliet, Tennessee for analysis in accordance with EPA Standard Methods. Copies of the CoC forms are included in **Appendix D**.

VOC trip blanks, prepared by the laboratory, accompanied the samples during both monitoring events for quality assurance and quality control purposes.

2.3 GROUNDWATER ANALYSIS

The Q2 Event groundwater samples were analyzed for the following, as required by Section 18.1 of the Permit.

Group 1b – Leachate Indicators		
Hardness	pH	Total suspended solids (TSS)
Total alkalinity	Total organic carbon (TOC)	Chemical oxygen demand (COD)
Specific conductance	Total dissolved solids (TDS)	

Group 2a – Common Anions and Cations					
Calcium	Magnesium	Manganese	Sodium	Potassium	Iron
Ammonia	Carbonate	Bicarbonate	Sulfate	Chloride	Nitrate
Silica	Ammonium[2]				

Group 2b – Trace Metals					
Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium
Cobalt	Copper	Lead	Nickel	Selenium	Silver
Thallium	Vanadium	Zinc			

[2] Ammonium is included in the list of Group 2a parameters. However, it has not been analysed in prior events and was not included in this event. It appears the exclusion of ammonium has been an oversight given the presence of ammonia, which is typically analysed for. Ammonium will be included in the 2020 parameter list.

Group 3 – Volatile Organic Compounds (VOCs)
All compounds that are detectable by EPA Method 8260.

In addition, although not required by the Permit, but consistent with some prior sampling events, samples were also analyzed for biological oxygen demand (BOD) (Group 1b) , silicon (Group 2a), and mercury (Group 2b).

The analytical results of the Q2 Event are presented in **Appendix D** and are summarized in the tables in **Appendix E**. The results indicated the following:

- Two VOCs with estimated concentrations slightly above the minimum detection limit (MDL) but below the reporting detection limit (RDL)
  - Chlorobenzene 0.476 µg/L (MDL = 0.348 µg/L and RDL = 1.00 µg/L); and
  - 1,4-Dichlorobenzene 0.468 µg/L (MDL = 0.274 µg/L and RDL = 1.00 µg/L).
- No VOCs were detected in the trip blank.

The August 13, 2019, Q2 Resampling Event was performed to determine if the Q2 Event VOC detections were false positives or repeatable results. Therefore, the parameters analyzed during the resampling event were limited to some of the Group 1b Leachate Indicators (as a check on the Group 1a Field Parameters) and VOCs. A duplicate sample was obtained for the VOC analyses and a laboratory-prepared trip blank accompanied the samples. No VOCs were detected in either the samples or the trip blank

The analytical results of the Q2 Resampling Event are presented in **Appendix D** and are summarized in the tables in **Appendix E**.

Overall the groundwater monitoring indicated:

- General consistency of Group 1a field and Group 1b laboratory indicators with prior years.
- Consistency of Group 2a common anions and cations with prior years, with exception that iron and manganese concentration in Q2 decreased from 2018 to below the Maximum Contaminant Level[3] (MCL) values of 0.3 mg/L and 0.05 mg/L, respectively.
- All Group 2 trace metal concentrations decreased to lowest concentrations on record.

[3] Maximum Contaminant Levels (MCLs) are standards that are set by the United States Environmental Protection Agency for drinking water quality. An MCL is the legal threshold limit on the amount of a substance that is allowed in public water systems under the Safe Drinking Water Act..

2.4 SURFACE WATER MONITORING

At the time of the Q2 Event, the SW-3 monitoring location was dry, and no surface water sample could be collected. Historical summary tables are included in **Appendix E**.

3 LEACHATE MONITORING

3.1 LEACHATE SAMPLING

During the Q2 Event, a leachate sample (L1) and a duplicate sample (L2) were collected from the location where leachate discharges from the Landfill upslope of the leachate collection pond. The Horiba U-53 instrument was used to measure the Group 1a Field Indicators and turbidity. The samples were managed in the same manner as the groundwater samples, as described in **Section 2.2**.

3.2 LEACHATE ANALYSIS

The leachate samples (L1 and L2) were analyzed for the same paraments as the groundwater sample. The analytical results of the Q2 Event are presented in **Appendix D** and are summarized in the tables in **Appendix E**. The results indicated the following.

- The field indicators, except for the redox potential, were generally consistent with prior values.
- There is good agreement between all the laboratory analytical results of the two samples.
- As in previous sampling events the concentrations of iron (35.9 mg/l and 36.1 mg/l) and manganese (7.68 mg/L and 7.82 mg/L) exceeded the MCLs of 0.30 mg/l and 0.05 mg/l, respectively.
- Two VOCs were identified in both L1 and L2 at concentrations above both the Minimum Detection Limit (MDL) and the Reporting Detection Limit (RDL):
  - Chlorobenzene 4.78 and 4.47 µg/L; and
  - 1,4-Dichlorobenzene 1.71 and 1.42 µg/L.
- Two VOCs were identified in both L1 and L2 at estimated concentrations slightly above the MDL, but below the RDL:
  - Benzene 0.934 and 0.899 µg/L (MDL = 0.331 µg/L and RDL = 1.00 µg/L); and
  - Isopropyl benzene 0.448 and 0.422 µg/L (MDL = 0.326 µg/L and RDL = 1.00 µg/L).
- All these VOC's have been detected at similar concentrations in sampling events since 2009.

Overall the data does not indicate an overall change in leachate quality.

4 LANDFILL GAS MONITORING

Landfill gas monitoring was performed in both the May 23, 2019, Q2 Event and the November 15, 2019, Q4 Event consistent with permit requirements. Monitoring results are consistent with previous years, including minor methane detections in probes VP-1S, VP-1D, and VP-2 which are located within the waste boundary; and no methane detections in the remaining perimeter probes. VP-5 was flooded during the Q4 sampling event and the PVC pipe in VP-6S was cracked about 15 inches below the sample port due to a bullet being shot through the casing, therefore sample results from these two probes are not considered valid for the Q4 event.

The 2019 data is shown on the FSD sheets in **Appendix A** and data since 2016 is summarized in **Appendix E.**

5 STATEMENT OF COMPLIANCE

The findings of the 2019 environmental monitoring events are summarized as follows:

- Two VOCs (chlorobenzene and 1,4-dichlorobenzene) with estimated concentrations slightly above the MDL but below the RDL were detected in the groundwater sample collected from monitoring well MW-3 in the Q2 event.
- No VOCs were detected in the groundwater sample collected from monitoring well MW-3 during the Q2 resampling event.
- The iron and manganese concentrations in the groundwater sample collected from MW-3 in the Q2 event decreased to below the Maximum Contaminant Level[4] (MCL) values of 0.3 mg/L and 0.05 mg/L, respectively.
- All Group 2 trace metals concentrations in the groundwater sample collected from MW-3 in the Q2 event decreased to the lowest concentrations on record.
- No surface water sample was collected due to dry conditions at SW-3.
- Methane was detected in probes VP-1S, VP-1D, and VP-2 at concentrations comparable to historical data. Probes VP-1S and VP-2 exceed the regulatory limit of five percent by volume but are located within the closed waste cell. No methane was detected in the soil gas probes on the east boundary of the landfill site.

[4] Maximum Contaminant Levels (MCLs) are standards that are set by the United States Environmental Protection Agency for drinking water quality. An MCL is the legal threshold limit on the amount of a substance that is allowed in public water systems under the Safe Drinking Water Act..

6 SUMMARY AND RECOMMENDATIONS

The monitoring data does not show any monitoring results of concern relative to prior years. However, the status of monitoring wells MW-1 and MW-2 which are routinely dry should be considered, and the casing around LFG probes VP-5 and VP-6S and 6D should be repaired.

VISTA appreciates the opportunity to work with HOOD RIVER COUNTY on this project. If you have any questions or need any additional information, please feel free to contact us at (503) 987-0254.

Sincerely,
Vista GeoEnvironmental Services, LLC

Roger North, P.E.
Principal

REGISTERED PROFESSIONAL ENGINEER
19006PE
OREGON
MARCH 18, 1997
ROGER BARRINGTON NORTH
EXPIRATION DATE: 12/31/20

ATTACHMENTS

Appendix A – Site Plan
Appendix B – Field Sampling Data Sheets
Appendix C – Field Instrument Calibration Records
Appendix D – Laboratory Reports and Chains of Custody
Appendix E – Summary Tables

APPENDIX A

SITE PLAN

HOOD RIVER COUNTY LANDFILL
01N10E10 1403

Static Water Elevations
MW-1 1508.65'
MW-2 1532.61'
MW-3 1604.35'

LANDFILL FEATURES
MONITORING WELLS
SUBJECT PROPERTY
TAXLOT LINE
Landfill gas probes
Surface water sampling points

N

0 200 400 800
Feet

Environmental & Ground Water Consultants
Mark Yinger Associates
69860 Camp Polk Road, Sisters OR, 97759 - 541-549-3030

Figure 2 Site Map

APPENDIX B

FIELD SAMPLING DATA SHEETS

VISTA GEOENVIRONMENTAL SERVICES

FIELD SAMPLING DATA SHEET
MONITORING WELLS

Facility: Hood River County Landfill_____ Job No. 19-143_____ Date: 2019-05-23__ Well ID: MW-1 _____

Personnel: Dan Murphy & Roger North _____ Weather: Clear & sunny _____

Wellhead Condition: Good and locked_____

Protective casing locked? Yes _____ Well capped? Yes _____ Pres. Or Vac. ? N/A _____

Water level start: Dry _____ Well depth: 365 ft _____ Refer. Elev.: 1859.98 ft _____

Well Volume Calculation: Casing diam. N/A _____ Borehole diam. N/A ____ Water column height: 0 ft _____

Well Volume: N/A _____

Target purge volume (3 x Well Volume): N/A ____ Purging rate: N/A _____ Sampling rate: N/A _____

Purging equipment: N/A _____

Sampling equipment: N/A _____

Sample filter: N/A _____ Sample preservative: N/A _____

Sample No.: N/A _____ Sample duplicate No. N/A _____ Laboratory: N/A _____

Comments: Made attempt to detect water by lowering a bailer to the bottom of the well. No liquid was present on or in the bailer. The cord was damp from rubbing the side of the PVC well. _____

_____

_____

Instrument	Calibration date/time	Standard

Time (X:XX)	Cumulative Volume (Gal.)	Temperature (C°)	Conductivity (umhos/cm)	pH	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NPT)

VISTA GEOENVIRONMENTAL SERVICES

FIELD SAMPLING DATA SHEET
MONITORING WELLS

Facility: Hood River County Landfill_____ Job No. 19-143_____ Date: 2019-05-23__ Well ID: MW-2 _____

Personnel: Dan Murphy & Roger North _____ Weather: Clear & sunny _____

Wellhead Condition: Good and locked_____

Protective casing locked? Yes _____ Well capped? Yes _____ Pres. Or Vac. ? N/A _____

Water level start: Dry _____ Well depth: 222 ft _____ Refer. Elev.: 1756.11 ft _____

Well Volume Calculation: Casing diam. N/A _____ Borehole diam. N/A ____ Water column height: 0 ft _____

Well Volume: N/A _____

Target purge volume (3 x Well Volume): N/A ____ Purging rate: N/A _____ Sampling rate: N/A _____

Purging equipment: N/A _____

Sampling equipment: N/A _____

Sample filter: N/A _____ Sample preservative: N/A _____

Sample No.: N/A _____ Sample duplicate No. N/A _____ Laboratory: N/A _____

Comments: Made attempt to detect water by lowering a bailer to the bottom of the well. No liquid was present on or in the bailer. The cord was damp from rubbing the side of the PVC well. _____

_____

_____

Instrument	Calibration date/time	Standard

Time (X:XX)	Cumulative Volume (Gal.)	Temperature (C°)	Conductivity (umhos/cm)	pH	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NPT)

VISTA GEOENVIRONMENTAL SERVICES

FIELD SAMPLING DATA SHEET
MONITORING WELLS

Facility: Hood River County Landfill_____ Job No. 19-143_____ Date: 2019-05-23__ Well ID: MW-3 _____

Personnel: Dan Murphy & Roger North _____ Weather: Clear & sunny _____

Wellhead Condition: Good and locked_____

Protective casing locked? Yes _____ Well capped? Yes _____ Pres. Or Vac. ? N/A _____

Water level start: 133.7 ft_____ Well depth: 136 ft _____ Refer. Elev.: 1738.30 ft _____

Well Volume Calculation: Casing diam. 2 in. _____ Borehole diam. 6 in. ____ Water column height: 2.3 ft _____

Well Volume: 0.37 gal. _____

Target purge volume (3 x Well Volume): 1.11 gal___ Purging rate: N/A _____ Sampling rate: N/A _____

Purging equipment: Disposable bailer _____

Sampling equipment: Disposable bailer _____

Sample filter: N/A _____ Sample preservative: See lab report._____

Sample No.: MW-3_____ Sample duplicate No. N/A. _____ Laboratory: Pace Analytical_____

Comments: Used bailers to purge well and obtain samples. Purging had to be halted multiple times to allow well time to recover. _____

_____

Instrument	Calibration date/time	Standard
Horiba U-53	2019-05-20	

Time (X:XX)	Cumulative Volume (Gal.)	Temperature (C°)	Conductivity (umhos/cm)	pH	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)
Initial 14:30	0.08	21.28	192	6.78	5.69	11	48.8
Final 15:55	1.11	21.27	123	6.71	6.31	55	0

VISTA GEOENVIRONMENTAL SERVICES

FIELD SAMPLING DATA SHEET
LEACHATE SAMPLING

Facility: Hood River County Landfill _Job No.: 19-143_____Date: 2019-05-23 ID__Leachate Discharge__

Personnel: Dan Murphy & Roger North_____Weather: Clear & sunny_____

Conditions: Dry_____

Leachate flow volume: Estimated approx. 5 gpm_____

Purging equipment: N/A sampled directly from leachate release into lab supplied containers._____

Sampling equipment: PPE and laboratory supplied containers._____

Sample filter : N/A_____ Sample preservative: Per lab report._____

Sample No.: L-1_____Sample duplicate No.: L-2_____Laboratory: Pace Analytical_____

Comments: Sampled directly from leachate release into lab supplied containers._____

_____

_____

Instrument	Calibration date/time	Standard
Horiba U-53	2019-05-20	

Time (X:XX)	Cumulative Volume (Gal.)	Temperature (C°)	Conductivity (umhos/cm)	pH	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)
17:00	N/A	14.07	368	6.49	7.70	13	14.1

VISTA GEOENVIRONMENTAL SERVICES

FIELD SAMPLING DATA SHEET
LANDFILL GAS SAMPLING

Facility: Hood River County Landfill _____Date: 2019-05-23_____ Page: 1 of 1

Personnel: Dan Murphy & Roger North __ Weather: Clear & sunny _____

Barometer: 30.0 in. Hg _____ Instrument: Landtec GEM 5000_____

Location	Methane (% LEL)	Oxygen (% Volume)	Carbon Dioxide (% Volume)	Comments
VP-1S	33.7	0.2	17.3	
VP-1D	0.3	0.2	12.8	
VP-2	14.2	0.2	17.0	
VP-3	0.0	15.6	5.5	
VP-4	0.0	16.0	3.3	
VP-5	0.0	17.2	3.1	
VP-6S	0.0	19.8	0.4	
VP-6D	0.0	8.7	9.1	
VP-7	0.0	16.2	4.7	
VP-8	0.0	17.0	4.9	

VISTA GEOENVIRONMENTAL SERVICES

FIELD SAMPLING DATA SHEET
MONITORING WELLS

Facility: Hood River County Landfill_____ Job No. 19-143_____ Date: 2019-08-13__ Well ID: MW-3 _____

Personnel: Dan Murphy & Roger North _____ Weather: Clear & sunny _____

Wellhead Condition: Good and locked_____

Protective casing locked? Yes _____ Well capped? Yes _____ Pres. Or Vac. ? N/A _____

Water level start: 133 ft_____ Well depth: 136 ft _____ Refer. Elev.: 1738.30 ft _____

Well Volume Calculation: Casing diam. 2 in. _____ Borehole diam. 6 in. ____ Water column height: 3.0 ft _____

Well Volume: 0.49 gal.(1.85 L) _____

Target purge volume (3 x Well Volume): 1.47 gal (5.56 L)___ Purging rate: N/A _____ Sampling rate: N/A _____

Purging equipment: Disposable bailer _____

Sampling equipment: Disposable bailer _____

Sample filter: N/A _____ Sample preservative: See lab report& COC_____

Sample No.: MW-3_____ Sample duplicate No. MW-3 - VOCs only___ Laboratory: Pace Analytical_____

Comments: Used bailers to purge well and obtain samples. Samples obtained for (i) laboratory specific conductance & TDS (ii)pH and (iii) VOCs for which a duplicate sample was obtained. _____

_____

Instrument	Calibration date/time	Standard
Horiba U-53	2019-08-09	

Time (X:XX)	Cumulative Volume (Gal.)	Temperature (C°)	Conductivity (umhos/cm)	pH	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)
Initial 16:30	0.2	18.05	111	5.92	13.02	333	17.8
Sample 17:50	1.61	19.13	35	6.71	4.16	223	340

VISTA GEOENVIRONMENTAL SERVICES

SAMPLING DATA SHEET
LANDFILL GAS SAMPLING

Facility: Hood River County Landfill _____Date: 2019-11-15_____ Page: 1 of 1

Personnel: Dan Murphy _____ Weather: Light fog and mist – 45 deg. F._____

Barometer: 30.13 in. Hg _____ Instrument: Landtec GEM 2000_____

Location	Methane (% LEL)	Oxygen (% Volume)	Carbon Dioxide (% Volume)	Comments
VP-1S	15.2	0.3	22.7	
VP-1D	0.0	1.0	12.7	
VP-2	0.4	0.0	20.5	
VP-3	0.0	18.1	4.0	
VP-4	0.0	19.5	2.4	
VP-5	0.0	20.7	0.0	Water present 15 in. below casing. Probe flooded. Invalid data.
VP-6S	0.0	20.6	0.5	Bullet holes in casing. ¾-in. PVC cracked approx. 15 in. below port
VP-6D	0.0	8.7	9.9	
VP-7	0.0	16.7	5.4	
VP-8	0.0	17.8	4.6	

APPENDIX C

FIELD INSTRUMENT CALIBRATION RECORDS

Eco-Rental Solutions

Calibration Certificate

rev 8/9/11

Work Order No.: SE-067903
Date of Service: 5/20/2019 12:00:00 AM

Unit Under Test: Horiba U-53-2, 2 meter cable

Asset No.: FA02117 Technician Initials: _____
Serial No: 8RPN9AJS/RXRT45TF

TEST	Specification	Result
Standard Calibration	Pass/Fail	PASS

TEST STANDARDS USED:

DESCRIPTION	LOT NO./EXPIRATION DATE	QUANTITY
Zobell Solution, ORP Standard	Lot#19080167 Exp: 5/1/19	1
AUTOCAL: pH 4, Cond 4.49 mS/cm, Turb 0.0 NTU	Lot#18366306 Exp: 9/30/19	1

TEST EQUIPMENT USED:

DESCRIPTION	ASSET NO.	SERIAL NO.	DATE OF LAST CAL	DATE CAL DUE

Test Equipment and standards are traceable to National standards.

FIELD ENVIRONMENTAL INSTRUMENTS, INC.
www.fieldenvironmental.com

301 Brushton Ave
Suite A
Pittsburgh, PA 15221
Toll Free (800) 393-4009
Local (412) 436-2600
Fax (412) 436-2616

	Lot #	Expiration
Horiba Auto-Cal Solution	7805081	5/1/2020

Cal Standard	Reading	Acceptable Range
PH 4 @ 25^{c}	4.00	(3.96 - 4.04)

Cal Standard	Reading ms/cm	Acceptable Range
Conductivity	4.49	(4.31 - 4.58)

Cal Standard		Reading NTU	Acceptable Range
Turbidity	0 NTU	0.0	(-2 - +2)
	100 NTU	100.0	(95 - 105)

Dissolved Oxygen	Reading mg/L
100% Saturation	9.66
0% Saturation	0.00

Cal Standard	Lot #	Expiration	Reading	Acceptable Range
PH 7 @ 25^{c}	78-10596	11/1/2020	7.00	(6.93 - 7.07)

Cal Standard	Lot #	Expiration	Reading	Acceptable Range
PH 10 @ 25^{c}	79-01499	10/1/2020	10.00	(9.9 - 10.1)

Check Standard	Temp ^{c}	Relative Reading	Acceptable Range
ORP	23.4	220.0	(+/- 15mV)

☑ ORP pin in place

*Solutions provided by LabChem (412-826-5230)

Model	U-52-2
S/N	P64RNY0G
Sonde	U66428X
Barcode	U90335X
Order #	404856

Calibrated By: David Lampert

Date of Calibration: 8/9/2019

All calibrations performed by FEI conform to manufacturer's specifications. Please report any issues within 24 hours of receiving equipment.
All calibration solutions used are traceable to NIST. Additional documentation is available upon request.

APPENDIX D

LABORATORY REPORTS AND CHAINS OF CUSTODY

- MAY 23, 2019 – Q2 EVENT
- AUGUST 13, 2019 – Q2 RESAMPLING EVENT

May 23, 2019 – Q2 Event

ANALYTICAL REPORT

June 11, 2019

Vista GeoEnvironmental Services, Inc.

