MAUL FOSTER ALONGI
601 East Front Avenue, Suite 202 | Coeur d'Alene, ID 83814 | 208 664 7880 | www.maulfoster.com

September 21, 2018
Project No. 1645.01.03

Steve Gill, Brownfields and VCP Specialist
Idaho Department of Environmental Quality
2110 Ironwood Parkway
Coeur d'Alene, Idaho 83814

Re: Coeur d'Alene Lodging Associates, LLC; Groundwater Sampling 1619 West Lee Court, Coeur d'Alene, Idaho

Dear Mr. Gill:

At the request of The Idaho Department of Environmental Quality (DEQ), Maul Foster & Alongi, Inc., conducted groundwater sampling at the former Kootenai Landfill located at 1619 W. Lee Ct., in Coeur d'Alene, Idaho (the Property). The DEQ requested that groundwater beneath the property be sampled based on detections of volatile organic compounds (VOCs), specifically vinyl chloride, in shallow soil gas samples. The results of the shallow soil gas sampling were provided to the DEQ in the Property Investigation Report, 1619 West Lee Court, Coeur d'Alene, Idaho, dated July 25, 2018.

FIELD PROCEDURES

Well installation and groundwater sampling were completed in accordance with the Coeur d'Alene Lodging Associates, LLC; Groundwater Sampling Quality Assurance Project Plan (QAPP) and Work Plan Addendum, 1518 West Appleway Avenue, Coeur d'Alene, Idaho, dated August 17, 2018.

Prior to drilling, public and private utility locates were completed. The boring was installed on August 22 and 23 2018 by Holt Drilling. The boring was installed using a TerraSonic International TSi compact crawler-mounted sonic drill rig. The boring was advanced to 180 feet below ground surface (bgs). The depth to ground water in the boring was 168 feet bgs. A boring log is included in Attachment A.

A 2-inch polyvinyl chloride (PVC) monitoring well was installed with a screened interval from 182 to 172 feet bgs. The well was constructed with a silica sand filter pack and bentonite seal. Approximately 50 gallons of water was purged from the temporary monitoring well during development. Consistent with the DEQ-approved QAPP, water quality parameters were measured during development to ensure stabilization and collection of a groundwater sample representative of in situ conditions. The groundwater sampling data sheet is included as Attachment B. Once stabilization was reached, one groundwater sample (B-5-GW-08242018) and one duplicate sample (B-5-GW-08242018-Dup) were collected. A trip blank sample was included in the shipment to monitor for any VOCs introduced during transport. Samples were

packed in an iced cooler and shipped to Pace Analytical under standard chain-of-custody procedures.

Following sampling on August 24, the PVC well casing was removed and the boring was abandoned by filling the boring with granular bentonite.

RESULTS

VOCs were not detected above the reported detection limit with the exception of tetrachloroethene (aka, perchloroethylene, –PCE). PCE was detected in trace amounts in both the primary (0.000964 milligrams per liter [mg/L]) and duplicate (0.000932 mg/L) samples at concentrations well below with DEQ's groundwater quality standard for PCE of 0.005 mg/L. The laboratory analytical report is included as Attachment C.

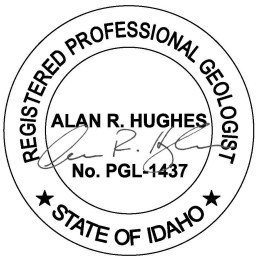
DATA QUALITY ASSURANCE/QUALITY CONTROL

Laboratory results underwent data verification and validation procedures consistent with USEPA methods (USEPA, 1986; USEPA, 2017) and primary sample results were compared to field duplicate results for quality assurance purposes. The data validation memorandum is included as Attachment D. The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned.

If you have any questions regarding this letter, please contact us.

Sincerely,

Maul Foster & Alongi, Inc.



Lisa M. Pritzl, LG	James J. Maul, LHG	Alan R. Hughes, PG
Project Geologist	Principal Hydrogeologist	Principal Geologist

Attachments: Figure
A—Boring Log
B—Groundwater Sampling Data Sheet
C—Laboratory Analytical Report
D—Data Validation Memorandum

FIGURES

Figure
Site Map

Raymond Management Company
Coeur D'Alene, ID

Legend

- Boring/Temporary Well Location
- Boring Location
- Estimated Depth to Top of Solid Waste - 10'
- Estimated Depth to Top of Solid Waste - 20'
- Estimated Depth to Top of Solid Waste - 30'
- Tench Evacuations (2008)
- Limits of Moen Pit
- Proposed Hotel
- Property Boundary

Note:
1. Locations are approximate.

0 25 50
Feet

Source: Aerial photograph obtained from Esri ArcGIS Online

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Print Date: 9/19/2018
Approved By:
Produced By: rroberts
Project:

ATTACHMENT A

BORING LOG

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1645.01.03	**B-5-2018**	**1 of 9**

Project Name	**Coeur d'Alene Lodging Associates, LLC**	TOC Elevation (feet)	
Project Location	**1619 West Lee Court, Coeur d'Alene, Idaho**	Surface Elevation (feet)	
Start/End Date	**8/22/2018 to 8/24/2018**	Northing	
Driller/Equipment	**Holt Drilling/Terra Sonic**	Easting	
Geologist/Engineer	**Lisa Pritzl**	Hole Depth	**182.0-feet**
Sample Method	**Core Barrel**	Outer Hole Diam	**9-inch**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
									0.0 to 7.0 feet: GRAVELLY SAND (SP); yellowish brown. FILL.
1									
2									
3									
4									
5									
6									
7									7.0 to 15.0 feet: GRAVELLY SAND (SP); very dark brown; trace woody and plastic debris. WASTE.
8									
						PID = 41 ppm			
9									
10									
						PID = 6.4 ppm			
11									
12									
						PID = 16 ppm			
13									
14									
15						**PID = 101.7 ppm**			
									15.0 to 23.0 feet: SAND (SW); yellowish brown; medium, well graded sand; moist. NATIVE.
16									
17									
						PID = 72 ppm			
18									
19						**PID = 40.2 ppm**			
20									

NOTES: 1. bgs = below ground surface. 2. ppm = parts per million. 3. PID = photoionization detector, soil head space reading in ppm. 4. PVC = polyvinyl chloride. 5. Depths are approximate and relative to feet below ground surface. 6. A groundwater sample was collected from a temporary well, that was removed prior to abandonment.