Sample Delivery Group:	L1102551
Samples Received:	05/25/2019
Project Number:	19-143
Description:	Hood River LF Q2 Monitoring 2019
Report To:	Roger North P.O. Box 388 Lake Oswego, OR 97034

Entire Report Reviewed By:

Brian Ford

Brian Ford
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.

TABLE OF CONTENTS

Cp: Cover Page 1

Tc: Table of Contents 2

Ss: Sample Summary 3

Cn: Case Narrative 5

Sr: Sample Results 6

MW-3 L1102551-01 6

L-1 L1102551-02 10

L-2 L1102551-03 14

Qc: Quality Control Summary 18

Gravimetric Analysis by Method 2540 C-2011 18

Gravimetric Analysis by Method 2540 D-2011 19

Wet Chemistry by Method 130.1 20

Wet Chemistry by Method 2320 B-2011 21

Wet Chemistry by Method 350.1 25

Wet Chemistry by Method 410.4 26

Wet Chemistry by Method 5210 B-2011 27

Wet Chemistry by Method 9040C 28

Wet Chemistry by Method 9050A 29

Wet Chemistry by Method 9056A 30

Wet Chemistry by Method 9060A 32

Mercury by Method 7470A 33

Metals (ICP) by Method 6010D 35

Metals (ICPMS) by Method 6020B 40

Volatile Organic Compounds (GC/MS) by Method 8260C 44

Gl: Glossary of Terms 48

Al: Accreditations & Locations 49

Sc: Sample Chain of Custody 50

MW-3 L1102551-01 GW

Collected by	Collected date/time	Received date/time
R. North	05/23/19 14:30	05/25/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1287643	1	05/30/19 15:01	05/30/19 15:01	EL	Mt. Juliet, TN
Calculated Results	WG1293083	1	06/11/19 01:54	06/11/19 01:54	EL	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1288040	1	05/30/19 11:16	05/30/19 11:56	MMF	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 D-2011	WG1288075	1	05/30/19 14:56	05/30/19 16:00	TH	Mt. Juliet, TN
Wet Chemistry by Method 130.1	WG1288764	1	05/31/19 14:09	05/31/19 14:09	SDL	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1288098	1	05/30/19 19:14	05/30/19 19:14	GB	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1288392	1	05/30/19 16:07	05/30/19 16:07	BRJ	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1289866	1	06/03/19 08:03	06/03/19 12:44	TCC	Mt. Juliet, TN
Wet Chemistry by Method 5210 B-2011	WG1286660	1	05/25/19 14:00	05/30/19 09:37	ARM	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1287176	1	05/28/19 12:11	05/28/19 12:11	TH	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG1288969	1	05/31/19 17:43	05/31/19 17:43	RDW	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286607	1	05/25/19 12:08	05/25/19 12:08	ST	Mt. Juliet, TN
Wet Chemistry by Method 9060A	WG1289078	1	06/01/19 14:13	06/01/19 14:13	EEM	Mt. Juliet, TN
Mercury by Method 7470A	WG1287077	1	05/28/19 20:07	05/29/19 11:05	ABL	Mt. Juliet, TN
Mercury by Method 7470A	WG1291603	1	06/06/19 10:44	06/06/19 20:52	TCT	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1287643	1	05/30/19 07:18	05/30/19 13:20	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1287643	5	05/30/19 07:18	05/30/19 15:01	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1288777	1	05/31/19 09:29	06/03/19 11:37	EL	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1293083	1	06/08/19 14:38	06/10/19 12:07	JDG	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1293083	5	06/08/19 14:38	06/11/19 01:54	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1287606	1	05/29/19 07:54	05/30/19 17:15	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1291430	1	06/05/19 16:56	06/06/19 17:35	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1287588	1	05/29/19 07:32	05/29/19 07:32	ADM	Mt. Juliet, TN

L-1 L1102551-02 GW

Collected by	Collected date/time	Received date/time
R. North	05/23/19 16:45	05/25/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1287643	1	05/30/19 13:23	05/30/19 13:23	EL	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1288040	1	05/30/19 11:16	05/30/19 11:56	MMF	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 D-2011	WG1288075	1	05/30/19 14:56	05/30/19 16:00	TH	Mt. Juliet, TN
Wet Chemistry by Method 130.1	WG1288764	1	05/31/19 14:31	05/31/19 14:31	SDL	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1288107	1	05/30/19 21:57	05/30/19 21:57	GB	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1288392	1	05/30/19 15:27	05/30/19 15:27	BRJ	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1289866	1	06/03/19 08:03	06/03/19 12:44	TCC	Mt. Juliet, TN
Wet Chemistry by Method 5210 B-2011	WG1286660	1	05/25/19 15:08	05/30/19 09:39	ARM	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1287176	1	05/28/19 12:11	05/28/19 12:11	TH	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG1288969	1	05/31/19 17:43	05/31/19 17:43	RDW	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286607	1	05/25/19 13:35	05/25/19 13:35	ST	Mt. Juliet, TN
Wet Chemistry by Method 9060A	WG1289078	1	06/01/19 14:26	06/01/19 14:26	EEM	Mt. Juliet, TN
Mercury by Method 7470A	WG1287077	1	05/28/19 20:07	05/29/19 11:08	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1287643	1	05/30/19 07:18	05/30/19 13:23	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1287606	1	05/29/19 07:54	05/30/19 17:20	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1287606	5	05/29/19 07:54	05/30/19 18:33	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1287588	1	05/29/19 07:52	05/29/19 07:52	ADM	Mt. Juliet, TN

L-2 L1102551-03 GW

Collected by	Collected date/time	Received date/time
R. North	05/23/19 17:50	05/25/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1287643	1	05/30/19 13:26	05/30/19 13:26	EL	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 C-2011	WG1288040	1	05/30/19 11:16	05/30/19 11:56	MMF	Mt. Juliet, TN
Gravimetric Analysis by Method 2540 D-2011	WG1288075	1	05/30/19 14:56	05/30/19 16:00	TH	Mt. Juliet, TN

L-2 L1102551-03 GW

Collected by	Collected date/time	Received date/time
R. North	05/23/19 17:50	05/25/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 130.1	WG1288764	1	05/31/19 14:11	05/31/19 14:11	SDL	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1288107	1	05/31/19 00:37	05/31/19 00:37	GB	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1288392	1	05/30/19 15:28	05/30/19 15:28	BRJ	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1289866	1	06/03/19 08:03	06/03/19 12:44	TCC	Mt. Juliet, TN
Wet Chemistry by Method 5210 B-2011	WG1286660	1	05/25/19 15:10	05/30/19 09:40	ARM	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1287176	1	05/28/19 12:11	05/28/19 12:11	TH	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG1288969	1	05/31/19 17:43	05/31/19 17:43	RDW	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1286607	1	05/25/19 13:49	05/25/19 13:49	ST	Mt. Juliet, TN
Wet Chemistry by Method 9060A	WG1289078	1	06/01/19 14:51	06/01/19 14:51	EEM	Mt. Juliet, TN
Mercury by Method 7470A	WG1287077	1	05/28/19 20:07	05/29/19 11:10	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1287643	1	05/30/19 07:18	05/30/19 13:26	EL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1287606	1	05/29/19 07:54	05/30/19 17:25	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1287606	5	05/29/19 07:54	05/30/19 18:38	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1287588	1	05/29/19 08:12	05/29/19 08:12	ADM	Mt. Juliet, TN

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

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.

Brian Ford

Brian Ford
Project Manager

Calculated Results

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Silica	24100		424	2140	1	05/30/2019 15:01	WG1287643
Silica,Dissolved	26400		424	2140	1	06/11/2019 01:54	WG1293083

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Dissolved Solids	111000		2820	10000	1	05/30/2019 11:56	WG1288040

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Suspended Solids	102000		2690	19200	1	05/30/2019 16:00	WG1288075

Wet Chemistry by Method 130.1

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Hardness (colorimetric) as CaCO3	10100	J	1430	30000	1	05/31/2019 14:09	WG1288764

Wet Chemistry by Method 2320 B-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Alkalinity	37700		2710	20000	1	05/30/2019 19:14	WG1288098
Alkalinity,Bicarbonate	37700		2710	20000	1	05/30/2019 19:14	WG1288098
Alkalinity,Carbonate	U		2710	20000	1	05/30/2019 19:14	WG1288098

Sample Narrative:

L1102551-01 WG1288098: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	U		31.7	100	1	05/30/2019 16:07	WG1288392

Wet Chemistry by Method 410.4

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
COD	36400		3000	10000	1	06/03/2019 12:44	WG1289866

Wet Chemistry by Method 5210 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
BOD	U		3.33	1	05/30/2019 09:37	WG1286660

Wet Chemistry by Method 9040C

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	6.68	T8	1	05/28/2019 12:11	WG1287176

Sample Narrative:

L1102551-01 WG1287176: 6.68 at 20.4C

Wet Chemistry by Method 9050A

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	83.5		10.0	1	05/31/2019 17:43	WG1288969

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	1750		51.9	1000	1	05/25/2019 12:08	WG1286607
Nitrate as (N)	196	P1	22.7	100	1	05/25/2019 12:08	WG1286607
Sulfate	706	J	77.4	5000	1	05/25/2019 12:08	WG1286607

Wet Chemistry by Method 9060A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOC (Total Organic Carbon)	1680	B	102	1000	1	06/01/2019 14:13	WG1289078

Mercury by Method 7470A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Mercury	U		0.0490	0.200	1	05/29/2019 11:05	WG1287077
Mercury,Dissolved	U		0.0490	0.200	1	06/06/2019 20:52	WG1291603

Metals (ICP) by Method 6010D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Calcium	5060		46.3	1000	1	05/30/2019 13:20	WG1287643
Calcium,Dissolved	5010		46.3	1000	1	06/10/2019 12:07	WG1293083
Iron	35.7	B J	14.1	100	1	05/30/2019 13:20	WG1287643
Iron,Dissolved	U		14.1	100	1	06/10/2019 12:07	WG1293083
Magnesium	1790		11.1	1000	1	05/30/2019 13:20	WG1287643
Magnesium,Dissolved	1710		11.1	1000	1	06/10/2019 12:07	WG1293083
Manganese	9.47	J	1.20	10.0	1	05/30/2019 13:20	WG1287643
Manganese,Dissolved	31.7		1.20	10.0	1	06/10/2019 12:07	WG1293083
Potassium	1410		102	1000	1	05/30/2019 13:20	WG1287643
Potassium,Dissolved	1310		102	1000	1	06/10/2019 12:07	WG1293083
Silicon	11300		198	1000	5	05/30/2019 15:01	WG1287643
Silicon,Dissolved	12300		198	1000	5	06/11/2019 01:54	WG1293083
Sodium	7920		98.5	1000	1	06/03/2019 11:37	WG1288777
Sodium,Dissolved	10100		98.5	1000	1	06/10/2019 12:07	WG1293083

Metals (ICPMS) by Method 6020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Antimony	U		0.754	2.00	1	05/30/2019 17:15	WG1287606
Antimony,Dissolved	U		0.754	2.00	1	06/06/2019 17:35	WG1291430
Arsenic	0.358	J	0.250	2.00	1	05/30/2019 17:15	WG1287606
Arsenic,Dissolved	0.371	J	0.250	2.00	1	06/06/2019 17:35	WG1291430
Barium	10.2		0.360	5.00	1	05/30/2019 17:15	WG1287606
Barium,Dissolved	9.93		0.360	5.00	1	06/06/2019 17:35	WG1291430
Beryllium	U		0.120	2.00	1	05/30/2019 17:15	WG1287606
Beryllium,Dissolved	U		0.120	2.00	1	06/06/2019 17:35	WG1291430
Cadmium	U		0.160	1.00	1	05/30/2019 17:15	WG1287606
Cadmium,Dissolved	U		0.160	1.00	1	06/06/2019 17:35	WG1291430
Chromium	U		0.540	2.00	1	05/30/2019 17:15	WG1287606
Chromium,Dissolved	U		0.540	2.00	1	06/06/2019 17:35	WG1291430
Copper	2.93	J	0.520	5.00	1	05/30/2019 17:15	WG1287606

Metals (ICPMS) by Method 6020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Copper,Dissolved	2.73	J	0.520	5.00	1	06/06/2019 17:35	WG1291430
Cobalt	U		0.260	2.00	1	05/30/2019 17:15	WG1287606
Cobalt,Dissolved	U		0.260	2.00	1	06/06/2019 17:35	WG1291430
Lead	0.318	J	0.240	2.00	1	05/30/2019 17:15	WG1287606
Lead,Dissolved	0.389	J	0.240	2.00	1	06/06/2019 17:35	WG1291430
Nickel	0.416	J	0.350	2.00	1	05/30/2019 17:15	WG1287606
Nickel,Dissolved	U		0.350	2.00	1	06/06/2019 17:35	WG1291430
Selenium	U		0.380	2.00	1	05/30/2019 17:15	WG1287606
Selenium,Dissolved	U		0.380	2.00	1	06/06/2019 17:35	WG1291430
Silver	U		0.310	2.00	1	05/30/2019 17:15	WG1287606
Silver,Dissolved	U		0.310	2.00	1	06/06/2019 17:35	WG1291430
Thallium	U		0.190	2.00	1	05/30/2019 17:15	WG1287606
Thallium,Dissolved	U		0.190	2.00	1	06/06/2019 17:35	WG1291430
Vanadium	0.990	J	0.180	5.00	1	05/30/2019 17:15	WG1287606
Vanadium,Dissolved	0.819	J	0.180	5.00	1	06/06/2019 17:35	WG1291430
Zinc	6.10	J	2.56	25.0	1	05/30/2019 17:15	WG1287606
Zinc,Dissolved	7.13	J	2.56	25.0	1	06/06/2019 17:35	WG1291430

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	U		10.0	50.0	1	05/29/2019 07:32	WG1287588
Acrolein	U	J4	8.87	50.0	1	05/29/2019 07:32	WG1287588
Acrylonitrile	U		1.87	10.0	1	05/29/2019 07:32	WG1287588
Benzene	U		0.331	1.00	1	05/29/2019 07:32	WG1287588
Bromobenzene	U		0.352	1.00	1	05/29/2019 07:32	WG1287588
Bromodichloromethane	U		0.380	1.00	1	05/29/2019 07:32	WG1287588
Bromoform	U		0.469	1.00	1	05/29/2019 07:32	WG1287588
Bromomethane	U		0.866	5.00	1	05/29/2019 07:32	WG1287588
n-Butylbenzene	U		0.361	1.00	1	05/29/2019 07:32	WG1287588
sec-Butylbenzene	U		0.365	1.00	1	05/29/2019 07:32	WG1287588
tert-Butylbenzene	U		0.399	1.00	1	05/29/2019 07:32	WG1287588
Carbon tetrachloride	U		0.379	1.00	1	05/29/2019 07:32	WG1287588
Chlorobenzene	0.476	J	0.348	1.00	1	05/29/2019 07:32	WG1287588
Chlorodibromomethane	U		0.327	1.00	1	05/29/2019 07:32	WG1287588
Chloroethane	U		0.453	5.00	1	05/29/2019 07:32	WG1287588
Chloroform	U		0.324	5.00	1	05/29/2019 07:32	WG1287588
Chloromethane	U		0.276	2.50	1	05/29/2019 07:32	WG1287588
2-Chlorotoluene	U		0.375	1.00	1	05/29/2019 07:32	WG1287588
4-Chlorotoluene	U		0.351	1.00	1	05/29/2019 07:32	WG1287588
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	05/29/2019 07:32	WG1287588
1,2-Dibromoethane	U		0.381	1.00	1	05/29/2019 07:32	WG1287588
Dibromomethane	U		0.346	1.00	1	05/29/2019 07:32	WG1287588
1,2-Dichlorobenzene	U		0.349	1.00	1	05/29/2019 07:32	WG1287588
1,3-Dichlorobenzene	U		0.220	1.00	1	05/29/2019 07:32	WG1287588
1,4-Dichlorobenzene	0.468	J	0.274	1.00	1	05/29/2019 07:32	WG1287588
Dichlorodifluoromethane	U		0.551	5.00	1	05/29/2019 07:32	WG1287588
1,1-Dichloroethane	U		0.259	1.00	1	05/29/2019 07:32	WG1287588
1,2-Dichloroethane	U		0.361	1.00	1	05/29/2019 07:32	WG1287588
1,1-Dichloroethene	U		0.398	1.00	1	05/29/2019 07:32	WG1287588
cis-1,2-Dichloroethene	U		0.260	1.00	1	05/29/2019 07:32	WG1287588
trans-1,2-Dichloroethene	U		0.396	1.00	1	05/29/2019 07:32	WG1287588
1,2-Dichloropropane	U		0.306	1.00	1	05/29/2019 07:32	WG1287588
1,1-Dichloropropene	U		0.352	1.00	1	05/29/2019 07:32	WG1287588
1,3-Dichloropropane	U		0.366	1.00	1	05/29/2019 07:32	WG1287588
cis-1,3-Dichloropropene	U		0.418	1.00	1	05/29/2019 07:32	WG1287588

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
trans-1,3-Dichloropropene	U		0.419	1.00	1	05/29/2019 07:32	WG1287588
2,2-Dichloropropane	U		0.321	1.00	1	05/29/2019 07:32	WG1287588
Di-isopropyl ether	U		0.320	1.00	1	05/29/2019 07:32	WG1287588
Ethylbenzene	U		0.384	1.00	1	05/29/2019 07:32	WG1287588
Hexachloro-1,3-butadiene	U		0.256	1.00	1	05/29/2019 07:32	WG1287588
Isopropylbenzene	U		0.326	1.00	1	05/29/2019 07:32	WG1287588
p-Isopropyltoluene	U		0.350	1.00	1	05/29/2019 07:32	WG1287588
2-Butanone (MEK)	U		3.93	10.0	1	05/29/2019 07:32	WG1287588
Methylene Chloride	U		1.00	5.00	1	05/29/2019 07:32	WG1287588
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	05/29/2019 07:32	WG1287588
Methyl tert-butyl ether	U		0.367	1.00	1	05/29/2019 07:32	WG1287588
Naphthalene	U		1.00	5.00	1	05/29/2019 07:32	WG1287588
n-Propylbenzene	U		0.349	1.00	1	05/29/2019 07:32	WG1287588
Styrene	U		0.307	1.00	1	05/29/2019 07:32	WG1287588
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	05/29/2019 07:32	WG1287588
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	05/29/2019 07:32	WG1287588
1,1,2-Trichlorotrifluoroethane	U		0.303	1.00	1	05/29/2019 07:32	WG1287588
Tetrachloroethene	U		0.372	1.00	1	05/29/2019 07:32	WG1287588
Toluene	U		0.412	1.00	1	05/29/2019 07:32	WG1287588
1,2,3-Trichlorobenzene	U		0.230	1.00	1	05/29/2019 07:32	WG1287588
1,2,4-Trichlorobenzene	U		0.355	1.00	1	05/29/2019 07:32	WG1287588
1,1,1-Trichloroethane	U		0.319	1.00	1	05/29/2019 07:32	WG1287588
1,1,2-Trichloroethane	U		0.383	1.00	1	05/29/2019 07:32	WG1287588
Trichloroethene	U		0.398	1.00	1	05/29/2019 07:32	WG1287588
Trichlorofluoromethane	U		1.20	5.00	1	05/29/2019 07:32	WG1287588
1,2,3-Trichloropropane	U		0.807	2.50	1	05/29/2019 07:32	WG1287588
1,2,4-Trimethylbenzene	U		0.373	1.00	1	05/29/2019 07:32	WG1287588
1,2,3-Trimethylbenzene	U		0.321	1.00	1	05/29/2019 07:32	WG1287588
1,3,5-Trimethylbenzene	U		0.387	1.00	1	05/29/2019 07:32	WG1287588
Vinyl chloride	U		0.259	1.00	1	05/29/2019 07:32	WG1287588
Xylenes, Total	U		1.06	3.00	1	05/29/2019 07:32	WG1287588
(S) Toluene-d8	*111*			*80.0-120*		*05/29/2019 07:32*	WG1287588
(S) 4-Bromofluorobenzene	*96.3*			*77.0-126*		*05/29/2019 07:32*	WG1287588
(S) 1,2-Dichloroethane-d4	*87.5*			*70.0-130*		*05/29/2019 07:32*	WG1287588

Calculated Results

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Silica	13800		84.7	428	1	05/30/2019 13:23	WG1287643

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Dissolved Solids	223000		2820	10000	1	05/30/2019 11:56	WG1288040

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Suspended Solids	36600		700	5000	1	05/30/2019 16:00	WG1288075

Wet Chemistry by Method 130.1

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Hardness (colorimetric) as CaCO3	158000		1430	30000	1	05/31/2019 14:31	WG1288764

Wet Chemistry by Method 2320 B-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Alkalinity	196000		2710	20000	1	05/30/2019 21:57	WG1288107
Alkalinity,Bicarbonate	196000		2710	20000	1	05/30/2019 21:57	WG1288107
Alkalinity,Carbonate	U		2710	20000	1	05/30/2019 21:57	WG1288107

Sample Narrative:

L1102551-02 WG1288107: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	1500		31.7	100	1	05/30/2019 15:27	WG1288392