▽ **Water level observed at time of drilling.**

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Maul Foster & Alongi, Inc.	Geologic Borehole Log/Well Construction		
	Project Number **1645.01.03**	Well Number **B-5-2018**	Sheet **2 of 9**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
21						**PID = 18.0 ppm**			
22									
23									23.0 to 37.0 feet: SAND (SP); coarse; moist.
24						**PID = 0.0 ppm**			
25									
26									
27									
28									
29									
30						**PID = 0.0 ppm**			
31									
32									
33									
34									
35									
36									
37									37.0 to 110.0 feet: SAND (SP); yellowish brown; coarse sand; fine, rounded to subrounded gravel; trace rounded to subrounded cobbles approximately five inches in diameter; moist.
38									
39									
40									
41									
42									

NOTES: 1. bgs = below ground surface. 2. ppm = parts per million. 3. PID = photoionization detector, soil head space reading in ppm. 4. PVC = polyvinyl chloride. 5. Depths are approximate and relative to feet below ground surface. 6. A groundwater sample was collected from a temporary well, that was removed prior to abandonment.

▽ **Water level observed at time of drilling.**

Maul Foster & Alongi, Inc.	Geologic Borehole Log/Well Construction		
	Project Number	Well Number	Sheet
	1645.01.03	B-5-2018	3 of 9

Depth (feet, BGS)	Well Details	Sample Data: Interval	Sample Data: Percent Recovery	Sample Data: Collection Method	Sample Data: Number	Sample Data: Name (Type)	Sample Data: Blows/6"	Lithologic Column	Soil Description
44									
45									
46									
47									
48									
49									
50									
51									
52									
53									
54									
55									
56									
57									
58									
59									
60									
61									
62									
63									
64									
65									

NOTES: *1. bgs = below ground surface. 2. ppm = parts per million. 3. PID = photoionization detector, soil head space reading in ppm. 4. PVC = polyvinyl chloride. 5. Depths are approximate and relative to feet below ground surface. 6. A groundwater sample was collected from a temporary well, that was removed prior to abandonment.*

▽ ***Water level observed at time of drilling.***

Maul Foster & Alongi, Inc.	Geologic Borehole Log/Well Construction		
	Project Number **1645.01.03**	Well Number **B-5-2018**	Sheet **4 of 9**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
66									
67									
68									
69									
70									
71									
72									
73									
74									
75									
76									
77									
78									
79									
80									
81									
82									
83									
84									
85									
86									
87									
88									

NOTES: *1. bgs = below ground surface. 2. ppm = parts per million. 3. PID = photoionization detector, soil head space reading in ppm. 4. PVC = polyvinyl chloride. 5. Depths are approximate and relative to feet below ground surface. 6. A groundwater sample was collected from a temporary well, that was removed prior to abandonment.*

▽ ***Water level observed at time of drilling.***

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1645.01.03	**B-5-2018**	**5 of 9**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
89									
90									
91									
92									
93									
94									
95									
96									
97									
98									
99									
100									
101									
102									
103									
104									
105									
106									
107									
108									
109									
110									110.0 to 123.0 feet: SAND (SW); grayish brown; medium to coarse sand; trace gravel; moist.
111									

NOTES: 1. bgs = below ground surface. 2. ppm = parts per million. 3. PID = photoionization detector, soil head space reading in ppm. 4. PVC = polyvinyl chloride. 5. Depths are approximate and relative to feet below ground surface. 6. A groundwater sample was collected from a temporary well, that was removed prior to abandonment.

▽ **Water level observed at time of drilling.**

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1645.01.03	**B-5-2018**	**6 of 9**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
112									
113									
114									
115									
116									
117									
118									
119									
120									
121									
122									
123									123.0 to 123.5 feet: SILTY SAND (SM); very stiff.
124									123.5 to 131.0 feet: SAND (SW); grayish brown; medium to coarse sand; trace gravel; moist.
125									
126									
127									
128									
129									
130									
131									131.0 to 134.0 feet: SILTY SAND (SM); very stiff.
132									
133									

NOTES: 1. bgs = below ground surface. 2. ppm = parts per million. 3. PID = photoionization detector, soil head space reading in ppm. 4. PVC = polyvinyl chloride. 5. Depths are approximate and relative to feet below ground surface. 6. A groundwater sample was collected from a temporary well, that was removed prior to abandonment.

▽ **Water level observed at time of drilling.**

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1645.01.03	**B-5-2018**	**7 of 9**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
135									134.0 to 168.0 feet: SAND (SP); yellowish brown; medium to coarse sand; rounded to subrounded gravel; trace subrounded cobbles six to eight inches in diameter; moist.
136									
137									
138									
139									
140									
141									
142									
143									
144									
145									
146									
147									
148									
149									
150									
151									
152									
153									
154									
155									
156									

NOTES: 1. bgs = below ground surface. 2. ppm = parts per million. 3. PID = photoionization detector, soil head space reading in ppm. 4. PVC = polyvinyl chloride. 5. Depths are approximate and relative to feet below ground surface. 6. A groundwater sample was collected from a temporary well, that was removed prior to abandonment.