Wet Chemistry by Method 410.4

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
COD	12400		3000	10000	1	06/03/2019 12:44	WG1289866

Wet Chemistry by Method 5210 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
BOD	9.70		3.33	1	05/30/2019 09:39	WG1286660

Wet Chemistry by Method 9040C

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	6.41	T8	1	05/28/2019 12:11	WG1287176

Sample Narrative:

L1102551-02 WG1287176: 6.41 at 20.3C

Wet Chemistry by Method 9050A

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	442		10.0	1	05/31/2019 17:43	WG1288969

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	24500		51.9	1000	1	05/25/2019 13:35	WG1286607
Nitrate as (N)	U		22.7	100	1	05/25/2019 13:35	WG1286607
Sulfate	1170	J	77.4	5000	1	05/25/2019 13:35	WG1286607

Wet Chemistry by Method 9060A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOC (Total Organic Carbon)	3130	B	102	1000	1	06/01/2019 14:26	WG1289078

Mercury by Method 7470A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Mercury	U		0.0490	0.200	1	05/29/2019 11:08	WG1287077

Metals (ICP) by Method 6010D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Calcium	38200		46.3	1000	1	05/30/2019 13:23	WG1287643
Iron	35900		14.1	100	1	05/30/2019 13:23	WG1287643
Magnesium	15000		11.1	1000	1	05/30/2019 13:23	WG1287643
Manganese	7680		1.20	10.0	1	05/30/2019 13:23	WG1287643
Potassium	4350		102	1000	1	05/30/2019 13:23	WG1287643
Silicon	6430		39.6	200	1	05/30/2019 13:23	WG1287643
Sodium	15700		98.5	1000	1	05/30/2019 13:23	WG1287643

Metals (ICPMS) by Method 6020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Antimony	U		0.754	2.00	1	05/30/2019 17:20	WG1287606
Arsenic	U		0.250	2.00	1	05/30/2019 17:20	WG1287606
Barium	378		1.80	25.0	5	05/30/2019 18:33	WG1287606
Beryllium	U		0.120	2.00	1	05/30/2019 17:20	WG1287606
Cadmium	U		0.160	1.00	1	05/30/2019 17:20	WG1287606
Chromium	U		0.540	2.00	1	05/30/2019 17:20	WG1287606
Copper	2.54	J	0.520	5.00	1	05/30/2019 17:20	WG1287606
Cobalt	74.6		0.260	2.00	1	05/30/2019 17:20	WG1287606
Lead	0.374	J	0.240	2.00	1	05/30/2019 17:20	WG1287606
Nickel	1.26	J	0.350	2.00	1	05/30/2019 17:20	WG1287606
Selenium	U		0.380	2.00	1	05/30/2019 17:20	WG1287606
Silver	U		0.310	2.00	1	05/30/2019 17:20	WG1287606
Thallium	U		0.190	2.00	1	05/30/2019 17:20	WG1287606
Vanadium	U		0.180	5.00	1	05/30/2019 17:20	WG1287606
Zinc	7.33	J	2.56	25.0	1	05/30/2019 17:20	WG1287606

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	U		10.0	50.0	1	05/29/2019 07:52	WG1287588
Acrolein	U	J4	8.87	50.0	1	05/29/2019 07:52	WG1287588
Acrylonitrile	U		1.87	10.0	1	05/29/2019 07:52	WG1287588
Benzene	0.934	J	0.331	1.00	1	05/29/2019 07:52	WG1287588
Bromobenzene	U		0.352	1.00	1	05/29/2019 07:52	WG1287588
Bromodichloromethane	U		0.380	1.00	1	05/29/2019 07:52	WG1287588
Bromoform	U		0.469	1.00	1	05/29/2019 07:52	WG1287588
Bromomethane	U		0.866	5.00	1	05/29/2019 07:52	WG1287588
n-Butylbenzene	U		0.361	1.00	1	05/29/2019 07:52	WG1287588
sec-Butylbenzene	U		0.365	1.00	1	05/29/2019 07:52	WG1287588
tert-Butylbenzene	U		0.399	1.00	1	05/29/2019 07:52	WG1287588
Carbon tetrachloride	U		0.379	1.00	1	05/29/2019 07:52	WG1287588
Chlorobenzene	4.78		0.348	1.00	1	05/29/2019 07:52	WG1287588
Chlorodibromomethane	U		0.327	1.00	1	05/29/2019 07:52	WG1287588
Chloroethane	U		0.453	5.00	1	05/29/2019 07:52	WG1287588
Chloroform	U		0.324	5.00	1	05/29/2019 07:52	WG1287588
Chloromethane	U		0.276	2.50	1	05/29/2019 07:52	WG1287588
2-Chlorotoluene	U		0.375	1.00	1	05/29/2019 07:52	WG1287588
4-Chlorotoluene	U		0.351	1.00	1	05/29/2019 07:52	WG1287588
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	05/29/2019 07:52	WG1287588
1,2-Dibromoethane	U		0.381	1.00	1	05/29/2019 07:52	WG1287588
Dibromomethane	U		0.346	1.00	1	05/29/2019 07:52	WG1287588
1,2-Dichlorobenzene	U		0.349	1.00	1	05/29/2019 07:52	WG1287588
1,3-Dichlorobenzene	U		0.220	1.00	1	05/29/2019 07:52	WG1287588
1,4-Dichlorobenzene	1.71		0.274	1.00	1	05/29/2019 07:52	WG1287588
Dichlorodifluoromethane	U		0.551	5.00	1	05/29/2019 07:52	WG1287588
1,1-Dichloroethane	U		0.259	1.00	1	05/29/2019 07:52	WG1287588
1,2-Dichloroethane	U		0.361	1.00	1	05/29/2019 07:52	WG1287588
1,1-Dichloroethene	U		0.398	1.00	1	05/29/2019 07:52	WG1287588
cis-1,2-Dichloroethene	U		0.260	1.00	1	05/29/2019 07:52	WG1287588
trans-1,2-Dichloroethene	U		0.396	1.00	1	05/29/2019 07:52	WG1287588
1,2-Dichloropropane	U		0.306	1.00	1	05/29/2019 07:52	WG1287588
1,1-Dichloropropene	U		0.352	1.00	1	05/29/2019 07:52	WG1287588
1,3-Dichloropropane	U		0.366	1.00	1	05/29/2019 07:52	WG1287588
cis-1,3-Dichloropropene	U		0.418	1.00	1	05/29/2019 07:52	WG1287588
trans-1,3-Dichloropropene	U		0.419	1.00	1	05/29/2019 07:52	WG1287588
2,2-Dichloropropane	U		0.321	1.00	1	05/29/2019 07:52	WG1287588
Di-isopropyl ether	U		0.320	1.00	1	05/29/2019 07:52	WG1287588
Ethylbenzene	U		0.384	1.00	1	05/29/2019 07:52	WG1287588
Hexachloro-1,3-butadiene	U		0.256	1.00	1	05/29/2019 07:52	WG1287588
Isopropylbenzene	0.448	J	0.326	1.00	1	05/29/2019 07:52	WG1287588
p-Isopropyltoluene	U		0.350	1.00	1	05/29/2019 07:52	WG1287588
2-Butanone (MEK)	U		3.93	10.0	1	05/29/2019 07:52	WG1287588
Methylene Chloride	U		1.00	5.00	1	05/29/2019 07:52	WG1287588
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	05/29/2019 07:52	WG1287588
Methyl tert-butyl ether	U		0.367	1.00	1	05/29/2019 07:52	WG1287588
Naphthalene	U		1.00	5.00	1	05/29/2019 07:52	WG1287588
n-Propylbenzene	U		0.349	1.00	1	05/29/2019 07:52	WG1287588
Styrene	U		0.307	1.00	1	05/29/2019 07:52	WG1287588
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	05/29/2019 07:52	WG1287588
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	05/29/2019 07:52	WG1287588
1,1,2-Trichlorotrifluoroethane	U		0.303	1.00	1	05/29/2019 07:52	WG1287588
Tetrachloroethene	U		0.372	1.00	1	05/29/2019 07:52	WG1287588
Toluene	U		0.412	1.00	1	05/29/2019 07:52	WG1287588
1,2,3-Trichlorobenzene	U		0.230	1.00	1	05/29/2019 07:52	WG1287588
1,2,4-Trichlorobenzene	U		0.355	1.00	1	05/29/2019 07:52	WG1287588

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
1,1,1-Trichloroethane	U		0.319	1.00	1	05/29/2019 07:52	WG1287588
1,1,2-Trichloroethane	U		0.383	1.00	1	05/29/2019 07:52	WG1287588
Trichloroethene	U		0.398	1.00	1	05/29/2019 07:52	WG1287588
Trichlorofluoromethane	U		1.20	5.00	1	05/29/2019 07:52	WG1287588
1,2,3-Trichloropropane	U		0.807	2.50	1	05/29/2019 07:52	WG1287588
1,2,4-Trimethylbenzene	U		0.373	1.00	1	05/29/2019 07:52	WG1287588
1,2,3-Trimethylbenzene	U		0.321	1.00	1	05/29/2019 07:52	WG1287588
1,3,5-Trimethylbenzene	U		0.387	1.00	1	05/29/2019 07:52	WG1287588
Vinyl chloride	U		0.259	1.00	1	05/29/2019 07:52	WG1287588
Xylenes, Total	U		1.06	3.00	1	05/29/2019 07:52	WG1287588
(S) Toluene-d8	*108*			*80.0-120*		*05/29/2019 07:52*	WG1287588
(S) 4-Bromofluorobenzene	*102*			*77.0-126*		*05/29/2019 07:52*	WG1287588
(S) 1,2-Dichloroethane-d4	*94.5*			*70.0-130*		*05/29/2019 07:52*	WG1287588

Calculated Results

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Silica	13900		84.7	428	1	05/30/2019 13:26	WG1287643

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Dissolved Solids	233000		2820	10000	1	05/30/2019 11:56	WG1288040

Gravimetric Analysis by Method 2540 D-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Suspended Solids	30000		700	5000	1	05/30/2019 16:00	WG1288075

Wet Chemistry by Method 130.1

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Hardness (colorimetric) as CaCO3	157000		1430	30000	1	05/31/2019 14:11	WG1288764

Wet Chemistry by Method 2320 B-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Alkalinity	167000		2710	20000	1	05/31/2019 00:37	WG1288107
Alkalinity,Bicarbonate	167000		2710	20000	1	05/31/2019 00:37	WG1288107
Alkalinity,Carbonate	U		2710	20000	1	05/31/2019 00:37	WG1288107

Sample Narrative:

L1102551-03 WG1288107: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	1470		31.7	100	1	05/30/2019 15:28	WG1288392

Wet Chemistry by Method 410.4

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
COD	10300		3000	10000	1	06/03/2019 12:44	WG1289866

Wet Chemistry by Method 5210 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
BOD	10.0		3.33	1	05/30/2019 09:40	WG1286660

Wet Chemistry by Method 9040C

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	6.43	T8	1	05/28/2019 12:11	WG1287176

Sample Narrative:

L1102551-03 WG1287176: 6.43 at 20.2C

Wet Chemistry by Method 9050A

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	441		10.0	1	05/31/2019 17:43	WG1288969

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	24600		51.9	1000	1	05/25/2019 13:49	WG1286607
Nitrate as (N)	U		22.7	100	1	05/25/2019 13:49	WG1286607
Sulfate	1050	J	77.4	5000	1	05/25/2019 13:49	WG1286607

Wet Chemistry by Method 9060A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
TOC (Total Organic Carbon)	3110	B	102	1000	1	06/01/2019 14:51	WG1289078

Mercury by Method 7470A

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Mercury	U		0.0490	0.200	1	05/29/2019 11:10	WG1287077

Metals (ICP) by Method 6010D

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Calcium	38600		46.3	1000	1	05/30/2019 13:26	WG1287643
Iron	36100		14.1	100	1	05/30/2019 13:26	WG1287643
Magnesium	15300		11.1	1000	1	05/30/2019 13:26	WG1287643
Manganese	7820		1.20	10.0	1	05/30/2019 13:26	WG1287643
Potassium	4390		102	1000	1	05/30/2019 13:26	WG1287643
Silicon	6480		39.6	200	1	05/30/2019 13:26	WG1287643
Sodium	15700		98.5	1000	1	05/30/2019 13:26	WG1287643

Metals (ICPMS) by Method 6020B

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Antimony	U		0.754	2.00	1	05/30/2019 17:25	WG1287606
Arsenic	U		0.250	2.00	1	05/30/2019 17:25	WG1287606
Barium	375		1.80	25.0	5	05/30/2019 18:38	WG1287606
Beryllium	U		0.120	2.00	1	05/30/2019 17:25	WG1287606
Cadmium	U		0.160	1.00	1	05/30/2019 17:25	WG1287606
Chromium	U		0.540	2.00	1	05/30/2019 17:25	WG1287606
Copper	1.09	J	0.520	5.00	1	05/30/2019 17:25	WG1287606
Cobalt	75.6		0.260	2.00	1	05/30/2019 17:25	WG1287606
Lead	U		0.240	2.00	1	05/30/2019 17:25	WG1287606
Nickel	1.31	J	0.350	2.00	1	05/30/2019 17:25	WG1287606
Selenium	U		0.380	2.00	1	05/30/2019 17:25	WG1287606
Silver	U		0.310	2.00	1	05/30/2019 17:25	WG1287606
Thallium	U		0.190	2.00	1	05/30/2019 17:25	WG1287606
Vanadium	U		0.180	5.00	1	05/30/2019 17:25	WG1287606
Zinc	7.61	J	2.56	25.0	1	05/30/2019 17:25	WG1287606

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	U		10.0	50.0	1	05/29/2019 08:12	WG1287588
Acrolein	U	J4	8.87	50.0	1	05/29/2019 08:12	WG1287588
Acrylonitrile	U		1.87	10.0	1	05/29/2019 08:12	WG1287588
Benzene	0.899	J	0.331	1.00	1	05/29/2019 08:12	WG1287588
Bromobenzene	U		0.352	1.00	1	05/29/2019 08:12	WG1287588
Bromodichloromethane	U		0.380	1.00	1	05/29/2019 08:12	WG1287588
Bromoform	U		0.469	1.00	1	05/29/2019 08:12	WG1287588
Bromomethane	U		0.866	5.00	1	05/29/2019 08:12	WG1287588
n-Butylbenzene	U		0.361	1.00	1	05/29/2019 08:12	WG1287588
sec-Butylbenzene	U		0.365	1.00	1	05/29/2019 08:12	WG1287588
tert-Butylbenzene	U		0.399	1.00	1	05/29/2019 08:12	WG1287588
Carbon tetrachloride	U		0.379	1.00	1	05/29/2019 08:12	WG1287588
Chlorobenzene	4.47		0.348	1.00	1	05/29/2019 08:12	WG1287588
Chlorodibromomethane	U		0.327	1.00	1	05/29/2019 08:12	WG1287588
Chloroethane	U		0.453	5.00	1	05/29/2019 08:12	WG1287588
Chloroform	U		0.324	5.00	1	05/29/2019 08:12	WG1287588
Chloromethane	U		0.276	2.50	1	05/29/2019 08:12	WG1287588
2-Chlorotoluene	U		0.375	1.00	1	05/29/2019 08:12	WG1287588
4-Chlorotoluene	U		0.351	1.00	1	05/29/2019 08:12	WG1287588
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	05/29/2019 08:12	WG1287588
1,2-Dibromoethane	U		0.381	1.00	1	05/29/2019 08:12	WG1287588
Dibromomethane	U		0.346	1.00	1	05/29/2019 08:12	WG1287588
1,2-Dichlorobenzene	U		0.349	1.00	1	05/29/2019 08:12	WG1287588
1,3-Dichlorobenzene	U		0.220	1.00	1	05/29/2019 08:12	WG1287588
1,4-Dichlorobenzene	1.42		0.274	1.00	1	05/29/2019 08:12	WG1287588
Dichlorodifluoromethane	U		0.551	5.00	1	05/29/2019 08:12	WG1287588
1,1-Dichloroethane	U		0.259	1.00	1	05/29/2019 08:12	WG1287588
1,2-Dichloroethane	U		0.361	1.00	1	05/29/2019 08:12	WG1287588
1,1-Dichloroethene	U		0.398	1.00	1	05/29/2019 08:12	WG1287588
cis-1,2-Dichloroethene	U		0.260	1.00	1	05/29/2019 08:12	WG1287588
trans-1,2-Dichloroethene	U		0.396	1.00	1	05/29/2019 08:12	WG1287588
1,2-Dichloropropane	U		0.306	1.00	1	05/29/2019 08:12	WG1287588
1,1-Dichloropropene	U		0.352	1.00	1	05/29/2019 08:12	WG1287588
1,3-Dichloropropane	U		0.366	1.00	1	05/29/2019 08:12	WG1287588
cis-1,3-Dichloropropene	U		0.418	1.00	1	05/29/2019 08:12	WG1287588
trans-1,3-Dichloropropene	U		0.419	1.00	1	05/29/2019 08:12	WG1287588
2,2-Dichloropropane	U		0.321	1.00	1	05/29/2019 08:12	WG1287588
Di-isopropyl ether	U		0.320	1.00	1	05/29/2019 08:12	WG1287588
Ethylbenzene	U		0.384	1.00	1	05/29/2019 08:12	WG1287588
Hexachloro-1,3-butadiene	U		0.256	1.00	1	05/29/2019 08:12	WG1287588
Isopropylbenzene	0.422	J	0.326	1.00	1	05/29/2019 08:12	WG1287588
p-Isopropyltoluene	U		0.350	1.00	1	05/29/2019 08:12	WG1287588
2-Butanone (MEK)	U		3.93	10.0	1	05/29/2019 08:12	WG1287588
Methylene Chloride	U		1.00	5.00	1	05/29/2019 08:12	WG1287588
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	05/29/2019 08:12	WG1287588
Methyl tert-butyl ether	U		0.367	1.00	1	05/29/2019 08:12	WG1287588
Naphthalene	U		1.00	5.00	1	05/29/2019 08:12	WG1287588
n-Propylbenzene	U		0.349	1.00	1	05/29/2019 08:12	WG1287588
Styrene	U		0.307	1.00	1	05/29/2019 08:12	WG1287588
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	05/29/2019 08:12	WG1287588
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	05/29/2019 08:12	WG1287588
1,1,2-Trichlorotrifluoroethane	U		0.303	1.00	1	05/29/2019 08:12	WG1287588
Tetrachloroethene	U		0.372	1.00	1	05/29/2019 08:12	WG1287588
Toluene	U		0.412	1.00	1	05/29/2019 08:12	WG1287588
1,2,3-Trichlorobenzene	U		0.230	1.00	1	05/29/2019 08:12	WG1287588
1,2,4-Trichlorobenzene	U		0.355	1.00	1	05/29/2019 08:12	WG1287588

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
1,1,1-Trichloroethane	U		0.319	1.00	1	05/29/2019 08:12	WG1287588
1,1,2-Trichloroethane	U		0.383	1.00	1	05/29/2019 08:12	WG1287588
Trichloroethene	U		0.398	1.00	1	05/29/2019 08:12	WG1287588
Trichlorofluoromethane	U		1.20	5.00	1	05/29/2019 08:12	WG1287588
1,2,3-Trichloropropane	U		0.807	2.50	1	05/29/2019 08:12	WG1287588
1,2,4-Trimethylbenzene	U		0.373	1.00	1	05/29/2019 08:12	WG1287588
1,2,3-Trimethylbenzene	U		0.321	1.00	1	05/29/2019 08:12	WG1287588
1,3,5-Trimethylbenzene	U		0.387	1.00	1	05/29/2019 08:12	WG1287588
Vinyl chloride	U		0.259	1.00	1	05/29/2019 08:12	WG1287588
Xylenes, Total	U		1.06	3.00	1	05/29/2019 08:12	WG1287588
(S) Toluene-d8	*106*			*80.0-120*		*05/29/2019 08:12*	WG1287588
(S) 4-Bromofluorobenzene	*102*			*77.0-126*		*05/29/2019 08:12*	WG1287588
(S) 1,2-Dichloroethane-d4	*96.4*			*70.0-130*		*05/29/2019 08:12*	WG1287588

Method Blank (MB)

(MB) R3417301-1 05/30/19 11:56

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Dissolved Solids	U		2820	10000

L1102551-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1102551-03 05/30/19 11:56 • (DUP) R3417301-3 05/30/19 11:56

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	233000	244000	1	4.61		5

Laboratory Control Sample (LCS)

(LCS) R3417301-2 05/30/19 11:56

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800000	8820000	100	85.0-115	

Method Blank (MB)

(MB) R3416605-1 05/30/19 16:00

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Suspended Solids	U		350	2500

L1102175-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1102175-01 05/30/19 16:00 • (DUP) R3416605-3 05/30/19 16:00

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	253000	228000	1	10.1	J3	5

L1103082-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1103082-01 05/30/19 16:00 • (DUP) R3416605-4 05/30/19 16:00

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Suspended Solids	15100	15600	1	3.19		5

Laboratory Control Sample (LCS)

(LCS) R3416605-2 05/30/19 16:00

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Suspended Solids	773000	816000	106	85.0-115	

Method Blank (MB)

(MB) R3416708-1 05/31/19 14:04

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Hardness (colorimetric) as CaCO3	U		1430	30000

L1102558-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1102558-01 05/31/19 14:14 • (DUP) R3416708-3 05/31/19 14:15

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Hardness (colorimetric) as CaCO3	170000	167000	1	1.78		20

L1100793-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1100793-03 05/31/19 14:32 • (DUP) R3416708-6 05/31/19 14:33

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Hardness (colorimetric) as CaCO3	239000	243000	5	1.87		20

Laboratory Control Sample (LCS)

(LCS) R3416708-2 05/31/19 14:05

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Hardness (colorimetric) as CaCO3	150000	147000	98.0	85.0-115	

L1103022-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1103022-01 05/31/19 14:27 • (MS) R3416708-4 05/31/19 14:28 • (MSD) R3416708-5 05/31/19 14:29

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Hardness (colorimetric) as CaCO3	150000	243000	257000	256000	9.33	8.67	1	80.0-120	E J6	E J6	0.390	20

Method Blank (MB)

(MB) R3416439-1 05/30/19 16:51

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Alkalinity	3000	J	2710	20000
Alkalinity,Bicarbonate	3000	J	2710	20000
Alkalinity,Carbonate	U		2710	20000

Sample Narrative:

BLANK: Endpoint pH 4.5

L1102029-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1102029-01 05/30/19 17:13 • (DUP) R3416439-2 05/30/19 17:20

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	56200	55800	1	0.765		20
Alkalinity,Bicarbonate	56200	55800	1	0.765		20
Alkalinity,Carbonate	ND	0.000	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

L1102352-14 Original Sample (OS) • Duplicate (DUP)

(OS) L1102352-14 05/30/19 20:52 • (DUP) R3416439-5 05/30/19 20:59

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	534000	533000	1	0.138		20
Alkalinity,Bicarbonate	534000	533000	1	0.138		20
Alkalinity,Carbonate	U	0.000	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 headspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3416439-3 05/30/19 18:15

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Alkalinity	100000	95600	95.6	85.0-115	

Sample Narrative:

LCS: Endpoint pH 4.5

Method Blank (MB)

(MB) R3416552-1 05/30/19 21:50

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Alkalinity	3120	J	2710	20000
Alkalinity,Bicarbonate	3120	J	2710	20000
Alkalinity,Carbonate	U		2710	20000

Sample Narrative:

BLANK: Endpoint pH 4.5

L1102551-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1102551-02 05/30/19 21:57 • (DUP) R3416552-2 05/30/19 22:03

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	196000	197000	1	0.0717		20
Alkalinity,Bicarbonate	196000	197000	1	0.0717		20
Alkalinity,Carbonate	U	0.000	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

L1102551-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1102551-03 05/31/19 00:37 • (DUP) R3416552-4 05/31/19 00:43

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	167000	172000	1	2.60		20
Alkalinity,Bicarbonate	167000	172000	1	2.60		20
Alkalinity,Carbonate	U	0.000	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3416552-3 05/30/19 23:02

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Alkalinity	100000	99600	99.6	85.0-115	

Sample Narrative:

LCS: Endpoint pH 4.5

Method Blank (MB)

(MB) R3416378-1 05/30/19 14:55

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Ammonia Nitrogen	U		31.7	100

L1102534-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1102534-01 05/30/19 15:06 • (DUP) R3416378-3 05/30/19 15:08

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ammonia Nitrogen	ND	0.000	1	0.000		10

L1103056-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1103056-01 05/30/19 15:44 • (DUP) R3416378-6 05/30/19 15:46

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ammonia Nitrogen	ND	0.000	1	0.000		10

Laboratory Control Sample (LCS)

(LCS) R3416378-2 05/30/19 14:56

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Ammonia Nitrogen	7500	7140	95.2	90.0-110	

L1102534-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1102534-02 05/30/19 15:09 • (MS) R3416378-4 05/30/19 15:15 • (MSD) R3416378-5 05/30/19 15:17

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Ammonia Nitrogen	5000	541	5500	5380	99.2	96.8	1	90.0-110			2.22	10

L1103056-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1103056-02 05/30/19 15:47 • (MS) R3416378-7 05/30/19 15:49

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Ammonia Nitrogen	5000	235	4910	93.4	1	90.0-110	

Method Blank (MB)

(MB) R3417207-1 06/03/19 12:32

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
COD	U		3000	10000

L1102436-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1102436-08 06/03/19 12:36 • (DUP) R3417207-3 06/03/19 12:37

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
COD	ND	0.000	1	0.000		20

L1102541-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1102541-01 06/03/19 12:43 • (DUP) R3417207-6 06/03/19 12:43

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
COD	51900	51700	1	0.357		20

Laboratory Control Sample (LCS)

(LCS) R3417207-2 06/03/19 12:34

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
COD	222000	215000	96.9	90.0-110	

L1102436-12 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1102436-12 06/03/19 12:39 • (MS) R3417207-4 06/03/19 12:39 • (MSD) R3417207-5 06/03/19 12:39

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
COD	400000	ND	404000	400000	101	99.9	1	80.0-120			1.03	20

Method Blank (MB)

(MB) R3416187-1 05/30/19 10:39

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
BOD	U		0.2	0.200

L1102541-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1102541-01 05/30/19 09:33 • (DUP) R3416187-4 05/30/19 09:34

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
BOD	17.8	16.8	1	6		30

L1102567-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1102567-01 05/30/19 10:28 • (DUP) R3416187-5 05/30/19 10:29

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
BOD	33.2	30.4	1	9		30

Laboratory Control Sample (LCS)

(LCS) R3416187-2 05/30/19 08:52

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
BOD	198	182	91.9	84.6-115	

Laboratory Control Sample (LCS)

(LCS) R3416187-3 05/30/19 10:36

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
BOD	198	202	102	84.6-115	

L1102347-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1102347-01 05/28/19 12:11 • (DUP) R3415348-2 05/28/19 12:11

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	6.83	6.86	1	0.438		1

Sample Narrative:

OS: 6.83 at 18.2C

DUP: 6.86 at 18.2C

L1102674-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1102674-01 05/28/19 12:11 • (DUP) R3415348-3 05/28/19 12:11

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.03	7.05	1	0.284		1

Sample Narrative:

OS: 7.03 at 21.5C

DUP: 7.05 at 21.5C

Laboratory Control Sample (LCS)

(LCS) R3415348-1 05/28/19 12:11

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	su	su	%	%	
pH	10.0	9.96	99.6	99.0-101	

Sample Narrative:

LCS: 9.96 at 19.8C

Method Blank (MB)

(MB) R3416821-1 05/31/19 17:43

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

L1101732-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1101732-01 05/31/19 17:43 • (DUP) R3416821-3 05/31/19 17:43

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	541	541	1	0.000		20

L1103333-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1103333-06 05/31/19 17:43 • (DUP) R3416821-4 05/31/19 17:43

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	9520	9520	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3416821-2 05/31/19 17:43

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	445	444	99.8	85.0-115	

Method Blank (MB)

(MB) R3415074-1 05/25/19 08:32

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Chloride	U		51.9	1000
Nitrate	U		22.7	100
Sulfate	U		77.4	5000

L1102551-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1102551-01 05/25/19 12:08 • (DUP) R3415074-3 05/25/19 12:22

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	1750	1730	1	1.25		15
Nitrate	196	250	1	24.3	P1	15
Sulfate	706	777	1	9.52	J	15

L1100662-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1100662-02 05/25/19 17:44 • (DUP) R3415074-6 05/25/19 18:28

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	23300	23400	1	0.484		15
Nitrate	ND	31.6	1	0.000		15
Sulfate	56100	56200	1	0.340		15

Laboratory Control Sample (LCS)

(LCS) R3415074-2 05/25/19 08:46

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40000	40500	101	80.0-120	
Nitrate	8000	8330	104	80.0-120	
Sulfate	40000	41500	104	80.0-120	

L1102551-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1102551-01 05/25/19 12:08 • (MS) R3415074-4 05/25/19 12:37 • (MSD) R3415074-5 05/25/19 12:52

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	1750	51600	51800	99.6	100	1	80.0-120			0.406	15
Nitrate	5000	196	5230	5250	101	101	1	80.0-120			0.432	15
Sulfate	50000	706	51200	51400	101	101	1	80.0-120			0.390	15

L1100662-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1100662-02 05/25/19 17:44 • (MS) R3415074-7 05/25/19 18:43

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50000	23300	72700	98.8	1	80.0-120	
Nitrate	5000	ND	5030	100	1	80.0-120	
Sulfate	50000	56100	104000	95.6	1	80.0-120	E

Method Blank (MB)

(MB) R3417258-1 06/01/19 12:57

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
TOC (Total Organic Carbon)	385	J	102	1000

L1102551-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1102551-02 06/01/19 14:26 • (DUP) R3417258-3 06/01/19 14:39

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOC (Total Organic Carbon)	3130	3120	1	0.224		20

L1102708-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1102708-03 06/03/19 12:16 • (DUP) R3417258-11 06/03/19 12:29

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
TOC (Total Organic Carbon)	1260	1280	1	0.866		20

Laboratory Control Sample (LCS)

(LCS) R3417258-2 06/01/19 13:32

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TOC (Total Organic Carbon)	75000	81400	109	85.0-115	

L1102624-11 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1102624-11 06/03/19 09:35 • (MS) R3417258-8 06/03/19 09:53 • (MSD) R3417258-10 06/03/19 10:16

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOC (Total Organic Carbon)	50000	4570	57600	57700	106	106	1	80.0-120			0.243	20

L1102708-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1102708-08 06/03/19 13:47 • (MS) R3417258-12 06/03/19 14:06 • (MSD) R3417258-13 06/03/19 14:40

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TOC (Total Organic Carbon)	50000	3270	53600	54200	101	102	1	80.0-120			1.09	20

Method Blank (MB)

(MB) R3415803-1 05/29/19 10:02

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Mercury	U		0.0490	0.200

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

(LCS) R3415803-2 05/29/19 10:04 • (LCSD) R3415803-3 05/29/19 10:07

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Mercury	3.00	3.03	3.07	101	102	80.0-120			1.29	20

L1102405-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1102405-03 05/29/19 10:09 • (MS) R3415803-4 05/29/19 10:19 • (MSD) R3415803-5 05/29/19 10:22

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	3.00	ND	3.42	3.20	112	105	1	75.0-125			6.65	20

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

Method Blank (MB)

(MB) R3418605-1 06/06/19 20:33

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Mercury,Dissolved	U		0.0490	0.200

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

(LCS) R3418605-2 06/06/19 20:35 • (LCSD) R3418605-3 06/06/19 20:38

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Mercury,Dissolved	3.00	2.80	2.81	93.3	93.6	80.0-120			0.339	20

L1105238-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1105238-01 06/06/19 20:40 • (MS) R3418605-4 06/06/19 20:47 • (MSD) R3418605-5 06/06/19 20:50

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury,Dissolved	3.00	U	2.87	2.86	95.6	95.3	1	75.0-125			0.353	20

Method Blank (MB)

(MB) R3416356-1 05/30/19 13:00

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Calcium	U		46.3	1000
Iron	U		14.1	100
Magnesium	U		11.1	1000
Manganese	U		1.20	10.0
Potassium	U		102	1000
Silicon	43.2	J	39.6	200
Sodium	1190		98.5	1000

Method Blank (MB)

(MB) R3416356-8 05/30/19 15:16

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Calcium	U		46.3	1000
Iron	21.7	J	14.1	100
Magnesium	U		11.1	1000
Manganese	U		1.20	10.0
Potassium	U		102	1000
Silicon	U		39.6	200
Sodium	1260		98.5	1000

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

(LCS) R3416356-2 05/30/19 13:03 • (LCSD) R3416356-3 05/30/19 13:06

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Calcium	10000	10200	10100	102	101	80.0-120			1.12	20
Iron	10000	9920	9770	99.2	97.7	80.0-120			1.50	20
Magnesium	10000	10100	10000	101	100	80.0-120			0.825	20
Manganese	1000	997	998	99.7	99.8	80.0-120			0.160	20
Potassium	10000	9870	9800	98.7	98.0	80.0-120			0.702	20
Silicon	1000	961	970	96.1	97.0	80.0-120			0.966	20
Sodium	10000	10200	10100	102	101	80.0-120			0.646	20

L1102768-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1102768-01 05/30/19 13:09 • (MS) R3416356-5 05/30/19 13:15 • (MSD) R3416356-6 05/30/19 13:17

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Calcium	10000	337000	340000	340000	29.4	34.6	1	75.0-125	V	V	0.153	20
Iron	10000	106000	114000	114000	84.5	80.6	1	75.0-125			0.343	20
Magnesium	10000	25400	34900	34800	94.4	93.5	1	75.0-125			0.243	20
Manganese	1000	2070	2970	2950	90.7	87.8	1	75.0-125			0.978	20
Potassium	10000	34600	44200	44500	95.7	98.4	1	75.0-125			0.606	20
Silicon	1000	11100	11800	11700	68.3	67.1	1	75.0-125	V	V	0.0998	20
Sodium	10000	473000	472000	475000	0.000	12.4	1	75.0-125	V	V	0.469	20

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

Method Blank (MB)

(MB) R3417199-1 06/03/19 11:16

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Sodium	U		98.5	1000

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

(LCS) R3417199-2 06/03/19 11:19 • (LCSD) R3417199-3 06/03/19 11:21

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Sodium	10000	9780	9780	97.8	97.8	80.0-120			0.0196	20

L1103753-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1103753-02 06/03/19 11:24 • (MS) R3417199-5 06/03/19 11:29 • (MSD) R3417199-6 06/03/19 11:32

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Sodium	10000	345000	344000	341000	0.000	0.000	1	75.0-125	V	V	0.929	20

Method Blank (MB)

(MB) R3419597-1 06/10/19 11:48

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Calcium,Dissolved	115	J	46.3	1000
Iron,Dissolved	U		14.1	100
Magnesium,Dissolved	U		11.1	1000
Manganese,Dissolved	U		1.20	10.0
Potassium,Dissolved	U		102	1000
Sodium,Dissolved	126	J	98.5	1000

Method Blank (MB)

(MB) R3419704-1 06/10/19 20:36

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Silicon,Dissolved	U		39.6	200

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

(LCS) R3419597-2 06/10/19 11:51 • (LCSD) R3419597-3 06/10/19 11:53

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Calcium,Dissolved	10000	10100	10100	101	101	80.0-120			0.0657	20
Iron,Dissolved	10000	9440	9360	94.4	93.6	80.0-120			0.847	20
Magnesium,Dissolved	10000	9500	9500	95.0	95.0	80.0-120			0.0106	20
Manganese,Dissolved	1000	949	962	94.9	96.2	80.0-120			1.39	20
Potassium,Dissolved	10000	9110	9180	91.1	91.8	80.0-120			0.765	20
Sodium,Dissolved	10000	9900	9970	99.0	99.7	80.0-120			0.767	20

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

(LCS) R3419704-2 06/10/19 20:38 • (LCSD) R3419704-3 06/10/19 20:41

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Silicon,Dissolved	1000	949	952	94.9	95.2	80.0-120			0.323	20

L1106531-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1106531-01 06/10/19 11:56 • (MS) R3419597-5 06/10/19 12:01 • (MSD) R3419597-6 06/10/19 12:04

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Calcium,Dissolved	10000	ND	11000	10800	101	99.2	1	75.0-125			1.28	20
Iron,Dissolved	10000	ND	9740	9620	97.4	96.2	1	75.0-125			1.15	20
Magnesium,Dissolved	10000	ND	9860	9770	98.2	97.4	1	75.0-125			0.846	20
Manganese,Dissolved	1000	156	1120	1110	96.2	95.2	1	75.0-125			0.945	20
Potassium,Dissolved	10000	ND	10400	10200	94.2	92.8	1	75.0-125			1.34	20
Sodium,Dissolved	10000	41200	50300	49500	90.7	82.1	1	75.0-125			1.73	20

L1106531-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1106531-01 06/10/19 20:44 • (MS) R3419704-5 06/10/19 20:49 • (MSD) R3419704-6 06/10/19 20:52

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Silicon,Dissolved	1000	16900	17800	17800	86.8	88.4	1	75.0-125			0.0913	20

Method Blank (MB)

(MB) R3416215-1 05/30/19 10:53

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Antimony	U		0.754	2.00
Arsenic	U		0.250	2.00
Barium	U		0.360	5.00
Beryllium	U		0.120	2.00
Cadmium	U		0.160	1.00
Chromium	U		0.540	2.00
Copper	U		0.520	5.00
Cobalt	U		0.260	2.00
Lead	U		0.240	2.00
Nickel	U		0.350	2.00
Selenium	U		0.380	2.00
Silver	U		0.310	2.00
Thallium	U		0.190	2.00
Vanadium	U		0.180	5.00
Zinc	U		2.56	25.0

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

(LCS) R3416215-2 05/30/19 10:57 • (LCSD) R3416215-3 05/30/19 11:02

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Antimony	50.0	50.5	51.9	101	104	80.0-120			2.70	20
Arsenic	50.0	47.1	46.5	94.2	93.1	80.0-120			1.17	20
Barium	50.0	46.1	47.8	92.1	95.7	80.0-120			3.81	20
Beryllium	50.0	44.1	44.7	88.3	89.5	80.0-120			1.32	20
Cadmium	50.0	45.9	46.9	91.9	93.7	80.0-120			2.01	20
Chromium	50.0	47.8	47.2	95.7	94.4	80.0-120			1.30	20
Copper	50.0	45.9	47.4	91.8	94.8	80.0-120			3.14	20
Cobalt	50.0	47.8	47.5	95.6	94.9	80.0-120			0.667	20
Lead	50.0	45.7	47.1	91.4	94.2	80.0-120			2.96	20
Nickel	50.0	49.2	48.1	98.5	96.3	80.0-120			2.26	20
Selenium	50.0	48.7	49.0	97.4	98.0	80.0-120			0.660	20
Silver	50.0	47.3	48.0	94.5	96.0	80.0-120			1.52	20
Thallium	50.0	45.0	47.0	90.0	93.9	80.0-120			4.26	20
Vanadium	50.0	46.4	46.7	92.8	93.5	80.0-120			0.734	20
Zinc	50.0	47.6	48.5	95.1	97.0	80.0-120			2.00	20

L1102436-12 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1102436-12 05/30/19 11:06 • (MS) R3416215-5 05/30/19 11:16 • (MSD) R3416215-6 05/30/19 11:20

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Antimony	50.0	ND	48.6	50.9	97.2	102	1	75.0-125			4.61	20
Arsenic	50.0	ND	47.2	46.9	91.3	90.8	1	75.0-125			0.597	20
Barium	50.0	308	347	349	77.7	82.5	1	75.0-125			0.692	20
Beryllium	50.0	ND	45.9	49.4	91.8	98.8	1	75.0-125			7.34	20
Cadmium	50.0	ND	44.4	46.1	88.8	92.1	1	75.0-125			3.62	20
Chromium	50.0	ND	45.7	45.3	91.3	90.6	1	75.0-125			0.840	20
Copper	50.0	ND	43.5	44.1	85.6	86.7	1	75.0-125			1.31	20
Cobalt	50.0	ND	45.5	45.1	90.3	89.5	1	75.0-125			0.927	20
Lead	50.0	ND	43.7	44.9	87.4	89.7	1	75.0-125			2.66	20
Nickel	50.0	ND	46.8	46.4	91.0	90.2	1	75.0-125			0.854	20
Selenium	50.0	5.44	53.0	54.3	95.1	97.7	1	75.0-125			2.50	20
Silver	50.0	ND	45.4	46.9	90.8	93.7	1	75.0-125			3.10	20
Thallium	50.0	ND	43.6	44.8	87.2	89.6	1	75.0-125			2.69	20
Vanadium	50.0	ND	46.2	45.8	89.5	88.7	1	75.0-125			0.933	20
Zinc	50.0	ND	46.0	46.2	92.0	92.4	1	75.0-125			0.416	20

Method Blank (MB)

(MB) R3418595-1 06/06/19 17:03

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Antimony,Dissolved	U		0.754	2.00
Arsenic,Dissolved	U		0.250	2.00
Barium,Dissolved	U		0.360	5.00
Beryllium,Dissolved	U		0.120	2.00
Cadmium,Dissolved	U		0.160	1.00
Chromium,Dissolved	U		0.540	2.00
Copper,Dissolved	U		0.520	5.00
Cobalt,Dissolved	U		0.260	2.00
Lead,Dissolved	U		0.240	2.00
Nickel,Dissolved	U		0.350	2.00
Selenium,Dissolved	U		0.380	2.00
Silver,Dissolved	U		0.310	2.00
Thallium,Dissolved	U		0.190	2.00
Vanadium,Dissolved	U		0.180	5.00
Zinc,Dissolved	U		2.56	25.0