▽ **Water level observed at time of drilling.**

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1645.01.03	**B-5-2018**	**8 of 9**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
157									
158									
159									
160									
161									
162									
163									
164									
165									
166									
167									
168	▽								168.0 to 168.0 feet: SILTY SAND (SM); very stiff.
169									169.0 to 182.0 feet: SAND (SP); yellowish brown; medium to coarse sand; trace silt; wet.
170									
171									
172				**GW**					
173									
174									
175									
176									
177									
178									
179									

NOTES: 1. bgs = below ground surface. 2. ppm = parts per million. 3. PID = photoionization detector, soil head space reading in ppm. 4. PVC = polyvinyl chloride. 5. Depths are approximate and relative to feet below ground surface. 6. A groundwater sample was collected from a temporary well, that was removed prior to abandonment.

▽ **Water level observed at time of drilling.**

Maul Foster & Alongi, Inc.

Geologic Borehole Log/Well Construction

Project Number	Well Number	Sheet
1645.01.03	**B-5-2018**	**9 of 9**

Depth (feet, BGS)	Well Details	Sample Data: Interval	Percent Recovery	Collection Method	Number	Name (Type)	Blows/6"	Lithologic Column	Soil Description
180									
181									
182									

Total Depth = 182.0 feet bgs.

Temporary Well Completion Details:
0 to 170.0 feet: bentonite grout slurry.
170.0 to 182.0 feet bgs: 10x20 washed Colorado silica sand, filter pack.
0.0 to 172.0 feet bgs: 2-inch-diameter, schedule 40 PVC blank riser pipe.
172.0 to 182.0 feet bgs: 2-inch-diameter, stainless steel wire wrapped screen, 0.010-slot.

NOTES: *1. bgs = below ground surface. 2. ppm = parts per million. 3. PID = photoionization detector, soil head space reading in ppm. 4. PVC = polyvinyl chloride. 5. Depths are approximate and relative to feet below ground surface. 6. A groundwater sample was collected from a temporary well, that was removed prior to abandonment.*

▽ ***Water level observed at time of drilling.***

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ATTACHMENT B

GROUNDWATER SAMPLING DATA SHEET

Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

Water Field Sampling Data Sheet

Client Name	Raymond Management Company	**Sample Location**	B-5
Project #	1645.01.03-01	**Sampler**	LMP
Project Name	CdALA	**Sampling Date**	8/24/2018
Sampling Event	August 2018	**Sample Name**	B-5-GW-08242018
Sub Area		**Sample Depth**	
FSDS QA:		**Easting**	**Northing** **TOC**

Hydrology/Level Measurements

Date	Time	DT-Bottom	DT-Product	DT-Water	DTP-DTW (Product Thickness)	DTB-DTW (Water Column)	Pore Volume (Gallons/ft x Water Column)
8/24/2018		182		168			

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	Time	Purge Vol (gal)	Flowrate l/min	pH	Temp (C)	E Cond (uS/cm)	DO (mg/L)	ORP	Turbidity
Waterra	11:17:00 AM	30	1	7.08	18.2	517	3.96	-95.4	66.1
	11:47:00 AM			7.08	16.9	510	3.16	-78.3	16.88
	12:57:00 PM			7.08	17	509	3.53	-41.2	12.95
	1:00:00 PM			7.09	17	508	3.59	-46.2	12.88
Final Field Parameters	1:03:00 PM	50		7.09	17	508	3.7	-43.9	13.65

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations:

Sample Information

Sampling Method	Sample Type	Sampling Time	Container Code/Preservative	#	Filtered
Waterra	Groundwater	1:05:00 PM	VOA-Glass	6	No
			Amber Glass		
			White Poly		
			Yellow Poly		
			Green Poly		
			Red Total Poly		
			Red Dissolved Poly		
			Total Bottles	6	

General Sampling Comments

Began purging at 0900. Duplicate B-5-GW-0824-2018-DUP collected.

Signature _____

MAUL FOSTER ALONGI

Water Field Sampling Data Sheet

Client Name:		Sample Location:	
Project #: 11045.01.03-01		Staff:	
Project Name: CALA		Sampling Date:	
Sampling Event:		Sample Name: B-5-~~2018~~ GW-08242018	
Sub Area:		Sample Depth:	
FSDS QA:			
Easting:	Northing:		TOC:

Hydrology/Level Measurements

Date	Time	Depth to Bottom (DTB)	Depth to Product (DTP)	Depth to Water (DTW)	DTP-DTW	DTB-DTW	Pore Volume
8/24/18		188		168			

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

Water Quality Data

Purge Method	Time	Purge Vol (gal/liter)	WLE (ft bgs)	Flowrate (l/min)	pH (SU)	Temp (C)	E Cond (uS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)
	1117	30		1.0	7.08	18.2	517	3.96	-95.4	66.1
	1147				7.08	16.9	510	3.16	-78.3	16.88
		Check ball stuck in valve - Pull tubing								
	1257				7.06	17.0	509	3.53	-41.2	12.95
	1300				7.09	17.0	508	3.59	-46.2	12.88
	1303	50			7.09	17.0	508	3.70	-45.9	13.65

Purge and Sample Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

Water Quality Observations:

Sample Information

Sampling Method	Sample Type	Sampling Time
Waterra	Groundwater grab	1305

Sample Type: Groundwater, Surface Water, Stormwater, Process Water, Grab Sample, Field Blank, or Other (specify).