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

(LCS) R3418595-2 06/06/19 17:08 • (LCSD) R3418595-3 06/06/19 17:13

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Antimony,Dissolved	50.0	52.9	54.0	106	108	80.0-120			2.20	20
Arsenic,Dissolved	50.0	48.6	48.8	97.3	97.5	80.0-120			0.261	20
Barium,Dissolved	50.0	47.4	47.8	94.8	95.7	80.0-120			0.962	20
Beryllium,Dissolved	50.0	48.5	49.1	96.9	98.2	80.0-120			1.35	20
Cadmium,Dissolved	50.0	49.1	48.1	98.2	96.1	80.0-120			2.15	20
Chromium,Dissolved	50.0	48.9	49.1	97.8	98.2	80.0-120			0.377	20
Copper,Dissolved	50.0	49.1	48.1	98.3	96.1	80.0-120			2.22	20
Cobalt,Dissolved	50.0	50.1	49.8	100	99.7	80.0-120			0.435	20
Lead,Dissolved	50.0	50.2	48.6	100	97.3	80.0-120			3.07	20
Nickel,Dissolved	50.0	49.3	49.6	98.5	99.1	80.0-120			0.617	20
Selenium,Dissolved	50.0	51.9	50.6	104	101	80.0-120			2.54	20
Silver,Dissolved	50.0	50.1	49.3	100	98.6	80.0-120			1.60	20
Thallium,Dissolved	50.0	49.3	48.7	98.6	97.4	80.0-120			1.14	20
Vanadium,Dissolved	50.0	48.3	48.4	96.6	96.8	80.0-120			0.260	20
Zinc,Dissolved	50.0	48.7	49.4	97.4	98.8	80.0-120			1.46	20

L1105011-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1105011-01 06/06/19 17:17 • (MS) R3418595-5 06/06/19 17:26 • (MSD) R3418595-6 06/06/19 17:31

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Antimony,Dissolved	50.0	U	54.9	53.1	110	106	1	75.0-125			3.17	20
Barium,Dissolved	50.0	20.7	68.8	69.0	96.1	96.6	1	75.0-125			0.355	20
Beryllium,Dissolved	50.0	1.16	47.3	47.8	92.2	93.3	1	75.0-125			1.15	20
Cadmium,Dissolved	50.0	4.19	54.0	53.7	99.6	99.1	1	75.0-125			0.484	20
Lead,Dissolved	50.0	3.00	51.1	52.2	96.3	98.4	1	75.0-125			2.05	20
Selenium,Dissolved	50.0	6.40	58.0	56.0	103	99.1	1	75.0-125			3.47	20
Silver,Dissolved	50.0	U	50.0	49.4	100	98.8	1	75.0-125			1.21	20
Thallium,Dissolved	50.0	0.251	47.0	47.0	93.6	93.5	1	75.0-125			0.111	20

L1105011-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1105011-01 06/06/19 18:32 • (MS) R3418595-8 06/06/19 18:42 • (MSD) R3418595-9 06/06/19 18:47

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic,Dissolved	10.0	5.52	51.9	51.3	92.7	91.6	5	75.0-125			1.04	20
Chromium,Dissolved	10.0	U	43.3	45.1	86.6	90.1	5	75.0-125			4.04	20
Copper,Dissolved	10.0	409	453	454	87.8	90.7	5	75.0-125			0.322	20
Cobalt,Dissolved	10.0	98.1	142	143	88.6	89.0	5	75.0-125			0.141	20
Nickel,Dissolved	10.0	25.8	70.3	74.0	89.0	96.4	5	75.0-125			5.13	20
Vanadium,Dissolved	10.0	U	44.5	45.3	88.9	90.5	5	75.0-125			1.78	20
Zinc,Dissolved	10.0	3930	3920	3960	0.000	53.7	5	75.0-125	V	V	0.914	20

Method Blank (MB)

(MB) R3416577-3 05/29/19 01:05

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Acetone	U		10.0	50.0
Acrolein	U		8.87	50.0
Acrylonitrile	U		1.87	10.0
Benzene	U		0.331	1.00
Bromobenzene	U		0.352	1.00
Bromodichloromethane	U		0.380	1.00
Bromoform	U		0.469	1.00
Bromomethane	U		0.866	5.00
n-Butylbenzene	U		0.361	1.00
sec-Butylbenzene	U		0.365	1.00
tert-Butylbenzene	U		0.399	1.00
Carbon tetrachloride	U		0.379	1.00
Chlorobenzene	U		0.348	1.00
Chlorodibromomethane	U		0.327	1.00
Chloroethane	U		0.453	5.00
Chloroform	U		0.324	5.00
Chloromethane	U		0.276	2.50
2-Chlorotoluene	U		0.375	1.00
4-Chlorotoluene	U		0.351	1.00
1,2-Dibromo-3-Chloropropane	U		1.33	5.00
1,2-Dibromoethane	U		0.381	1.00
Dibromomethane	U		0.346	1.00
1,2-Dichlorobenzene	U		0.349	1.00
1,3-Dichlorobenzene	U		0.220	1.00
1,4-Dichlorobenzene	U		0.274	1.00
Dichlorodifluoromethane	U		0.551	5.00
1,1-Dichloroethane	U		0.259	1.00
1,2-Dichloroethane	U		0.361	1.00
1,1-Dichloroethene	U		0.398	1.00
cis-1,2-Dichloroethene	U		0.260	1.00
trans-1,2-Dichloroethene	U		0.396	1.00
1,2-Dichloropropane	U		0.306	1.00
1,1-Dichloropropene	U		0.352	1.00
1,3-Dichloropropane	U		0.366	1.00
cis-1,3-Dichloropropene	U		0.418	1.00
trans-1,3-Dichloropropene	U		0.419	1.00
2,2-Dichloropropane	U		0.321	1.00
Di-isopropyl ether	U		0.320	1.00
Ethylbenzene	U		0.384	1.00
Hexachloro-1,3-butadiene	0.276	J	0.256	1.00

Method Blank (MB)

(MB) R3416577-3 05/29/19 01:05

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Isopropylbenzene	U		0.326	1.00
p-Isopropyltoluene	U		0.350	1.00
2-Butanone (MEK)	U		3.93	10.0
Methylene Chloride	U		1.00	5.00
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0
Methyl tert-butyl ether	U		0.367	1.00
Naphthalene	U		1.00	5.00
n-Propylbenzene	U		0.349	1.00
Styrene	U		0.307	1.00
1,1,1,2-Tetrachloroethane	U		0.385	1.00
1,1,2,2-Tetrachloroethane	U		0.130	1.00
1,1,2-Trichlorotrifluoroethane	U		0.303	1.00
Tetrachloroethene	U		0.372	1.00
Toluene	U		0.412	1.00
1,2,3-Trichlorobenzene	U		0.230	1.00
1,2,4-Trichlorobenzene	U		0.355	1.00
1,1,1-Trichloroethane	U		0.319	1.00
1,1,2-Trichloroethane	U		0.383	1.00
Trichloroethene	U		0.398	1.00
Trichlorofluoromethane	U		1.20	5.00
1,2,3-Trichloropropane	U		0.807	2.50
1,2,4-Trimethylbenzene	U		0.373	1.00
1,2,3-Trimethylbenzene	U		0.321	1.00
1,3,5-Trimethylbenzene	U		0.387	1.00
Vinyl chloride	U		0.259	1.00
Xylenes, Total	U		1.06	3.00
(S) Toluene-d8	*106*			*80.0-120*
(S) 4-Bromofluorobenzene	*97.5*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*97.5*			*70.0-130*

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

(LCS) R3416577-1 05/28/19 23:46 • (LCSD) R3416577-2 05/29/19 00:06

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	125	109	140	87.0	112	19.0-160			24.9	27
Acrolein	125	197	221	158	177	10.0-160		J4	11.4	26
Acrylonitrile	125	135	149	108	119	55.0-149			9.87	20
Benzene	25.0	23.2	23.0	92.6	92.1	70.0-123			0.593	20

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

(LCS) R3416577-1 05/28/19 23:46 • (LCSD) R3416577-2 05/29/19 00:06

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Bromobenzene	25.0	25.9	26.0	104	104	73.0-121			0.388	20
Bromodichloromethane	25.0	21.8	21.7	87.3	86.8	75.0-120			0.589	20
Bromoform	25.0	25.6	25.9	102	104	68.0-132			1.41	20
Bromomethane	25.0	29.2	28.5	117	114	10.0-160			2.50	25
n-Butylbenzene	25.0	23.8	23.6	95.0	94.2	73.0-125			0.831	20
sec-Butylbenzene	25.0	25.6	25.4	102	102	75.0-125			0.573	20
tert-Butylbenzene	25.0	27.8	27.4	111	110	76.0-124			1.30	20
Carbon tetrachloride	25.0	24.3	24.1	97.3	96.2	68.0-126			1.09	20
Chlorobenzene	25.0	25.1	24.7	100	99.0	80.0-121			1.51	20
Chlorodibromomethane	25.0	25.1	25.2	100	101	77.0-125			0.640	20
Chloroethane	25.0	30.4	29.7	122	119	47.0-150			2.34	20
Chloroform	25.0	22.1	22.1	88.5	88.5	73.0-120			0.0266	20
Chloromethane	25.0	34.1	33.3	136	133	41.0-142			2.42	20
2-Chlorotoluene	25.0	28.0	28.0	112	112	76.0-123			0.108	20
4-Chlorotoluene	25.0	28.3	28.1	113	112	75.0-122			0.710	20
1,2-Dibromo-3-Chloropropane	25.0	21.7	24.2	86.9	96.8	58.0-134			10.7	20
1,2-Dibromoethane	25.0	24.9	25.4	99.4	102	80.0-122			2.07	20
Dibromomethane	25.0	24.2	24.4	97.0	97.7	80.0-120			0.733	20
1,2-Dichlorobenzene	25.0	22.4	23.0	89.7	91.9	79.0-121			2.42	20
1,3-Dichlorobenzene	25.0	23.2	23.4	92.9	93.4	79.0-120			0.537	20
1,4-Dichlorobenzene	25.0	23.2	23.1	92.7	92.5	79.0-120			0.255	20
Dichlorodifluoromethane	25.0	24.6	23.1	98.3	92.2	51.0-149			6.39	20
1,1-Dichloroethane	25.0	25.3	25.1	101	100	70.0-126			0.960	20
1,2-Dichloroethane	25.0	21.9	22.3	87.6	89.3	70.0-128			1.86	20
1,1-Dichloroethene	25.0	24.0	23.5	95.8	93.9	71.0-124			2.01	20
cis-1,2-Dichloroethene	25.0	23.0	23.4	91.9	93.6	73.0-120			1.93	20
trans-1,2-Dichloroethene	25.0	24.4	23.9	97.7	95.5	73.0-120			2.25	20
1,2-Dichloropropane	25.0	26.3	26.0	105	104	77.0-125			1.02	20
1,1-Dichloropropene	25.0	24.5	24.2	98.1	96.6	74.0-126			1.54	20
1,3-Dichloropropane	25.0	24.3	24.7	97.2	98.8	80.0-120			1.70	20
cis-1,3-Dichloropropene	25.0	23.5	23.5	94.1	93.9	80.0-123			0.140	20
trans-1,3-Dichloropropene	25.0	24.0	23.9	95.9	95.5	78.0-124			0.449	20
2,2-Dichloropropane	25.0	20.0	19.7	80.0	79.0	58.0-130			1.32	20
Di-isopropyl ether	25.0	25.9	25.9	104	103	58.0-138			0.112	20
Ethylbenzene	25.0	24.4	24.7	97.8	98.8	79.0-123			1.02	20
Hexachloro-1,3-butadiene	25.0	22.4	24.2	89.7	96.7	54.0-138			7.52	20
Isopropylbenzene	25.0	24.9	24.9	99.7	99.4	76.0-127			0.324	20
p-Isopropyltoluene	25.0	24.6	24.8	98.5	99.2	76.0-125			0.660	20
2-Butanone (MEK)	125	140	147	112	118	44.0-160			5.40	20
Methylene Chloride	25.0	23.3	23.5	93.0	94.0	67.0-120			1.05	20

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

(LCS) R3416577-1 05/28/19 23:46 • (LCSD) R3416577-2 05/29/19 00:06

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
4-Methyl-2-pentanone (MIBK)	125	139	142	111	114	68.0-142			2.39	20
Methyl tert-butyl ether	25.0	22.6	23.2	90.4	92.8	68.0-125			2.59	20
Naphthalene	25.0	20.9	23.3	83.6	93.1	54.0-135			10.8	20
n-Propylbenzene	25.0	28.4	28.2	114	113	77.0-124			0.576	20
Styrene	25.0	24.8	24.7	99.4	98.9	73.0-130			0.447	20
1,1,1,2-Tetrachloroethane	25.0	24.9	24.8	99.7	99.4	75.0-125			0.318	20
1,1,2,2-Tetrachloroethane	25.0	28.0	28.8	112	115	65.0-130			2.80	20
1,1,2-Trichlorotrifluoroethane	25.0	27.0	26.6	108	106	69.0-132			1.72	20
Tetrachloroethene	25.0	25.5	25.2	102	101	72.0-132			1.20	20
Toluene	25.0	23.7	23.6	94.8	94.3	79.0-120			0.607	20
1,2,3-Trichlorobenzene	25.0	23.9	26.2	95.6	105	50.0-138			9.29	20
1,2,4-Trichlorobenzene	25.0	23.4	24.6	93.8	98.3	57.0-137			4.68	20
1,1,1-Trichloroethane	25.0	22.9	22.8	91.6	91.3	73.0-124			0.338	20
1,1,2-Trichloroethane	25.0	23.5	23.8	94.0	95.1	80.0-120			1.12	20
Trichloroethene	25.0	25.1	25.1	100	100	78.0-124			0.00379	20
Trichlorofluoromethane	25.0	30.4	27.9	122	112	59.0-147			8.55	20
1,2,3-Trichloropropane	25.0	28.0	29.1	112	117	73.0-130			3.98	20
1,2,4-Trimethylbenzene	25.0	27.0	27.1	108	108	76.0-121			0.408	20
1,2,3-Trimethylbenzene	25.0	24.2	24.8	96.9	99.3	77.0-120			2.44	20
1,3,5-Trimethylbenzene	25.0	28.4	28.4	113	114	76.0-122			0.0796	20
Vinyl chloride	25.0	31.4	30.8	126	123	67.0-131			1.92	20
Xylenes, Total	75.0	72.7	71.4	96.9	95.2	79.0-123			1.80	20
(S) Toluene-d8				*106*	*106*	*80.0-120*				
(S) 4-Bromofluorobenzene				*98.7*	*98.6*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*104*	*104*	*70.0-130*				

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

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.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J4	The associated batch QC was outside the established quality control range for accuracy.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

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

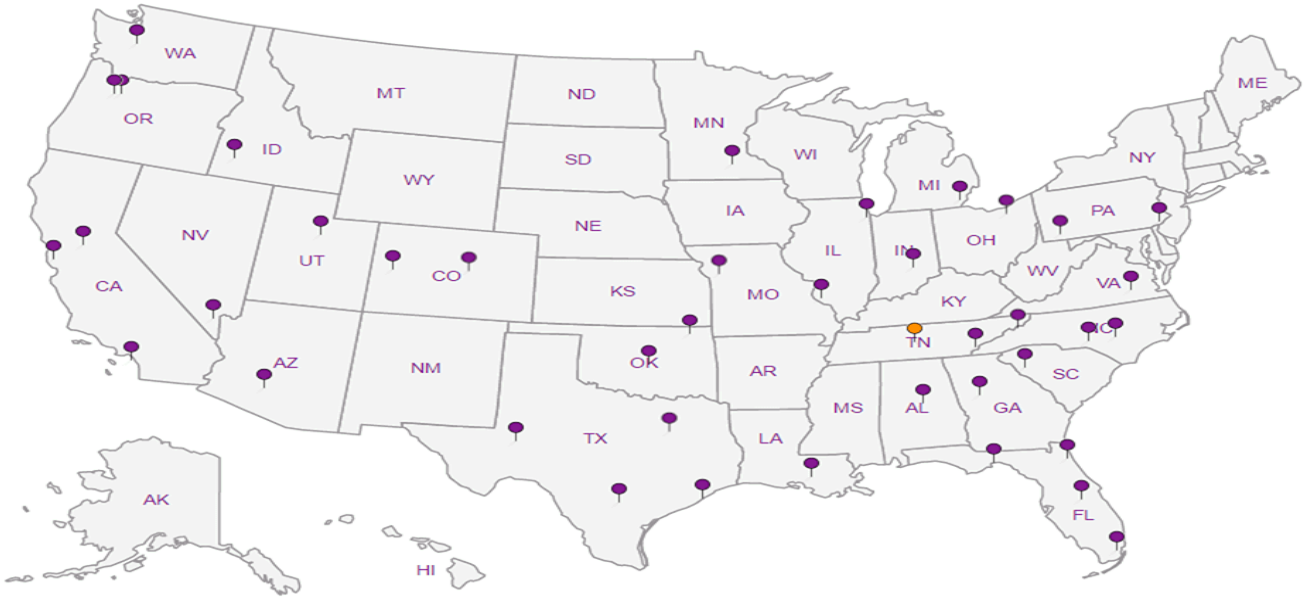
Third Party Federal Accreditations

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

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

Our Locations

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



Vista GeoEnvironmental Services, Inc.

489 N 8th St

Billing Information:
Jennifer Kimura / Vista Accounting
P.O. Box 388
Lake Oswego, OR 97034
ROGERNQ

Report to: ~~Michelle Wittenbrink~~ ROGER NORTH

Email To: ~~michellew~~@vista-us.com; JenniferK@vista-us.com

Project Description: HOOD RIVER LF Q2 MONITORING 2019

City/State Collected: HOOD RIVER OREGON

Phone: ~~503-209-0327~~
Fax: 971.777.3333

Client Project #: 19-143

Lab Project #: VISGEOLOOR-HRLANDFIL

Collected by (print): R. NORTH

Site/Facility ID #:

P.O. #:

Collected by (signature):

Quote #:

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

Date Results Needed

Chain of Custody Page ___ of ___

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# L1162551
F184

Acctnum: VISGEOLOOR
Template: T136975
Prelogin: P709943
TSR: 110 - Brian Ford
PB:
Shipped Via:

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	**BOD** 500mlHDPE-NoPres	**NO3,Cl,SO4** 125mlHDPE-NoPres	Alk,carb,bicarb 250mlHDPE-NoPres	COD,NH3 250mlHDPE-H2SO4	HOLD FF met/cations* 250mlHDPE-HNO3	Metals/cations/hard* 250mlHDPE-HNO3	TOC 250mlAmb-HCl	TSS 1L-HDPE NoPres	VOCs 8260C 40mlAmb-HCl	pH,SpCon,TDS 250mlHDPE-NoPres	Remarks	Sample # (lab only)
										12	12	12	12					
MW-3		GW		5/23/19	14:30	12	X	X	X	X	X	X	X	X	X	X		-01
L-1		GW		5/23/19	16:45	12	X	X	X	X	X	X	X	X	X	X		02
L-2		GW		5/23/19	17:00	12	X	X	X	X	X	X	X	X	X	X		03
		GW				12	X	X	X	X	X	X	X	X	X	X		
		GW				12	X	X	X	X	X	X	X	X	X	X		
		GW				12	X	X	X	X	X	X	X	X	X	X		

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

Remarks:BOD,Nitrate have a 48 hourhold time****
***metals/cations=M6020AP1+Ca,Fe,Mg,Mn,K,Si,Silica,Na by 6010.**
only run FF Diss metals/cations if TSS>100mg/L.

pH _____ Temp _____
Flow _____ Other _____

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

Tracking # 4794 8834 0197

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	
ROGER NORTH	5/24/19	10:15			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: ASDF °C 0.9+.1=1.0	Bottles Received: 36
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 5/25/19	Time: 8:45

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

August 13, 2019 – Q2 Resampling Event

ANALYTICAL REPORT

August 22, 2019

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

Vista GeoEnvironmental Services, Inc.

Sample Delivery Group:	L1129071
Samples Received:	08/15/2019
Project Number:	19-143
Description:	HRC Landfill
Report To:	Roger North P.O. Box 388 Lake Oswego, OR 97034

Entire Report Reviewed By:

Brian Ford

Brian Ford
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 Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

TABLE OF CONTENTS

Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	4
Sr: Sample Results	5
MW-3 L1129071-01	5
MW-3 L1129071-02	7
Qc: Quality Control Summary	9
Gravimetric Analysis by Method 2540 C-2011	9
Wet Chemistry by Method 9040C	10
Wet Chemistry by Method 9050A	13
Volatile Organic Compounds (GC/MS) by Method 8260C	14
Gl: Glossary of Terms	18
Al: Accreditations & Locations	19
Sc: Sample Chain of Custody	20

MW-3 L1129071-01 GW

Collected by	Collected date/time	Received date/time
Roger North	08/13/19 17:50	08/15/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1329550	1	08/16/19 20:27	08/16/19 22:23	TH	Mt. Juliet, TN
Wet Chemistry by Method 9040C	WG1329687	1	08/17/19 12:22	08/17/19 12:22	ANP	Mt. Juliet, TN
Wet Chemistry by Method 9050A	WG1329789	1	08/16/19 15:56	08/16/19 15:56	AKA	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1332861	1	08/22/19 01:31	08/22/19 01:31	JHH	Mt. Juliet, TN

MW-3 L1129071-02 GW

Collected by	Collected date/time	Received date/time
Roger North	08/13/19 17:50	08/15/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1332861	1	08/22/19 01:53	08/22/19 01:53	JHH	Mt. Juliet, TN

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

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.

Brian Ford

Brian Ford
Project Manager

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Dissolved Solids	130000		2820	10000	1	08/16/2019 22:23	WG1329550

Wet Chemistry by Method 9040C

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	6.64	T8	1	08/17/2019 12:22	WG1329687

Sample Narrative:

L1129071-01 WG1329687: 6.64 at 21.5C

Wet Chemistry by Method 9050A

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	84.6		10.0	1	08/16/2019 15:56	WG1329789

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	U		10.0	50.0	1	08/22/2019 01:31	WG1332861
Acrolein	U		8.87	50.0	1	08/22/2019 01:31	WG1332861
Acrylonitrile	U		1.87	10.0	1	08/22/2019 01:31	WG1332861
Benzene	U		0.331	1.00	1	08/22/2019 01:31	WG1332861
Bromobenzene	U		0.352	1.00	1	08/22/2019 01:31	WG1332861
Bromodichloromethane	U		0.380	1.00	1	08/22/2019 01:31	WG1332861
Bromoform	U		0.469	1.00	1	08/22/2019 01:31	WG1332861
Bromomethane	U		0.866	5.00	1	08/22/2019 01:31	WG1332861
n-Butylbenzene	U		0.361	1.00	1	08/22/2019 01:31	WG1332861
sec-Butylbenzene	U		0.365	1.00	1	08/22/2019 01:31	WG1332861
tert-Butylbenzene	U		0.399	1.00	1	08/22/2019 01:31	WG1332861
Carbon tetrachloride	U		0.379	1.00	1	08/22/2019 01:31	WG1332861
Chlorobenzene	U		0.348	1.00	1	08/22/2019 01:31	WG1332861
Chlorodibromomethane	U		0.327	1.00	1	08/22/2019 01:31	WG1332861
Chloroethane	U		0.453	5.00	1	08/22/2019 01:31	WG1332861
Chloroform	U		0.324	5.00	1	08/22/2019 01:31	WG1332861
Chloromethane	U		0.276	2.50	1	08/22/2019 01:31	WG1332861
2-Chlorotoluene	U		0.375	1.00	1	08/22/2019 01:31	WG1332861
4-Chlorotoluene	U		0.351	1.00	1	08/22/2019 01:31	WG1332861
1,2-Dibromo-3-Chloropropane	U	J0	1.33	5.00	1	08/22/2019 01:31	WG1332861
1,2-Dibromoethane	U		0.381	1.00	1	08/22/2019 01:31	WG1332861
Dibromomethane	U		0.346	1.00	1	08/22/2019 01:31	WG1332861
1,2-Dichlorobenzene	U		0.349	1.00	1	08/22/2019 01:31	WG1332861
1,3-Dichlorobenzene	U		0.220	1.00	1	08/22/2019 01:31	WG1332861
1,4-Dichlorobenzene	U		0.274	1.00	1	08/22/2019 01:31	WG1332861
Dichlorodifluoromethane	U		0.551	5.00	1	08/22/2019 01:31	WG1332861
1,1-Dichloroethane	U		0.259	1.00	1	08/22/2019 01:31	WG1332861
1,2-Dichloroethane	U		0.361	1.00	1	08/22/2019 01:31	WG1332861
1,1-Dichloroethene	U		0.398	1.00	1	08/22/2019 01:31	WG1332861
cis-1,2-Dichloroethene	U		0.260	1.00	1	08/22/2019 01:31	WG1332861
trans-1,2-Dichloroethene	U		0.396	1.00	1	08/22/2019 01:31	WG1332861
1,2-Dichloropropane	U		0.306	1.00	1	08/22/2019 01:31	WG1332861
1,1-Dichloropropene	U		0.352	1.00	1	08/22/2019 01:31	WG1332861
1,3-Dichloropropane	U		0.366	1.00	1	08/22/2019 01:31	WG1332861
cis-1,3-Dichloropropene	U		0.418	1.00	1	08/22/2019 01:31	WG1332861
trans-1,3-Dichloropropene	U		0.419	1.00	1	08/22/2019 01:31	WG1332861

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
2,2-Dichloropropane	U		0.321	1.00	1	08/22/2019 01:31	WG1332861
Di-isopropyl ether	U		0.320	1.00	1	08/22/2019 01:31	WG1332861
Ethylbenzene	U		0.384	1.00	1	08/22/2019 01:31	WG1332861
Hexachloro-1,3-butadiene	U		0.256	1.00	1	08/22/2019 01:31	WG1332861
Isopropylbenzene	U		0.326	1.00	1	08/22/2019 01:31	WG1332861
p-Isopropyltoluene	U		0.350	1.00	1	08/22/2019 01:31	WG1332861
2-Butanone (MEK)	U		3.93	10.0	1	08/22/2019 01:31	WG1332861
Methylene Chloride	U		1.00	5.00	1	08/22/2019 01:31	WG1332861
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	08/22/2019 01:31	WG1332861
Methyl tert-butyl ether	U		0.367	1.00	1	08/22/2019 01:31	WG1332861
Naphthalene	U	J0	1.00	5.00	1	08/22/2019 01:31	WG1332861
n-Propylbenzene	U		0.349	1.00	1	08/22/2019 01:31	WG1332861
Styrene	U		0.307	1.00	1	08/22/2019 01:31	WG1332861
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	08/22/2019 01:31	WG1332861
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	08/22/2019 01:31	WG1332861
1,1,2-Trichlorotrifluoroethane	U		0.303	1.00	1	08/22/2019 01:31	WG1332861
Tetrachloroethene	U		0.372	1.00	1	08/22/2019 01:31	WG1332861
Toluene	U		0.412	1.00	1	08/22/2019 01:31	WG1332861
1,2,3-Trichlorobenzene	U	J0	0.230	1.00	1	08/22/2019 01:31	WG1332861
1,2,4-Trichlorobenzene	U	J0	0.355	1.00	1	08/22/2019 01:31	WG1332861
1,1,1-Trichloroethane	U		0.319	1.00	1	08/22/2019 01:31	WG1332861
1,1,2-Trichloroethane	U		0.383	1.00	1	08/22/2019 01:31	WG1332861
Trichloroethene	U		0.398	1.00	1	08/22/2019 01:31	WG1332861
Trichlorofluoromethane	U		1.20	5.00	1	08/22/2019 01:31	WG1332861
1,2,3-Trichloropropane	U		0.807	2.50	1	08/22/2019 01:31	WG1332861
1,2,4-Trimethylbenzene	U		0.373	1.00	1	08/22/2019 01:31	WG1332861
1,2,3-Trimethylbenzene	U		0.321	1.00	1	08/22/2019 01:31	WG1332861
1,3,5-Trimethylbenzene	U		0.387	1.00	1	08/22/2019 01:31	WG1332861
Vinyl chloride	U		0.259	1.00	1	08/22/2019 01:31	WG1332861
Xylenes, Total	U		1.06	3.00	1	08/22/2019 01:31	WG1332861
(S) Toluene-d8	*103*			*80.0-120*		*08/22/2019 01:31*	WG1332861
(S) 4-Bromofluorobenzene	*97.0*			*77.0-126*		*08/22/2019 01:31*	WG1332861
(S) 1,2-Dichloroethane-d4	*107*			*70.0-130*		*08/22/2019 01:31*	WG1332861

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	U		10.0	50.0	1	08/22/2019 01:53	WG1332861
Acrolein	U		8.87	50.0	1	08/22/2019 01:53	WG1332861
Acrylonitrile	U		1.87	10.0	1	08/22/2019 01:53	WG1332861
Benzene	U		0.331	1.00	1	08/22/2019 01:53	WG1332861
Bromobenzene	U		0.352	1.00	1	08/22/2019 01:53	WG1332861
Bromodichloromethane	U		0.380	1.00	1	08/22/2019 01:53	WG1332861
Bromoform	U		0.469	1.00	1	08/22/2019 01:53	WG1332861
Bromomethane	U		0.866	5.00	1	08/22/2019 01:53	WG1332861
n-Butylbenzene	U		0.361	1.00	1	08/22/2019 01:53	WG1332861
sec-Butylbenzene	U		0.365	1.00	1	08/22/2019 01:53	WG1332861
tert-Butylbenzene	U		0.399	1.00	1	08/22/2019 01:53	WG1332861
Carbon tetrachloride	U		0.379	1.00	1	08/22/2019 01:53	WG1332861
Chlorobenzene	U		0.348	1.00	1	08/22/2019 01:53	WG1332861
Chlorodibromomethane	U		0.327	1.00	1	08/22/2019 01:53	WG1332861
Chloroethane	U		0.453	5.00	1	08/22/2019 01:53	WG1332861
Chloroform	U		0.324	5.00	1	08/22/2019 01:53	WG1332861
Chloromethane	U		0.276	2.50	1	08/22/2019 01:53	WG1332861
2-Chlorotoluene	U		0.375	1.00	1	08/22/2019 01:53	WG1332861
4-Chlorotoluene	U		0.351	1.00	1	08/22/2019 01:53	WG1332861
1,2-Dibromo-3-Chloropropane	U	J0	1.33	5.00	1	08/22/2019 01:53	WG1332861
1,2-Dibromoethane	U		0.381	1.00	1	08/22/2019 01:53	WG1332861
Dibromomethane	U		0.346	1.00	1	08/22/2019 01:53	WG1332861
1,2-Dichlorobenzene	U		0.349	1.00	1	08/22/2019 01:53	WG1332861
1,3-Dichlorobenzene	U		0.220	1.00	1	08/22/2019 01:53	WG1332861
1,4-Dichlorobenzene	U		0.274	1.00	1	08/22/2019 01:53	WG1332861
Dichlorodifluoromethane	U		0.551	5.00	1	08/22/2019 01:53	WG1332861
1,1-Dichloroethane	U		0.259	1.00	1	08/22/2019 01:53	WG1332861
1,2-Dichloroethane	U		0.361	1.00	1	08/22/2019 01:53	WG1332861
1,1-Dichloroethene	U		0.398	1.00	1	08/22/2019 01:53	WG1332861
cis-1,2-Dichloroethene	U		0.260	1.00	1	08/22/2019 01:53	WG1332861
trans-1,2-Dichloroethene	U		0.396	1.00	1	08/22/2019 01:53	WG1332861
1,2-Dichloropropane	U		0.306	1.00	1	08/22/2019 01:53	WG1332861
1,1-Dichloropropene	U		0.352	1.00	1	08/22/2019 01:53	WG1332861
1,3-Dichloropropane	U		0.366	1.00	1	08/22/2019 01:53	WG1332861
cis-1,3-Dichloropropene	U		0.418	1.00	1	08/22/2019 01:53	WG1332861
trans-1,3-Dichloropropene	U		0.419	1.00	1	08/22/2019 01:53	WG1332861
2,2-Dichloropropane	U		0.321	1.00	1	08/22/2019 01:53	WG1332861
Di-isopropyl ether	U		0.320	1.00	1	08/22/2019 01:53	WG1332861
Ethylbenzene	U		0.384	1.00	1	08/22/2019 01:53	WG1332861
Hexachloro-1,3-butadiene	U		0.256	1.00	1	08/22/2019 01:53	WG1332861
Isopropylbenzene	U		0.326	1.00	1	08/22/2019 01:53	WG1332861
p-Isopropyltoluene	U		0.350	1.00	1	08/22/2019 01:53	WG1332861
2-Butanone (MEK)	U		3.93	10.0	1	08/22/2019 01:53	WG1332861
Methylene Chloride	U		1.00	5.00	1	08/22/2019 01:53	WG1332861
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	08/22/2019 01:53	WG1332861
Methyl tert-butyl ether	U		0.367	1.00	1	08/22/2019 01:53	WG1332861
Naphthalene	U	J0	1.00	5.00	1	08/22/2019 01:53	WG1332861
n-Propylbenzene	U		0.349	1.00	1	08/22/2019 01:53	WG1332861
Styrene	U		0.307	1.00	1	08/22/2019 01:53	WG1332861
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	08/22/2019 01:53	WG1332861
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	08/22/2019 01:53	WG1332861
1,1,2-Trichlorotrifluoroethane	U		0.303	1.00	1	08/22/2019 01:53	WG1332861
Tetrachloroethene	U		0.372	1.00	1	08/22/2019 01:53	WG1332861
Toluene	U		0.412	1.00	1	08/22/2019 01:53	WG1332861
1,2,3-Trichlorobenzene	U	J0	0.230	1.00	1	08/22/2019 01:53	WG1332861
1,2,4-Trichlorobenzene	U	J0	0.355	1.00	1	08/22/2019 01:53	WG1332861

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
1,1,1-Trichloroethane	U		0.319	1.00	1	08/22/2019 01:53	WG1332861
1,1,2-Trichloroethane	U		0.383	1.00	1	08/22/2019 01:53	WG1332861
Trichloroethene	U		0.398	1.00	1	08/22/2019 01:53	WG1332861
Trichlorofluoromethane	U		1.20	5.00	1	08/22/2019 01:53	WG1332861
1,2,3-Trichloropropane	U		0.807	2.50	1	08/22/2019 01:53	WG1332861
1,2,4-Trimethylbenzene	U		0.373	1.00	1	08/22/2019 01:53	WG1332861
1,2,3-Trimethylbenzene	U		0.321	1.00	1	08/22/2019 01:53	WG1332861
1,3,5-Trimethylbenzene	U		0.387	1.00	1	08/22/2019 01:53	WG1332861
Vinyl chloride	U		0.259	1.00	1	08/22/2019 01:53	WG1332861
Xylenes, Total	U		1.06	3.00	1	08/22/2019 01:53	WG1332861
(S) Toluene-d8	*104*			*80.0-120*		*08/22/2019 01:53*	WG1332861
(S) 4-Bromofluorobenzene	*98.0*			*77.0-126*		*08/22/2019 01:53*	WG1332861
(S) 1,2-Dichloroethane-d4	*108*			*70.0-130*		*08/22/2019 01:53*	WG1332861

Method Blank (MB)

(MB) R3441707-1 08/16/19 22:23

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Dissolved Solids	U		2820	10000

L1128960-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1128960-02 08/16/19 22:23 • (DUP) R3441707-3 08/16/19 22:23

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	1010000	1030000	1	1.77		5

Laboratory Control Sample (LCS)

(LCS) R3441707-2 08/16/19 22:23

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800000	8740000	99.3	85.0-115	

L1128553-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1128553-01 08/17/19 12:22 • (DUP) R3441419-2 08/17/19 12:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	9.11	9.11	1	0.000		1

Sample Narrative:
OS: 9.11 at 21.8C
DUP: 9.11 at 21.9C

L1128841-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1128841-02 08/17/19 12:22 • (DUP) R3441419-3 08/17/19 12:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	6.30	6.31	1	0.159		1

Sample Narrative:
OS: 6.3 at 21.8C
DUP: 6.31 at 21.9C

L1128914-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1128914-01 08/17/19 12:22 • (DUP) R3441419-5 08/17/19 12:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.55	7.57	1	0.265		1

Sample Narrative:
OS: 7.55 at 21.8C
DUP: 7.57 at 21.8C

L1128989-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1128989-01 08/17/19 12:22 • (DUP) R3441419-6 08/17/19 12:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.03	7.02	1	0.142		1

Sample Narrative:

L1128989-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1128989-01 08/17/19 12:22 • (DUP) R3441419-6 08/17/19 12:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%

OS: 7.03 at 21.8C
DUP: 7.02 at 21.2C

L1129064-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1129064-01 08/17/19 12:22 • (DUP) R3441419-7 08/17/19 12:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.87	7.88	1	0.127		1

Sample Narrative:
OS: 7.87 at 21.8C
DUP: 7.88 at 21.8C

L1129071-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1129071-01 08/17/19 12:22 • (DUP) R3441419-8 08/17/19 12:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	6.64	6.64	1	0.000		1

Sample Narrative:
OS: 6.64 at 21.5C
DUP: 6.64 at 21.9C

L1129102-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1129102-01 08/17/19 12:22 • (DUP) R3441419-9 08/17/19 12:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.66	7.69	1	0.391		1

Sample Narrative:
OS: 7.66 at 21.5C
DUP: 7.69 at 21.7C

L1129102-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1129102-02 08/17/19 12:22 • (DUP) R3441419-10 08/17/19 12:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	6.58	6.59	1	0.152		1

Sample Narrative:
OS: 6.58 at 21.6C
DUP: 6.59 at 21.8C

L1129157-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1129157-01 08/17/19 12:22 • (DUP) R3441419-11 08/17/19 12:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.65	7.65	1	0.000		1

Sample Narrative:
OS: 7.65 at 21.8C
DUP: 7.65 at 21.8C

L1129240-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1129240-01 08/17/19 12:22 • (DUP) R3441419-12 08/17/19 12:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	su	su		%		%
pH	7.54	7.59	1	0.661		1

Sample Narrative:
OS: 7.54 at 21.5C
DUP: 7.59 at 21.9C

Laboratory Control Sample (LCS)

(LCS) R3441419-1 08/17/19 12:22

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 21.3C

Method Blank (MB)

(MB) R3441302-1 08/16/19 15:56

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

L1129102-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1129102-02 08/16/19 15:56 • (DUP) R3441302-3 08/16/19 15:56

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	U	0.000	1	0.000		20

L1129132-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1129132-06 08/16/19 15:56 • (DUP) R3441302-4 08/16/19 15:56

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1330	1340	1	0.600		20

Laboratory Control Sample (LCS)

(LCS) R3441302-2 08/16/19 15:56

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	393	394	100	85.0-115	

Method Blank (MB)

(MB) R3443137-2 08/22/19 00:47

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Acetone	U		10.0	50.0
Acrolein	U		8.87	50.0
Acrylonitrile	U		1.87	10.0
Benzene	U		0.331	1.00
Bromobenzene	U		0.352	1.00
Bromodichloromethane	U		0.380	1.00
Bromoform	U		0.469	1.00
Bromomethane	U		0.866	5.00
n-Butylbenzene	U		0.361	1.00
sec-Butylbenzene	U		0.365	1.00
tert-Butylbenzene	U		0.399	1.00
Carbon tetrachloride	U		0.379	1.00
Chlorobenzene	U		0.348	1.00
Chlorodibromomethane	U		0.327	1.00
Chloroethane	U		0.453	5.00
Chloroform	U		0.324	5.00
Chloromethane	U		0.276	2.50
2-Chlorotoluene	U		0.375	1.00
4-Chlorotoluene	U		0.351	1.00
1,2-Dibromo-3-Chloropropane	U		1.33	5.00
1,2-Dibromoethane	U		0.381	1.00
Dibromomethane	U		0.346	1.00
1,2-Dichlorobenzene	U		0.349	1.00
1,3-Dichlorobenzene	U		0.220	1.00
1,4-Dichlorobenzene	U		0.274	1.00
Dichlorodifluoromethane	U		0.551	5.00
1,1-Dichloroethane	U		0.259	1.00
1,2-Dichloroethane	U		0.361	1.00
1,1-Dichloroethene	U		0.398	1.00
cis-1,2-Dichloroethene	U		0.260	1.00
trans-1,2-Dichloroethene	U		0.396	1.00
1,2-Dichloropropane	U		0.306	1.00
1,1-Dichloropropene	U		0.352	1.00
1,3-Dichloropropane	U		0.366	1.00
cis-1,3-Dichloropropene	U		0.418	1.00
trans-1,3-Dichloropropene	U		0.419	1.00
2,2-Dichloropropane	U		0.321	1.00
Di-isopropyl ether	U		0.320	1.00
Ethylbenzene	U		0.384	1.00
Hexachloro-1,3-butadiene	0.517	J	0.256	1.00

Method Blank (MB)

(MB) R3443137-2 08/22/19 00:47

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Isopropylbenzene	U		0.326	1.00
p-Isopropyltoluene	U		0.350	1.00
2-Butanone (MEK)	U		3.93	10.0
Methylene Chloride	U		1.00	5.00
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0
Methyl tert-butyl ether	U		0.367	1.00
Naphthalene	U		1.00	5.00
n-Propylbenzene	U		0.349	1.00
Styrene	U		0.307	1.00
1,1,1,2-Tetrachloroethane	U		0.385	1.00
1,1,2,2-Tetrachloroethane	U		0.130	1.00
Tetrachloroethene	U		0.372	1.00
Toluene	U		0.412	1.00
1,1,2-Trichlorotrifluoroethane	U		0.303	1.00
1,2,3-Trichlorobenzene	U		0.230	1.00
1,2,4-Trichlorobenzene	U		0.355	1.00
1,1,1-Trichloroethane	U		0.319	1.00
1,1,2-Trichloroethane	U		0.383	1.00
Trichloroethene	U		0.398	1.00
Trichlorofluoromethane	U		1.20	5.00
1,2,3-Trichloropropane	U		0.807	2.50
1,2,3-Trimethylbenzene	U		0.321	1.00
1,2,4-Trimethylbenzene	U		0.373	1.00
1,3,5-Trimethylbenzene	U		0.387	1.00
Vinyl chloride	U		0.259	1.00
Xylenes, Total	U		1.06	3.00
(S) Toluene-d8	*103*			*80.0-120*
(S) 4-Bromofluorobenzene	*96.3*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*105*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3443137-1 08/21/19 23:43

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acrolein	125	156	125	10.0-160	
Acetone	125	122	97.3	19.0-160	
Acrylonitrile	125	136	109	55.0-149	
Benzene	25.0	24.2	97.0	70.0-123	

Laboratory Control Sample (LCS)