Container Code/Preservative	Number of Bottles	Filtered (Yes/No)
VOA Glass	6	N
Amber Glass		
White Poly		
Yellow Poly		
Green Poly		
Red Total Poly		
Red Dissolved Poly		
Total Bottles	6	

General Sampling Comments

Began purging @ 0900
Duplicate B-5-GW-08242018-Dup Collected

Signature

ATTACHMENT C

LABORATORYANALYTICAL REPORT

ANALYTICAL REPORT

August 30, 2018

Maul Foster & Alongi- Coeur d Alene, ID

Sample Delivery Group:	L1021001
Samples Received:	08/25/2018
Project Number:	1645.01.03-01
Description:	CDALA
Report To:	Lisa Pritzl 601 East Front Avenue, Suite 202 Coeur d'Alene, ID 83814

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	4
Sr: Sample Results	5
B-5-GW-08242018 L1021001-01	5
B-5-GW-08242018-DUP L1021001-02	7
TRIP BLANK L1021001-03	9
Qc: Quality Control Summary	11
Volatile Organic Compounds (GC/MS) by Method 8260B	11
Is: Internal Standard Summary	15
Volatile Organic Compounds (GC/MS) by Method 8260B	15
Gl: Glossary of Terms	16
Al: Accreditations & Locations	17
Sc: Sample Chain of Custody	18

B-5-GW-08242018 L1021001-01 GW

Collected by	Collected date/time	Received date/time
Lisa Pritzl	08/24/18 13:05	08/25/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1158295	1	08/29/18 01:54	08/29/18 01:54	BMB

B-5-GW-08242018-DUP L1021001-02 GW

Collected by	Collected date/time	Received date/time
Lisa Pritzl	08/24/18 13:05	08/25/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1158295	1	08/29/18 02:14	08/29/18 02:14	BMB

TRIP BLANK L1021001-03 GW

Collected by	Collected date/time	Received date/time
Lisa Pritzl	08/24/18 08:00	08/25/18 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1158295	1	08/28/18 13:57	08/28/18 13:57	ACG

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 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

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	U		10.0	50.0	1	08/29/2018 01:54	WG1158295
Acrolein	U		8.87	50.0	1	08/29/2018 01:54	WG1158295
Acrylonitrile	U		1.87	10.0	1	08/29/2018 01:54	WG1158295
Benzene	U		0.331	1.00	1	08/29/2018 01:54	WG1158295
Bromobenzene	U		0.352	1.00	1	08/29/2018 01:54	WG1158295
Bromodichloromethane	U		0.380	1.00	1	08/29/2018 01:54	WG1158295
Bromoform	U		0.469	1.00	1	08/29/2018 01:54	WG1158295
Bromomethane	U		0.866	5.00	1	08/29/2018 01:54	WG1158295
n-Butylbenzene	U		0.361	1.00	1	08/29/2018 01:54	WG1158295
sec-Butylbenzene	U		0.365	1.00	1	08/29/2018 01:54	WG1158295
tert-Butylbenzene	U		0.399	1.00	1	08/29/2018 01:54	WG1158295
Carbon disulfide	U		0.275	1.00	1	08/29/2018 01:54	WG1158295
Carbon tetrachloride	U		0.379	1.00	1	08/29/2018 01:54	WG1158295
Chlorobenzene	U		0.348	1.00	1	08/29/2018 01:54	WG1158295
Chlorodibromomethane	U		0.327	1.00	1	08/29/2018 01:54	WG1158295
Chloroethane	U		0.453	5.00	1	08/29/2018 01:54	WG1158295
2-Chloroethyl vinyl ether	U		3.01	50.0	1	08/29/2018 01:54	WG1158295
Chloroform	U		0.324	5.00	1	08/29/2018 01:54	WG1158295
Chloromethane	U		0.276	2.50	1	08/29/2018 01:54	WG1158295
2-Chlorotoluene	U		0.375	1.00	1	08/29/2018 01:54	WG1158295
4-Chlorotoluene	U		0.351	1.00	1	08/29/2018 01:54	WG1158295
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	08/29/2018 01:54	WG1158295
1,2-Dibromoethane	U		0.381	1.00	1	08/29/2018 01:54	WG1158295
Dibromomethane	U		0.346	1.00	1	08/29/2018 01:54	WG1158295
1,2-Dichlorobenzene	U		0.349	1.00	1	08/29/2018 01:54	WG1158295
1,3-Dichlorobenzene	U		0.220	1.00	1	08/29/2018 01:54	WG1158295
1,4-Dichlorobenzene	U		0.274	1.00	1	08/29/2018 01:54	WG1158295
Dichlorodifluoromethane	U		0.551	5.00	1	08/29/2018 01:54	WG1158295
1,1-Dichloroethane	U		0.259	1.00	1	08/29/2018 01:54	WG1158295
1,2-Dichloroethane	U		0.361	1.00	1	08/29/2018 01:54	WG1158295
1,1-Dichloroethene	U		0.398	1.00	1	08/29/2018 01:54	WG1158295
cis-1,2-Dichloroethene	U		0.260	1.00	1	08/29/2018 01:54	WG1158295
trans-1,2-Dichloroethene	U		0.396	1.00	1	08/29/2018 01:54	WG1158295
1,2-Dichloropropane	U		0.306	1.00	1	08/29/2018 01:54	WG1158295
1,1-Dichloropropene	U		0.352	1.00	1	08/29/2018 01:54	WG1158295
1,3-Dichloropropane	U		0.366	1.00	1	08/29/2018 01:54	WG1158295
cis-1,3-Dichloropropene	U		0.418	1.00	1	08/29/2018 01:54	WG1158295
trans-1,3-Dichloropropene	U		0.419	1.00	1	08/29/2018 01:54	WG1158295
2,2-Dichloropropane	U		0.321	1.00	1	08/29/2018 01:54	WG1158295
Di-isopropyl ether	U		0.320	1.00	1	08/29/2018 01:54	WG1158295
Ethylbenzene	U		0.384	1.00	1	08/29/2018 01:54	WG1158295
Hexachloro-1,3-butadiene	U		0.256	1.00	1	08/29/2018 01:54	WG1158295
Isopropylbenzene	U		0.326	1.00	1	08/29/2018 01:54	WG1158295
p-Isopropyltoluene	U		0.350	1.00	1	08/29/2018 01:54	WG1158295
2-Butanone (MEK)	U		3.93	10.0	1	08/29/2018 01:54	WG1158295
Methylene Chloride	U		1.00	5.00	1	08/29/2018 01:54	WG1158295
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	08/29/2018 01:54	WG1158295
Methyl tert-butyl ether	U		0.367	1.00	1	08/29/2018 01:54	WG1158295
Naphthalene	U		1.00	5.00	1	08/29/2018 01:54	WG1158295
n-Propylbenzene	U		0.349	1.00	1	08/29/2018 01:54	WG1158295
Styrene	U		0.307	1.00	1	08/29/2018 01:54	WG1158295
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	08/29/2018 01:54	WG1158295
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	08/29/2018 01:54	WG1158295
1,1,2-Trichlorotrifluoroethane	U		0.303	1.00	1	08/29/2018 01:54	WG1158295
Tetrachloroethene	0.964	J	0.372	1.00	1	08/29/2018 01:54	WG1158295
Toluene	U		0.412	1.00	1	08/29/2018 01:54	WG1158295

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
1,2,3-Trichlorobenzene	U		0.230	1.00	1	08/29/2018 01:54	WG1158295
1,2,4-Trichlorobenzene	U		0.355	1.00	1	08/29/2018 01:54	WG1158295
1,1,1-Trichloroethane	U		0.319	1.00	1	08/29/2018 01:54	WG1158295
1,1,2-Trichloroethane	U		0.383	1.00	1	08/29/2018 01:54	WG1158295
Trichloroethene	U		0.398	1.00	1	08/29/2018 01:54	WG1158295
Trichlorofluoromethane	U		1.20	5.00	1	08/29/2018 01:54	WG1158295
1,2,3-Trichloropropane	U		0.807	2.50	1	08/29/2018 01:54	WG1158295
1,2,4-Trimethylbenzene	U		0.373	1.00	1	08/29/2018 01:54	WG1158295
1,2,3-Trimethylbenzene	U		0.321	1.00	1	08/29/2018 01:54	WG1158295
1,3,5-Trimethylbenzene	U		0.387	1.00	1	08/29/2018 01:54	WG1158295
Vinyl chloride	U		0.259	1.00	1	08/29/2018 01:54	WG1158295
Xylenes, Total	U		1.06	3.00	1	08/29/2018 01:54	WG1158295
(S) Toluene-d8	*98.0*			*80.0-120*		*08/29/2018 01:54*	WG1158295
(S) Dibromofluoromethane	*103*			*75.0-120*		*08/29/2018 01:54*	WG1158295
(S) 4-Bromofluorobenzene	*94.1*			*77.0-126*		*08/29/2018 01:54*	WG1158295