(LCS) R3443137-1 08/21/19 23:43

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromobenzene	25.0	24.3	97.3	73.0-121	
Bromodichloromethane	25.0	26.6	107	75.0-120	
Bromoform	25.0	28.3	113	68.0-132	
Bromomethane	25.0	26.4	106	10.0-160	
n-Butylbenzene	25.0	19.9	79.7	73.0-125	
sec-Butylbenzene	25.0	20.1	80.6	75.0-125	
tert-Butylbenzene	25.0	21.4	85.7	76.0-124	
Carbon tetrachloride	25.0	22.3	89.4	68.0-126	
Chlorobenzene	25.0	24.5	97.8	80.0-121	
2-Chlorotoluene	25.0	22.7	90.6	76.0-123	
Chlorodibromomethane	25.0	26.6	106	77.0-125	
4-Chlorotoluene	25.0	23.7	94.8	75.0-122	
Chloroethane	25.0	24.9	99.4	47.0-150	
Chloroform	25.0	24.5	97.9	73.0-120	
Chloromethane	25.0	23.4	93.7	41.0-142	
1,2-Dibromo-3-Chloropropane	25.0	24.0	95.8	58.0-134	
1,2-Dibromoethane	25.0	27.5	110	80.0-122	
Dibromomethane	25.0	26.8	107	80.0-120	
1,2-Dichlorobenzene	25.0	23.3	93.2	79.0-121	
1,3-Dichlorobenzene	25.0	22.9	91.7	79.0-120	
1,4-Dichlorobenzene	25.0	21.8	87.2	79.0-120	
Dichlorodifluoromethane	25.0	29.0	116	51.0-149	
1,1-Dichloroethane	25.0	24.8	99.1	70.0-126	
1,1-Dichloropropene	25.0	25.3	101	74.0-126	
1,2-Dichloroethane	25.0	25.8	103	70.0-128	
1,1-Dichloroethene	25.0	21.6	86.2	71.0-124	
1,3-Dichloropropane	25.0	27.6	110	80.0-120	
cis-1,2-Dichloroethene	25.0	23.0	91.9	73.0-120	
trans-1,2-Dichloroethene	25.0	21.9	87.7	73.0-120	
1,2-Dichloropropane	25.0	26.0	104	77.0-125	
2,2-Dichloropropane	25.0	18.3	73.4	58.0-130	
cis-1,3-Dichloropropene	25.0	27.1	109	80.0-123	
trans-1,3-Dichloropropene	25.0	28.4	114	78.0-124	
Di-isopropyl ether	25.0	22.1	88.4	58.0-138	
Ethylbenzene	25.0	23.5	93.9	79.0-123	
Isopropylbenzene	25.0	22.5	89.8	76.0-127	
Hexachloro-1,3-butadiene	25.0	20.4	81.6	54.0-138	
p-Isopropyltoluene	25.0	21.6	86.4	76.0-125	
2-Butanone (MEK)	125	151	121	44.0-160	
Methylene Chloride	25.0	23.0	92.0	67.0-120	

Laboratory Control Sample (LCS)

(LCS) R3443137-1 08/21/19 23:43

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
4-Methyl-2-pentanone (MIBK)	125	136	109	68.0-142	
Methyl tert-butyl ether	25.0	21.0	84.2	68.0-125	
Naphthalene	25.0	15.9	63.6	54.0-135	
n-Propylbenzene	25.0	21.7	86.7	77.0-124	
Styrene	25.0	25.1	100	73.0-130	
1,1,1,2-Tetrachloroethane	25.0	25.6	102	75.0-125	
1,1,2,2-Tetrachloroethane	25.0	25.8	103	65.0-130	
Tetrachloroethene	25.0	24.5	97.8	72.0-132	
1,2,3-Trichlorobenzene	25.0	16.0	63.9	50.0-138	
Toluene	25.0	24.0	95.9	79.0-120	
1,1,2-Trichlorotrifluoroethane	25.0	20.5	82.1	69.0-132	
1,2,4-Trichlorobenzene	25.0	19.1	76.5	57.0-137	
1,1,1-Trichloroethane	25.0	21.7	87.0	73.0-124	
1,1,2-Trichloroethane	25.0	25.3	101	80.0-120	
1,2,3-Trimethylbenzene	25.0	22.7	91.0	77.0-120	
Trichloroethene	25.0	24.2	97.0	78.0-124	
Trichlorofluoromethane	25.0	23.4	93.5	59.0-147	
1,2,3-Trichloropropane	25.0	28.9	116	73.0-130	
1,2,4-Trimethylbenzene	25.0	22.5	90.1	76.0-121	
1,3,5-Trimethylbenzene	25.0	21.3	85.1	76.0-122	
Vinyl chloride	25.0	24.4	97.5	67.0-131	
Xylenes, Total	75.0	70.4	93.9	79.0-123	
(S) Toluene-d8			*102*	*80.0-120*	
(S) 4-Bromofluorobenzene			*98.4*	*77.0-126*	
(S) 1,2-Dichloroethane-d4			*111*	*70.0-130*	

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

Guide to Reading and Understanding Your Laboratory Report

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

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

Abbreviations and Definitions

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

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J0	J0: The identification of the analyte is acceptable, but the reported concentration is an estimate. The calibration met method criteria.
T8	Sample(s) received past/too close to holding time expiration.

ACCREDITATIONS & LOCATIONS

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

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

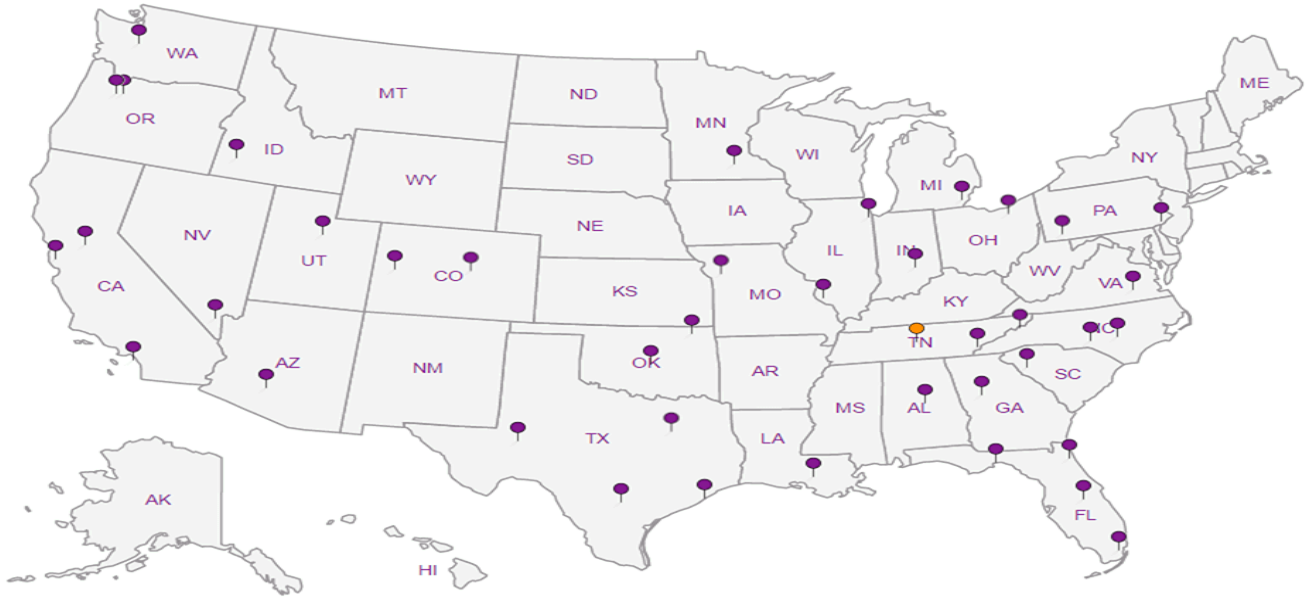
Third Party Federal Accreditations

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

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

Our Locations

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



Vista GeoEnvironmental Services, Inc.

P.O. Box 388

Billing Information:
Jennifer Kimura / Vista Accounting
P.O. Box 388
Lake Oswego, OR 97034

Pres Chk

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Pace Analytical®
National Center for Testing & Innovation

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

Report to: Roger North

Email To: rogern@vista-us.com; JenniferK@vista-us.com

Project Description: HRC LANDFILL

City/State Collected: PARKDALE OR

Phone: 503-209-0327
Fax:

Client Project # 19-143

Lab Project # VISGEOLOOR-HRLANDFIL

L # L1129071

A049

Tab

Collected by (print): ROGER NORTH

Site/Facility ID #

P.O. #

Collected by (signature):

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

Acctnum: VISGEOLOOR
Template: T154116
Prelogin: P723858
TSR: 110 - Brian Ford
PB:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	SpCon, TDS 250mlHDPE-NoPres	VOCs 8260C 40mlAmb-HCl	pH 125mlHDPE-NoPres	Remarks	Sample # (lab only)
MW-3		GW		8/13/19	17:50	5	✓	✓	✓		-01
MW-3		GW		8/13/19	17:50	3		✓			-02

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

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

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	
[signature]	8/14/19	9:15	[signature]	1 0	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: A3BF°C 1.5+.1=1.6	Bottles Received: 8
[signature] ESCPON	8/14/19	1000			If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 8/15	Time: 0845
			[signature]		Hold: / Condition: NCF / OK

APPENDIX E

SUMMARY TABLES

- GROUNDWATER DATA – MW-3
- LEACHATE DATA
- SURFACE WATER DATA – SW-3
- LFG DATA

GROUNDWATER DATA – MW-3

GROUNDWATER AT MW-3

Group 1a: Field Indicators								
Date Sampled	Casing Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)	pH (S.U.)	Temperature (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/l)	ORP (mv)
MCL				6.5 - 8.5 a				
2019-08-13	1,738.30	133.00	1,605.30	6.71	19.1	35.0	4.2	223.0
2019-05-23	1,738.30	133.70	1,604.60	6.71	21.3	123.0	6.3	55.0
2018-06-13	1,738.30	134.00	1,604.30	6.48	9.1	88.6	10.5	233.8
2016-09-05	1,738.30	133.99	1,604.31	7.19	10.5	97.2	13.0	265.0
2015-02-04	1,738.30	135.16	1,603.14	7.22	8.7	74.6	11.0	228.0
2014-05-16	1,738.30	133.61	1,604.69	6.91	10.1	106.2	11.0	275.0
2014-04-15	1,738.30	133.95	1,604.35	6.90	8.6	89.4	11.5	230.0
2013-07-15	1,738.30	134.03	1,604.27	6.94	10.7	98.5	NT	289.0
2013-05-14	1,738.30	133.95	1,604.35	7.16	9.8	107.8	11.0	263.0
2010-06-15	1,738.30	133.91	1,604.39	6.96	8.4	175.2	10.5	180.0

GROUNDWATER AT MW-3

Group 1b: Laboratory Indicators									
Date Sampled	Hardness as CaCO3 (mg/l)	Total Alkalinity as CaCO3 (mg/l)	Total Organic Carbon (mg/l)	pH (S.U.)	Specific Conductance (µS/cm)	Total Dissolved Solids (mg/l)	Total Suspended Solids (mg/l)	Chemical Oxygen Demand (mg/l)	Biological Oxygen Demand (mg/l)
MCL				6.5 - 8.5 a		500 a			
2019-08-13	NT	NT	NT	6.64	84.6	130.0	NT	NT	NT
2019-05-23	101.0 J	37.7	1.68 B	6.68 T8	83.5	111.0	102.0	36.4	U
2018-06-13	28.9 B, J	43.3	0.69 B, J	6.79 T8	101.0	57.5 Q	233.0	20.9	7.4 B1, J-
2016-09-05	19.5	19.3	0.32 J	6.64	41.0	55.0	52.3	ND	ND
2015-02-04	25.0	25.0	0.38 J	6.80 T8	58.0	68.0	98.0	4.4 J	ND
2014-05-16	NT	NT	NT	NT	NT	NT	53.0	NT	NT
2014-04-15	42.0	23.0	0.53 J	7.00 T8	57.0	78.0	850.0	29.0	6.9
2010-06-15	17.0	50.0	0.35	6.90	140.0	200.0	910.0	26.0	NT

GROUNDWATER AT MW-3

VISTA

Group 2a: Common Anions and Cations - Total Concentrations (mg/l)														
Date Sampled	Calcium (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Sodium (mg/L)	Nitrate (mg/L)	Silica (mg/L)	Iron (mg/L)	Manganese (mg/L)	Magnesium (mg/L)	Chloride (mg/L)	Carbonate (mg/L)	Potassium (mg/L)	Bicarbonate (mg/L)	Silicon (mg/L)
MCL		250 a			10		0.3 a	0.05 a		250 a				
2019-05-23	5.06	0.71 J	U	7.92	0.20 P1	24.1	0.04 B,J	0.009 J	1.79	1.75	ND	1.41	37.70	11.3
2018-06-13	6.72	1.19 J	0.04 J	13.30	0.28 P1	42.6	6.80	0.149	2.44	1.80	ND	2.11	43.30	19.9
2016-09-05	3.89	0.77 J	ND	5.72	0.18	30.2	3.89	0.135	1.48	2.03	ND	1.75	19.30	14.1
2015-02-04	5.30	0.78 J	ND	6.50	0.25	40.0	7.30	0.150	2.10	8.10	ND	2.00	25.00	19.0
2014-05-16	NT	NT	NT	NT	NT	NT	0.14	0.004	NT	NT	NT	NT	NT	NT
2014-04-15	0.48	2.60 J	ND	10.00	0.21	90.0	16.00	0.320	4.70	2.00	ND	3.70	23.00	42.0
2010-06-15	10.00	16.00	0.52	16.00	0.27	42.0	4.80	0.110	3.80	2.20	ND	1.70	50.00	20.0

Group 2a: Common Anions and Cations - Total Concentrations (meq/L). Note meq/L = mg/L ÷ equivalent weight.														
Date Sampled	Calcium (meq/L)	Sulfate (meq/L)	Ammonia (meq/L)	Sodium (meq/L)	Nitrate (meq/L)	Silica (meq/L)	Iron (meq/L)	Manganese (meq/L)	Magnesium (meq/L)	Chloride (meq/L)	Carbonate (meq/L)	Potassium (meq/L)	Bicarbonate (meq/L)	Silicon (meq/L)
Equivalent Weight	20	48	17	23	62	60	28	27.5	12	35	30	39	61	28
2019-05-23	0.253	0.015 J	U	0.344	0.003 P1	0.402	0.001 B,J	0.000 J	0.149	0.050	ND	0.036	0.618	0.404
2018-06-13	0.336	0.025 J	0.003 J	0.578	0.004 P1	0.710	0.244	0.005	0.203	0.051	ND	0.054	0.710	0.711
2016-09-05	0.195	0.016 J	ND	0.249	0.003	0.503	0.139	0.005	0.123	0.058	ND	0.045	0.316	0.504
2015-02-04	0.265	0.016 J	ND	0.283	0.004	0.667	0.261	0.005	0.175	0.231	ND	0.051	0.410	0.679
2014-05-16	NT	NT	NT	NT	NT	NT	0.005	0.000	NT	NT	NT	NT	NT	NT
2014-04-15	0.024	0.054 J	ND	0.435	0.003	1.500	0.573	0.012	0.392	0.057	ND	0.095	0.377	1.500
2010-06-15	0.500	0.333	0.031	0.696	0.004	0.700	0.172	0.004	0.317	0.063	ND	0.044	0.820	0.714

GROUNDWATER AT MW-3

Group 2a: Common Anions and Cations - Dissolved Concentrations (mg/l)							
Date Sampled	Calcium (mg/L)	Sodium (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Potassium (mg/L)	Silicon (mg/L)
MCL			0.3 a		0.05 a		
2019-05-23	5.01	10.10	U	1.710	0.032	1.31	12.3
2018-06-13	5.63	8.25	0.02 J	2.060	0.004 J	1.39	12.7
2014-04-15	2.30	10.00	ND	0.940	0.010	96.0	13.0
2010-06-15	7.10	11.00	0.24	2.600	0.016	1.50	12.0

Group 2a: Common Anions and Cations - Dissolved Concentrations (meq/L). Note meq/L = mg/L ÷ equivalent weight.							
Date Sampled	Calcium (meq/L)	Sodium (meq/L)	Iron (meq/L)	Magnesium (meq/L)	Manganese (meq/L)	Potassium (meq/L)	Silicon (meq/L)
Equivalent Weight	20	23	28	12	27	39	28
2019-05-23	0.251	0.439	U	0.143	0.001	0.034	0.439
2018-06-13	0.282	0.359	0.001 J	0.172	0.000 J	0.036	0.454
2014-04-15	0.115	0.435	ND	0.078	0.000	2.462	0.464
2010-06-15	0.355	0.478	0.009	0.217	0.001	0.038	0.429

GROUNDWATER AT MW-3

VISTA

Group 2b: Trace Metals - Total Concentrations (µg/l)																
Date Sampled	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Lead (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Thallium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)	Mercury (µg/L)
MCL (µg/l)	6	10	1,000	4	5	50		1,000 a	15 a		10	50	2		5,000 a	
2019-05-23	U	0.36 J	10.2	U	U	U	U	2.93 J	0.32 J	0.42	U	U	U	0.99 J	6.10 J	U
2018-06-13	U	3.58	139.0	0.26 J	U	2.39	3.35	3.01 J	4.19	1.46 J	U	U	U	13.40	14.10 J	U
2016-09-05	0.56 J	0.61 J	111.0	0.30 J	ND	1.90 J	3.72 J	1.90 J	4.73		ND	ND	ND	16.10 J	9.62 J	ND
2015-02-04	0.38 J	0.73 J	160.0	0.24 J	ND	3.80 J	4.50 J	2.60 J	4.00	12.00 J	ND	ND	ND	18.00 J	24.00 J	ND
2014-05-16	NT	NT	21.0	NT	NT	NT	NT	NT	0.26 J	NT	NT	NT	NT	NT	NT	NT
2014-04-15	1.00 J	2.50	480.0	1.40	0.54	3.00 J	5.00 J	5.90	15.00	12.00 J	ND	ND	0.29 J	32.00	50.00	ND
2010-06-15	0.57 J	1.10	15.0	0.36 J	0.38 J	12.00	1.80	8.40	5.00	11.00	0.75 J	ND	ND	8.40	150.00	NT

GROUNDWATER AT MW-3

Group 2b: Trace Metals - Disssolved Concentrations (µg/l)																
Date Sampled	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Lead (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Thallium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)	Mercury (µg/L)
MCL (µg/l)	6	10	1,000	4	5	50		1,000 a	15 a		10	50	2		5,000 a	
2019-05-23	U	0.37 J	9.9	U	U	U	U	2.73 J	0.39 J	U	U	U	U	0.82 J	7.13 J	U
2018-06-13	U	0.38 J	16.2	U	U	U	U	0.64 J	U	U	U	U	U	1.13 J	U	U
2014-04-15	0.79 J	0.84 J	3.7 J	ND	0.21 J	ND	ND	0.53 J	ND	8.20 J	ND	15.0	ND	2.80 J	ND	ND
2010-06-15	0.21 J	ND	37.0 ND	ND	ND	4.10	ND	1.70	0.35 J	2.10	ND	ND	ND	2.10	29.00	NT

GROUNDWATER AT MW-3

Group 3: VOCs (µg/L) (Detected Compounds Only)		
Sample Date	Chloro-benzene (µg/L)	1,4-Di-chloro-benzene (µg/L)
MCL (µg/L)	100	75
2019-08-13	ND	ND
2019-08-13 DUP	ND	ND
2019-05-23	0.48 J	0.47 J
2018-06-13	ND	ND
2017-05-03	ND	ND
2016-09-05	ND	ND
2015-02-04	ND	ND
2014-04-15	ND	ND
2009-04-17	ND	ND

Leachate Data

LEACHATE DATA

Group 1a: Field Indicators					
Date Sampled	pH (S.U.)	Temperature (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/l)	ORP (mv)
MCL	6.5 - 8.5 a				
2019-05-23	6.49	14.1	368.0	7.7	13.0
2018-06-13	6.65	9.5	551.0	2.0	230.1
2017-05-03	6.44	8.8	507.0	7.0	266.0
2016-09-05	6.33	9.4	486.0	8.0	308.0
2015-02-04	6.70	8.6	442.0	7.0	339.0
2014-04-15	6.48	8.0	482.0	7.5	306.0
2009-04-17	7.14	9.0	488.0	8.0	153.0
2009-04-17 Dup	6.88	8.9	491.0	8.0	151.0
2009-04-17 Avg	7.01	9.0	489.5	8.0	152.0

LEACHATE DATA

VISTA

Group 1b: Laboratory Indicators									
Date Sampled	Hardness as CaCO3 (mg/l)	Total Alkalinity as CaCO3 (mg/l)	Total Organic Carbon (mg/l)	pH (S.U.)	Specific Conductance (µS/cm)	Total Dissolved Solids (mg/l)	Total Suspended Solids (mg/l)	Chemical Oxygen Demand (mg/l)	Biological Oxygen Demand (mg/l)
MCL				6.5 - 8.5 a		500 a			
2019-05-23	158.0	196.0	3.13 B	6.41 T8	442.0	223.0	36.6	12.4	9.7
2019-05-23 Dup	157.0	167.0	3.11 B	6.43 T8	441.0	233.0	30.0	10.3	10.0
2019-05-23 Avg	157.5	181.5	3.12	6.42	441.5	228.0	33.3	11.4	9.9
2018-06-13	143.0	160.0	2.34 B	6.61 T8	490.0	192.0 Q	52.7	20.9	7.4 B1, J-
2018-06-13 Dup	150.0	162.0	2.33 B	6.79 T8	462.0	192.0 Q	66.7	22.7	6.6 B1, J-
2018-06-13 Avg	146.5	161.0	2.34	6.70	476.0	192.0	59.7	21.8	7.0
2017-05-03	156.0	233.0	3.66	6.53	408.0	213.0	39.3	37.5	14.1
2017-05-03 Dup	157.0	232.0	3.60	5.52	406.0	215.0	40.5	23.1	11.2
2017-05-03 Avg	156.5	232.5	3.63	6.03	407.0	214.0	39.9	30.3	12.7
2016-09-05	150.0	154.0	3.42	6.40	451.0	239.0	21.5	21.4	5.7
2015-02-04	140.0	150.0	4.10	6.50 T8	400.0	210.0	68.0	14.0	ND
2014-04-15	190.0	160.0	5.10	6.50 T8	520.0	270.0	92.0	22.0	6.7
2009-04-17	149.0	162.0	4.09	6.40	475.0	231.0	33.0	ND	NT
2009-04-17 Dup	161.0	172.0	4.36	6.30	495.0	231.0	24.0	ND	NT
2009-04-17 Avg	155.0	167.0	4.23	6.35	485.0	231.0	28.5	NA	NA

LEACHATE DATA

VISTA

Group 2a: Common Anions and Cations - Total Concentrations (mg/l)															
Date Sampled	Calcium (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Sodium (mg/L)	Nitrate (mg/L)	Silica (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Chloride (mg/L)	Carbonate (mg/L)	Potassium (mg/L)	Bicarbonate (mg/L)	Silicon (mg/L)
MCL		250 a			10		0.3 a		0.05 a	250 a				
2019-05-23	38.2	1.17	1.50	15.7	ND	13.8	35.9	15.0	7.68	24.5	ND	4.35	196.0	6.43
2019-05-23 Dup	38.6	1.05	1.47	15.70	ND	13.9	36.1	15.3	7.82	24.6	ND	4.39	167.0	6.48
2019-05-23 Avg	38.4	1.11	1.49	15.70	NA	13.9	36.0	15.2	7.75	24.6	NA	4.37	181.5	6.46
2018-06-13	30.0	0.89 J	2.07	14.9	ND	13.9	51.1	12.1	8.28	24.8	ND	3.66	160.0	6.48
2018-06-13 Dup	29.6	0.89 J	2.09	14.40	ND	13.9	51.0	12.0	8.31	24.9	ND	3.64	162.0	6.50
2018-06-13 Avg	29.8	0.89 J	2.08	14.65	NA	13.9	51.1	12.1	8.30	24.9	NA	3.65	161.0	6.49
2017-05-03	34.2	1.28 J	2.74	17.1	ND	13.7	52.0	13.2	6.12	25.2	ND	4.61	233.0	6.41
2017-05-03 Dup	34.2	1.22 J	2.75	17.10	ND	13.6	52.1	13.2	6.12	25.5	ND	4.60	232.0	6.34
2017-05-03 Avg	34.2	1.25 J	2.75	17.10	NA	13.7	52.1	13.2	6.12	25.4	NA	4.61	232.5	6.38
2016-09-05	31.1	0.21 J	2.17	16.0	ND	12.4	60.3	13.1	6.60	28.0	ND	3.85	154.0	5.78
2015-02-04	NT	2.30 J	2.10	16.0	0.03 J	14.0	42.0	14.0	6.70	35.0	ND	5.10	150.0	6.70
2014-04-15	46.0	6.30	2.70	22.0	0.22	13.0	12.0	14.0	6.10	33.0	ND	9.30	160.0	6.00
2009-04-17	35.4	3.68	1.20	19.7	0.17	13.3	17.0	13.8	6.21	35.7	ND	4.60	162.0	NT
2009-04-17 Dup	35.8	3.54	1.20	19.60	0.2	13.3	19.6	13.5	6.48	37.6	ND	4.64	168.0	NT
2009-04-17 Avg	35.6	3.61	1.20	19.65	0.2	13.3	18.3	13.7	6.35	36.7	NA	4.62	165.0	NA

VISTA

Group 2a: Common Anions and Cations - Dissolved Concentrations (meq/L).
Note meq/L = mg/L ÷ equivalent weight.

Note meq/L = mg/L ÷ equivalent weight.	Calcium (meq/L)	Sulfate (meq/L)	Ammonia (meq/L)	Sodium (meq/L)	Nitrate (meq/L)	Silica (meq/L)	Iron (meq/L)	Magnesium (meq/L)	Manganese (meq/L)	Chloride (meq/L)	Carbonate (meq/L)	Potassium (meq/L)	Bicarbonate (meq/L)	Silicon (meq/L)
Equivalent Weight	20	48	17	23	62	60	28	12	27.5	35	30	39	61	28
2019-05-23	1.910	0.024	0.088	0.683	ND	0.230	1.286	1.250	0.280	0.700	ND	0.112	3.213	0.230
2019-05-23 Dup	1.930	0.022	0.086	0.683	ND	0.232	1.293	1.275	0.285	0.703	ND	0.113	2.738	0.231
2019-05-23 Avg	1.920	0.023	0.087	0.683	NA	0.231	1.289	1.263	0.282	0.701	NA	0.112	2.975	0.231
2018-06-13	1.500	0.018 J	0.122	0.648	ND	0.232	1.830	1.008	0.301	0.709	ND	0.094	2.623	0.231
2018-06-13 Dup	1.480	0.019 J	0.123	0.626	ND	0.232	1.827	1.000	0.303	0.711	ND	0.093	2.656	0.232
2018-06-13 Avg	1.490	0.019 J	0.122	0.637	NA	0.232	1.828	1.004	0.302	0.710	NA	0.094	2.639	0.232
2017-05-03	1.710	0.027 J	0.161	0.743	ND	0.228	1.862	1.100	0.223	0.720	ND	0.118	3.820	0.229
2017-05-03 Dup	1.710	0.025 J	0.162	0.743	ND	0.227	1.866	1.100	0.223	0.729	ND	0.118	3.803	0.226
2017-05-03 Avg	1.710	0.026 J	0.161	0.743	NA	0.228	1.864	1.100	0.223	0.724	NA	0.118	3.811	0.228
2016-09-05	1.555	0.004 J	0.128	0.696	ND	0.207	2.160	1.092	0.240	0.800	ND	0.099	2.525	0.206
2015-02-04	NT	0.048 J	0.124	0.696	0.000 J	0.233	1.504	1.167	0.244	1.000	ND	0.131	2.459	0.239
2014-04-15	2.300	0.131	0.159	0.957	0.004	0.217	0.430	1.167	0.222	0.943	ND	0.238	2.623	0.214
2009-04-17	1.770	0.077	0.071	0.857	0.003	0.222	0.609	1.150	0.226	1.020	ND	0.118	2.656	NT
2009-04-17 Dup	1.790	0.074	0.071	0.852	0.004	0.222	0.702	1.125	0.236	1.074	ND	0.119	2.754	NT
2009-04-17 Avg	1.780	0.075	0.071	0.854	0.003	0.222	0.655	1.138	0.231	1.047	NA	0.118	2.705	NA

LEACHATE DATA

VISTA

Group 2b: Trace Metals - Total Concentrations (µg/l)																
Date Sampled	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Lead (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Thallium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)	Mercury (µg/L)
MCL (µg/l)	6	10	1,000	4	5	50		1,000 a	15 a		10	20	2		5,000 a	
2019-05-23	ND	ND	0.38	ND	ND	ND	74.6	2.54 J	0.37 J	1.26 J	ND	ND	ND	ND	7.33 J	ND
2019-05-23 Dup	ND	ND	0.38	ND	ND	ND	75.6	1.09 J	0.00 ND	1.31 J	ND	ND	ND	ND	7.61 J	ND
2019-05-23 Avg	NA		0.38	NA	NA	NA	75.1	1.82	0.19	1.29	NA	NA	NA	NA	7.47	NA
2018-06-13	ND	1.74 J	0.31	ND	ND	ND	75.3	0.78	0.26 J	1.22 J	ND	ND	ND	ND	5.00 J	ND
2018-06-13 Dup	ND	2.01	0.32	ND	ND	ND	79.9	1.73 J	0.57 J	1.04 J	ND	ND	ND	ND	4.61 J	ND
2018-06-13 Avg	NA	1.88	0.31	NA	NA	NA	77.6	1.25	0.41 J	1.13 J	NA	NA	NA	NA	4.81	NA
2017-05-03	ND	ND	0.43	ND	ND	1.81 J	73.0	1.83 J	ND	ND	ND	ND	ND	ND	18.50 J	ND
2017-05-03 Dup	ND	ND	0.43	ND	ND	ND	73.2	0.63 J	ND	ND	ND	ND	ND	ND	15.80 J	ND
2017-05-03 Avg	NA		0.43	NA	NA	0.91	73.1	1.23	NA	NA	NA	NA	NA	NA	17.15	NA
2016-09-05	0.30 J	ND	0.37	ND	ND	ND	74.3	0.00 ND	0.25 J	ND	ND	ND	ND	4.68 J	3.32 J	ND
2015-02-04	0.23 J	ND	0.43	ND	0.19 J	ND	81.0	0.00 ND	0.54 J	20.00 J	ND	ND	ND	ND	16.00 J	ND
2014-04-15	0.62 J	1.20	0.38	0.23 J	0.96	ND	44.0	4.00	0.39 J	18.00 J	0.45 J	5.20 J	0.30 J	ND	97.00	ND
2009-04-17	ND	0.09 J	0.32	ND	0.08 J	ND	48.0	0.82	0.19	2.20	ND	ND	ND	ND	17.00	NT
2009-04-17 Dup	ND	0.06 J	0.34	ND	0.08 J	ND	51.0	0.18	0.16	2.40	ND	ND	ND	ND	16.00	NT
2009-04-17 Avg	NA	0.08	0.33	NA	0.08	NA	49.5	0.50	0.18	2.30	NA	NA	NA	NA	16.50	NA

LEACHATE DATA

Group 3: VOCs (µg/L) (Detected Compounds Only)													
Sample Date	Acetone (µg/L)	Benzene (µg/L)	Carbon Disulfide (µg/L)	Chloro-benzene (µg/L)	1,4-Di-chloro-benzene (µg/L)	Ethyl-benzene (µg/L)	Iso-propyl-benzene (µg/L)	m,p-Xylene (µg/L)	Naph-thalene (µg/L)	n-Propyl-benzene (µg/L)	Tri-chloro-ethene (µg/L)	1,2,4-Tri-methyl-benzene (µg/L)	1,3,5-Tri-methyl-benzene (µg/L)
MCL (µg/L)		5		100	75	700					5		
2019-05-23		0.93 J		4.78	1.71		0.45 J						
2019-05-23 Dup		0.9 J		4.5	1.4		0.4 J						
2019-05-23 Avg		0.9		4.6	1.6		0.4						
2018-06-13		0.34 J		2.86									
2018-06-13 Dup		0.4 J		2.7									
2018-06-13 Avg		0.4		2.8									
2017-05-03		1.11		6.00	1.68		0.77 J		1.04 J				
2017-05-03 Dup		1.1		6.2	1.5		0.8 J		0.0				
2017-05-03 Avg		1.1		6.1	1.6		0.8		0.5				
2016-09-05	11.90 J	0.74 J		3.00	1.19								
2015-02-04		0.59 J		2.00	0.69 J								
2014-04-15		1.40		3.00			0.47 J		2.80 J			0.41 J	0.45 J
2009-05-20		1.04		1.72	1.24			1.24	2.41			2.30	
2009-04-17	3.50 J	0.16 J	0.22 J	1.06	0.00	0.13 J		0.00	0.49 J	0.00	0.00	0.00	
2009-04-17 Dup	4.4 J	0.4	0.2 J	1.0	0.0	0.2 J		0.2 J	0.6 J	0.1 J	0.2 J	0.1 J	
2009-04-17 Dup	3.7 J	0.3 J	0.2 J	1.6	0.7 J	0.1 J		0.0	0.5 J	0.0	0.0	0.0	
2009-04-17 Avg	3.9	0.3	0.2	1.2	0.2	0.1		0.1	0.6	0.0	0.1	0.0	

SURFACE WATER DATA – SW-3

SURFACE WATER SW-3 DATA

Group 1a: Field Indicators					
Date Sampled	pH (S.U.)	Temperature (°C)	Specific Conductance (µS/cm)	Dissolved Oxygen (mg/l)	ORP (mv)
MCL	6.5 - 8.5 a				
2019-05-23	NS	NS	NS	NS	NS
2018-06-13	NS	NS	NS	NS	NS
2017-05-03	6.85	8.8	259.0	14.0	291.0
2015-04-02	6.93	7.9	316.0	10.0	328.0
2014-04-15	6.56	7.6	261.0	10.0	252.0
2011-06-16	7.41	8.5	312.0	10.5	115.0
2009-04-17	6.69	7.2	307.0	11.0	154.0

SURFACE WATER SW-3 DATA

Group 1b: Laboratory Indicators									
Date Sampled	Hardness as CaCO3 (mg/l)	Total Alkalinity as CaCO3 (mg/l)	Total Organic Carbon (mg/l)	pH (S.U.)	Specific Conductance (µS/cm)	Total Dissolved Solids (mg/l)	Total Suspended Solids (mg/l)	Chemical Oxygen Demand (mg/l)	Biological Oxygen Demand (mg/l)
MCL				6.5 - 8.5 a		500 a			
2019-05-23	NS	NS	NS	NS	NS	NS	NS	NS	NS
2018-06-13	NS	NS	NS	NS	NS	NS	NS	NS	NS
2017-05-03	109.0	93.7	1.88	6.70	276.0	171.0	10.3	5.0 J	ND
2015-04-02	120.0	100.0	2.00	6.70 T8	330.0	190.0	44.0	ND	ND
2014-04-15	99.0	71.0	2.00	7.30 T8	280.0	150.0	12.0	ND	ND
2011-06-16	160.0	140.0	2.00	7.00	360.0	200.0	2.4	3.1	ND
2009-04-17	107.0	93.0	2.70	6.00	303.0	156.0	35.0	ND	NT

SURFACE WATER SW-3 DATA

Group 2a: Common Anions and Cations (mg/l)														
Date Sampled	Calcium (mg/L)	Sulfate (mg/L)	Ammonia (mg/L)	Sodium (mg/L)	Nitrate (mg/L)	Silica (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Chloride (mg/L)	Carbonate (mg/L)	Potassium (mg/L)	Bicarbonate (mg/L)	Silicon (mg/L)
MCL		250 a			10		0.3 a		0.05 a	250 a				
2019-05-23	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2018-06-13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2017-05-03	25.3	10.10	0.05 J	14.40	0.2	17.4	3.2	0.0	9.50	24.1	ND	1.76	93.7	8.13
2015-04-02	31.0	5.70	ND	19.0	0.69	19.0	3.3	0.3	13.00	34.0	ND	2.20	100.0	8.80
2014-04-15	24.0	8.90	0.06 J	15.00	0.2	19.0	0.2	0.0	9.70	25.0	ND	1.60	71.0	9.10
2011-06-16	33.0	6.00	1.10	19.00	0.2	14.0	0.1	0.0 J	14.00	34.0	ND	2.20	140.0	6.70
2009-04-17	25.4	7.98	0.01 J	16.0	0.41	18.4	0.0	0.0	9.70	31.0	ND	2.14	94.8	NT

SURFACE WATER SW-3 DATA

Group 2b: Trace Metals - Total Concentrations (µg/l)																
Date Sampled	Antimony (µg/L)	Arsenic (µg/L)	Barium (µg/L)	Beryllium (µg/L)	Cadmium (µg/L)	Chromium (µg/L)	Cobalt (µg/L)	Copper (µg/L)	Lead (µg/L)	Nickel (µg/L)	Selenium (µg/L)	Silver (µg/L)	Thallium (µg/L)	Vanadium (µg/L)	Zinc (µg/L)	Mercury (µg/L)
MCL (µg/l)	6	10	1,000	4	5	50		1,000 a	15 a		10	20	2		5,000 a	
2019-05-23	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2018-06-13	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
2017-05-03	ND	ND	46.0	ND	ND	ND	ND	0.92 J	ND	ND	ND	ND	ND	ND	2.89 J	ND
2015-04-02	0.36 J	0.39 J	73.0	ND	ND	ND	3.100 J	4.70 J	1.500 J	9.70 J	ND	ND	ND	5.30 J	6.80 J	ND
2014-04-15	0.41 J	0.81 J	46.0	ND	0.28 J	ND	ND	ND	ND	7.70 J	0.64 J	3.30 J	ND	ND	ND	ND
2011-06-16	ND	0.53 J	62.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2009-04-17	ND	0.05 J	56.0	ND	0.45	0.20 J	0.640	0.84	0.130	0.20 J	ND	ND	ND	1.30	2.00 J	ND

SURFACE WATER SW-3 DATA

Group 3: VOCs (µg/L) (Detected Compounds Only)					
Sample Date	Acetone (µg/L)	Carbon Disulfide (µg/L)	Ethyl-benzene (µg/L)	Naph-thalene (µg/L)	Tetra-chloro-ethene (µg/L)
MCL (µg/L)			700		
2019-05-23	NS	NS	NS	NS	NS
2018-06-13	NS	NS	NS	NS	NS
2017-05-03	ND	ND	ND	ND	ND
2016-09-05	ND	ND	ND	ND	ND
2015-02-04	ND	ND	ND	ND	ND
2014-04-15	ND	ND	ND	ND	ND
2009-04-17	1.50 J	0.16 J	0.11 J	0.33 J	0.19 J

LFG Data

LANDFILL GAS DATA

Date Sampled	VP-1S			VP-1D			VP-2			VP-3			VP-4			VP-5			VP-6S			VP-6D			VP-7			VP-8		
	CH_4 (% LEL)	O_2 (% Vol)	CO_2 (% Vol)	CH_4 (% LEL)	O_2 (% Vol)	CO_2 (% Vol)	CH_4 (% LEL)	O_2 (% Vol)	CO_2 (% Vol)	CH_4 (% LEL)	O_2 (% Vol)	CO_2 (% Vol)	CH_4 (% LEL)	O_2 (% Vol)	CO_2 (% Vol)	CH_4 (% LEL)	O_2 (% Vol)	CO_2 (% Vol)	CH_4 (% LEL)	O_2 (% Vol)	CO_2 (% Vol)	CH_4 (% LEL)	O_2 (% Vol)	CO_2 (% Vol)	CH_4 (% LEL)	O_2 (% Vol)	CO_2 (% Vol)	CH_4 (% LEL)	O_2 (% Vol)	CO_2 (% Vol)
2019-11-15	15.2	0.3	22.7	0.0	1.0	12.7	0.4	0.0	20.5	0.0	18.1	4.0	0.0	19.5	2.4	*0.0*	*20.7*	*0.0*	0.0	20.6	0.5	0.0	8.7	9.9	0.0	16.7	5.4	0.0	17.8	4.6
2019-05-23	33.7	0.2	17.3	0.3	0.2	12.8	14.2	0.2	17.0	0.0	15.6	5.5	0.0	16.0	3.3	0.0	17.2	3.1	0.0	19.8	0.4	0.0	8.7	9.1	0.0	16.2	4.7	0.0	17.0	4.9
2018-11-21	14.4	0.0	23.2	0.2	0.3	14.2	0.3	0.0	21.1	0.0	18.2	4.9	0.0	20.1	3.5	0.0	19.1	3.5	0.0	21.5	0.6	0.0	9.2	9.0	0.0	18.6	4.5	0.0	18.1	4.8
2018-06-13	16.3	0.1	17.2	1.1	1.7	13.5	3.7	0.2	17.1	0.0	16.4	5.9	0.0	13.5	4.8	0.0	17.4	3.2	0.0	20.7	0.2	0.0	8.9	9.4	0.0	16.1	5.8	0.0	18.0	4.7
2017-11-24	20.3	0.3	20.7	1.4	0.7	14.0	3.6	0.7	20.4	0.0	15.4	5.5	0.0	19.7	2.1	0.0	17.2	4.1	0.1	21.3	0.5	0.0	9.4	10.0	0.0	18.2	4.5	0.0	15.6	5.7
2017-05-12	38.8	0.7	17.8	2.0	0.0	13.4	10.6	0.8	16.2	0.0	13.8	5.8	0.0	18.1	2.0	0.0	15.8	3.4	0.1	20.4	0.3	0.1	9.1	9.1	0.0	13.7	5.2	0.0	16.4	5.1
2016-04-19	40.3	0.5	19.2	3.3	1.1	13.1	21.3	0.4	18.1	0.0	14.6	5.7	0.0	17.8	2.4	0.0	16.2	3.4	0.0	20.4	0.2	0.0	9.9	8.6	0.0	14.3	4.5	0.0	16.9	4.7

NOTE: 2019-11-15 shaded and italicized data for VP-5 considered invalid due to presence of water, See Field Sample Data Sheet.