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	U		10.0	50.0	1	08/29/2018 02:14	WG1158295
Acrolein	U		8.87	50.0	1	08/29/2018 02:14	WG1158295
Acrylonitrile	U		1.87	10.0	1	08/29/2018 02:14	WG1158295
Benzene	U		0.331	1.00	1	08/29/2018 02:14	WG1158295
Bromobenzene	U		0.352	1.00	1	08/29/2018 02:14	WG1158295
Bromodichloromethane	U		0.380	1.00	1	08/29/2018 02:14	WG1158295
Bromoform	U		0.469	1.00	1	08/29/2018 02:14	WG1158295
Bromomethane	U		0.866	5.00	1	08/29/2018 02:14	WG1158295
n-Butylbenzene	U		0.361	1.00	1	08/29/2018 02:14	WG1158295
sec-Butylbenzene	U		0.365	1.00	1	08/29/2018 02:14	WG1158295
tert-Butylbenzene	U		0.399	1.00	1	08/29/2018 02:14	WG1158295
Carbon disulfide	U		0.275	1.00	1	08/29/2018 02:14	WG1158295
Carbon tetrachloride	U		0.379	1.00	1	08/29/2018 02:14	WG1158295
Chlorobenzene	U		0.348	1.00	1	08/29/2018 02:14	WG1158295
Chlorodibromomethane	U		0.327	1.00	1	08/29/2018 02:14	WG1158295
Chloroethane	U		0.453	5.00	1	08/29/2018 02:14	WG1158295
2-Chloroethyl vinyl ether	U		3.01	50.0	1	08/29/2018 02:14	WG1158295
Chloroform	U		0.324	5.00	1	08/29/2018 02:14	WG1158295
Chloromethane	U		0.276	2.50	1	08/29/2018 02:14	WG1158295
2-Chlorotoluene	U		0.375	1.00	1	08/29/2018 02:14	WG1158295
4-Chlorotoluene	U		0.351	1.00	1	08/29/2018 02:14	WG1158295
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	08/29/2018 02:14	WG1158295
1,2-Dibromoethane	U		0.381	1.00	1	08/29/2018 02:14	WG1158295
Dibromomethane	U		0.346	1.00	1	08/29/2018 02:14	WG1158295
1,2-Dichlorobenzene	U		0.349	1.00	1	08/29/2018 02:14	WG1158295
1,3-Dichlorobenzene	U		0.220	1.00	1	08/29/2018 02:14	WG1158295
1,4-Dichlorobenzene	U		0.274	1.00	1	08/29/2018 02:14	WG1158295
Dichlorodifluoromethane	U		0.551	5.00	1	08/29/2018 02:14	WG1158295
1,1-Dichloroethane	U		0.259	1.00	1	08/29/2018 02:14	WG1158295
1,2-Dichloroethane	U		0.361	1.00	1	08/29/2018 02:14	WG1158295
1,1-Dichloroethene	U		0.398	1.00	1	08/29/2018 02:14	WG1158295
cis-1,2-Dichloroethene	U		0.260	1.00	1	08/29/2018 02:14	WG1158295
trans-1,2-Dichloroethene	U		0.396	1.00	1	08/29/2018 02:14	WG1158295
1,2-Dichloropropane	U		0.306	1.00	1	08/29/2018 02:14	WG1158295
1,1-Dichloropropene	U		0.352	1.00	1	08/29/2018 02:14	WG1158295
1,3-Dichloropropane	U		0.366	1.00	1	08/29/2018 02:14	WG1158295
cis-1,3-Dichloropropene	U		0.418	1.00	1	08/29/2018 02:14	WG1158295
trans-1,3-Dichloropropene	U		0.419	1.00	1	08/29/2018 02:14	WG1158295
2,2-Dichloropropane	U		0.321	1.00	1	08/29/2018 02:14	WG1158295
Di-isopropyl ether	U		0.320	1.00	1	08/29/2018 02:14	WG1158295
Ethylbenzene	U		0.384	1.00	1	08/29/2018 02:14	WG1158295
Hexachloro-1,3-butadiene	U		0.256	1.00	1	08/29/2018 02:14	WG1158295
Isopropylbenzene	U		0.326	1.00	1	08/29/2018 02:14	WG1158295
p-Isopropyltoluene	U		0.350	1.00	1	08/29/2018 02:14	WG1158295
2-Butanone (MEK)	U		3.93	10.0	1	08/29/2018 02:14	WG1158295
Methylene Chloride	U		1.00	5.00	1	08/29/2018 02:14	WG1158295
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	08/29/2018 02:14	WG1158295
Methyl tert-butyl ether	U		0.367	1.00	1	08/29/2018 02:14	WG1158295
Naphthalene	U		1.00	5.00	1	08/29/2018 02:14	WG1158295
n-Propylbenzene	U		0.349	1.00	1	08/29/2018 02:14	WG1158295
Styrene	U		0.307	1.00	1	08/29/2018 02:14	WG1158295
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	08/29/2018 02:14	WG1158295
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	08/29/2018 02:14	WG1158295
1,1,2-Trichlorotrifluoroethane	U		0.303	1.00	1	08/29/2018 02:14	WG1158295
Tetrachloroethene	0.932	J	0.372	1.00	1	08/29/2018 02:14	WG1158295
Toluene	U		0.412	1.00	1	08/29/2018 02:14	WG1158295

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
1,2,3-Trichlorobenzene	U		0.230	1.00	1	08/29/2018 02:14	WG1158295
1,2,4-Trichlorobenzene	U		0.355	1.00	1	08/29/2018 02:14	WG1158295
1,1,1-Trichloroethane	U		0.319	1.00	1	08/29/2018 02:14	WG1158295
1,1,2-Trichloroethane	U		0.383	1.00	1	08/29/2018 02:14	WG1158295
Trichloroethene	U		0.398	1.00	1	08/29/2018 02:14	WG1158295
Trichlorofluoromethane	U		1.20	5.00	1	08/29/2018 02:14	WG1158295
1,2,3-Trichloropropane	U		0.807	2.50	1	08/29/2018 02:14	WG1158295
1,2,4-Trimethylbenzene	U		0.373	1.00	1	08/29/2018 02:14	WG1158295
1,2,3-Trimethylbenzene	U		0.321	1.00	1	08/29/2018 02:14	WG1158295
1,3,5-Trimethylbenzene	U		0.387	1.00	1	08/29/2018 02:14	WG1158295
Vinyl chloride	U		0.259	1.00	1	08/29/2018 02:14	WG1158295
Xylenes, Total	U		1.06	3.00	1	08/29/2018 02:14	WG1158295
(S) Toluene-d8	*99.0*			*80.0-120*		*08/29/2018 02:14*	WG1158295
(S) Dibromofluoromethane	*102*			*75.0-120*		*08/29/2018 02:14*	WG1158295
(S) 4-Bromofluorobenzene	*95.3*			*77.0-126*		*08/29/2018 02:14*	WG1158295

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
Acetone	U		10.0	50.0	1	08/28/2018 13:57	WG1158295
Acrolein	U		8.87	50.0	1	08/28/2018 13:57	WG1158295
Acrylonitrile	U		1.87	10.0	1	08/28/2018 13:57	WG1158295
Benzene	U		0.331	1.00	1	08/28/2018 13:57	WG1158295
Bromobenzene	U		0.352	1.00	1	08/28/2018 13:57	WG1158295
Bromodichloromethane	U		0.380	1.00	1	08/28/2018 13:57	WG1158295
Bromoform	U		0.469	1.00	1	08/28/2018 13:57	WG1158295
Bromomethane	U		0.866	5.00	1	08/28/2018 13:57	WG1158295
n-Butylbenzene	U		0.361	1.00	1	08/28/2018 13:57	WG1158295
sec-Butylbenzene	U		0.365	1.00	1	08/28/2018 13:57	WG1158295
tert-Butylbenzene	U		0.399	1.00	1	08/28/2018 13:57	WG1158295
Carbon disulfide	U		0.275	1.00	1	08/28/2018 13:57	WG1158295
Carbon tetrachloride	U		0.379	1.00	1	08/28/2018 13:57	WG1158295
Chlorobenzene	U		0.348	1.00	1	08/28/2018 13:57	WG1158295
Chlorodibromomethane	U		0.327	1.00	1	08/28/2018 13:57	WG1158295
Chloroethane	U		0.453	5.00	1	08/28/2018 13:57	WG1158295
2-Chloroethyl vinyl ether	U		3.01	50.0	1	08/28/2018 13:57	WG1158295
Chloroform	U		0.324	5.00	1	08/28/2018 13:57	WG1158295
Chloromethane	U		0.276	2.50	1	08/28/2018 13:57	WG1158295
2-Chlorotoluene	U		0.375	1.00	1	08/28/2018 13:57	WG1158295
4-Chlorotoluene	U		0.351	1.00	1	08/28/2018 13:57	WG1158295
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	08/28/2018 13:57	WG1158295
1,2-Dibromoethane	U		0.381	1.00	1	08/28/2018 13:57	WG1158295
Dibromomethane	U		0.346	1.00	1	08/28/2018 13:57	WG1158295
1,2-Dichlorobenzene	U		0.349	1.00	1	08/28/2018 13:57	WG1158295
1,3-Dichlorobenzene	U		0.220	1.00	1	08/28/2018 13:57	WG1158295
1,4-Dichlorobenzene	U		0.274	1.00	1	08/28/2018 13:57	WG1158295
Dichlorodifluoromethane	U		0.551	5.00	1	08/28/2018 13:57	WG1158295
1,1-Dichloroethane	U		0.259	1.00	1	08/28/2018 13:57	WG1158295
1,2-Dichloroethane	U		0.361	1.00	1	08/28/2018 13:57	WG1158295
1,1-Dichloroethene	U		0.398	1.00	1	08/28/2018 13:57	WG1158295
cis-1,2-Dichloroethene	U		0.260	1.00	1	08/28/2018 13:57	WG1158295
trans-1,2-Dichloroethene	U		0.396	1.00	1	08/28/2018 13:57	WG1158295
1,2-Dichloropropane	U		0.306	1.00	1	08/28/2018 13:57	WG1158295
1,1-Dichloropropene	U		0.352	1.00	1	08/28/2018 13:57	WG1158295
1,3-Dichloropropane	U		0.366	1.00	1	08/28/2018 13:57	WG1158295
cis-1,3-Dichloropropene	U		0.418	1.00	1	08/28/2018 13:57	WG1158295
trans-1,3-Dichloropropene	U		0.419	1.00	1	08/28/2018 13:57	WG1158295
2,2-Dichloropropane	U		0.321	1.00	1	08/28/2018 13:57	WG1158295
Di-isopropyl ether	U		0.320	1.00	1	08/28/2018 13:57	WG1158295
Ethylbenzene	U		0.384	1.00	1	08/28/2018 13:57	WG1158295
Hexachloro-1,3-butadiene	U		0.256	1.00	1	08/28/2018 13:57	WG1158295
Isopropylbenzene	U		0.326	1.00	1	08/28/2018 13:57	WG1158295
p-Isopropyltoluene	U		0.350	1.00	1	08/28/2018 13:57	WG1158295
2-Butanone (MEK)	U		3.93	10.0	1	08/28/2018 13:57	WG1158295
Methylene Chloride	U		1.00	5.00	1	08/28/2018 13:57	WG1158295
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	08/28/2018 13:57	WG1158295
Methyl tert-butyl ether	U		0.367	1.00	1	08/28/2018 13:57	WG1158295
Naphthalene	U		1.00	5.00	1	08/28/2018 13:57	WG1158295
n-Propylbenzene	U		0.349	1.00	1	08/28/2018 13:57	WG1158295
Styrene	U		0.307	1.00	1	08/28/2018 13:57	WG1158295
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	08/28/2018 13:57	WG1158295
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	08/28/2018 13:57	WG1158295
1,1,2-Trichlorotrifluoroethane	U		0.303	1.00	1	08/28/2018 13:57	WG1158295
Tetrachloroethene	U		0.372	1.00	1	08/28/2018 13:57	WG1158295
Toluene	U		0.412	1.00	1	08/28/2018 13:57	WG1158295

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

Analyte	Result ug/l	Qualifier	MDL ug/l	RDL ug/l	Dilution	Analysis date / time	Batch
1,2,3-Trichlorobenzene	U		0.230	1.00	1	08/28/2018 13:57	WG1158295
1,2,4-Trichlorobenzene	U		0.355	1.00	1	08/28/2018 13:57	WG1158295
1,1,1-Trichloroethane	U		0.319	1.00	1	08/28/2018 13:57	WG1158295
1,1,2-Trichloroethane	U		0.383	1.00	1	08/28/2018 13:57	WG1158295
Trichloroethene	U		0.398	1.00	1	08/28/2018 13:57	WG1158295
Trichlorofluoromethane	U		1.20	5.00	1	08/28/2018 13:57	WG1158295
1,2,3-Trichloropropane	U		0.807	2.50	1	08/28/2018 13:57	WG1158295
1,2,4-Trimethylbenzene	U		0.373	1.00	1	08/28/2018 13:57	WG1158295
1,2,3-Trimethylbenzene	U		0.321	1.00	1	08/28/2018 13:57	WG1158295
1,3,5-Trimethylbenzene	U		0.387	1.00	1	08/28/2018 13:57	WG1158295
Vinyl chloride	U		0.259	1.00	1	08/28/2018 13:57	WG1158295
Xylenes, Total	U		1.06	3.00	1	08/28/2018 13:57	WG1158295
(S) Toluene-d8	*102*			*80.0-120*		*08/28/2018 13:57*	WG1158295
(S) Dibromofluoromethane	*106*			*75.0-120*		*08/28/2018 13:57*	WG1158295
(S) 4-Bromofluorobenzene	*102*			*77.0-126*		*08/28/2018 13:57*	WG1158295

Method Blank (MB)

(MB) R3337351-3 08/28/18 10:18

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 disulfide	U		0.275	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
2-Chloroethyl vinyl ether	U		3.01	50.0
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

Method Blank (MB)

(MB) R3337351-3 08/28/18 10:18

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Ethylbenzene	U		0.384	1.00
Hexachloro-1,3-butadiene	U		0.256	1.00
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	*102*			*80.0-120*
(S) Dibromofluoromethane	*105*			*75.0-120*
(S) 4-Bromofluorobenzene	*96.3*			*77.0-126*

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

(LCS) R3337351-1 08/28/18 09:19 • (LCSD) R3337351-2 08/28/18 09:38

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 %
Acetone	125	197	169	158	135	19.0-160			15.6	27
Acrolein	125	16.0	17.2	12.8	13.7	10.0-160			6.71	26

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

(LCS) R3337351-1 08/28/18 09:19 • (LCSD) R3337351-2 08/28/18 09:38

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 %
Acrylonitrile	125	146	139	117	111	55.0-149			5.04	20
Benzene	25.0	28.6	28.2	115	113	70.0-123			1.65	20
Bromobenzene	25.0	25.3	27.0	101	108	73.0-121			6.76	20
Bromodichloromethane	25.0	24.6	24.5	98.6	98.0	75.0-120			0.599	20
Bromoform	25.0	24.4	25.3	97.5	101	68.0-132			3.49	20
Bromomethane	25.0	27.5	28.1	110	112	10.0-160			2.11	25
n-Butylbenzene	25.0	26.2	27.7	105	111	73.0-125			5.68	20
sec-Butylbenzene	25.0	27.4	28.5	109	114	75.0-125			4.15	20
tert-Butylbenzene	25.0	27.3	28.0	109	112	76.0-124			2.66	20
Carbon disulfide	25.0	28.8	28.3	115	113	61.0-128			1.75	20
Carbon tetrachloride	25.0	27.0	26.2	108	105	68.0-126			3.08	20
Chlorobenzene	25.0	25.7	26.3	103	105	80.0-121			1.99	20
Chlorodibromomethane	25.0	24.8	25.2	99.3	101	77.0-125			1.59	20
Chloroethane	25.0	30.4	28.7	122	115	47.0-150			5.89	20
2-Chloroethyl vinyl ether	125	132	133	105	106	51.0-160			0.998	20
Chloroform	25.0	27.7	27.6	111	110	73.0-120			0.551	20
Chloromethane	25.0	27.1	27.1	108	108	41.0-142			0.0614	20
2-Chlorotoluene	25.0	27.5	28.6	110	114	76.0-123			3.87	20
4-Chlorotoluene	25.0	26.7	27.2	107	109	75.0-122			2.12	20
1,2-Dibromo-3-Chloropropane	25.0	26.9	26.1	108	105	58.0-134			2.87	20
1,2-Dibromoethane	25.0	26.4	27.4	105	110	80.0-122			4.07	20
Dibromomethane	25.0	27.4	26.9	110	108	80.0-120			1.84	20
1,2-Dichlorobenzene	25.0	26.6	26.5	107	106	79.0-121			0.415	20
1,3-Dichlorobenzene	25.0	27.1	27.6	108	110	79.0-120			1.91	20
1,4-Dichlorobenzene	25.0	26.1	26.8	105	107	79.0-120			2.30	20
Dichlorodifluoromethane	25.0	27.5	27.6	110	110	51.0-149			0.164	20
1,1-Dichloroethane	25.0	28.7	28.8	115	115	70.0-126			0.237	20
1,2-Dichloroethane	25.0	27.9	27.0	112	108	70.0-128			3.48	20
1,1-Dichloroethene	25.0	28.9	29.0	116	116	71.0-124			0.266	20
cis-1,2-Dichloroethene	25.0	27.9	27.7	112	111	73.0-120			0.748	20
trans-1,2-Dichloroethene	25.0	28.0	27.4	112	109	73.0-120			2.30	20
1,2-Dichloropropane	25.0	26.5	26.7	106	107	77.0-125			0.816	20
1,1-Dichloropropene	25.0	29.6	30.2	118	121	74.0-126			2.05	20
1,3-Dichloropropane	25.0	26.1	26.6	104	106	80.0-120			1.86	20
cis-1,3-Dichloropropene	25.0	25.8	25.8	103	103	80.0-123			0.142	20
trans-1,3-Dichloropropene	25.0	25.4	26.4	101	106	78.0-124			4.21	20
2,2-Dichloropropane	25.0	30.4	29.9	122	120	58.0-130			1.46	20
Di-isopropyl ether	25.0	26.7	26.2	107	105	58.0-138			1.70	20
Ethylbenzene	25.0	26.4	26.4	106	106	79.0-123			0.0858	20
Hexachloro-1,3-butadiene	25.0	23.9	25.0	95.5	99.9	54.0-138			4.46	20

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

(LCS) R3337351-1 08/28/18 09:19 • (LCSD) R3337351-2 08/28/18 09:38

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 %
Isopropylbenzene	25.0	25.4	26.2	102	105	76.0-127			3.12	20
p-Isopropyltoluene	25.0	26.4	27.7	106	111	76.0-125			4.80	20
2-Butanone (MEK)	125	194	182	155	146	44.0-160			6.05	20
Methylene Chloride	25.0	25.3	24.5	101	98.1	67.0-120			3.00	20
4-Methyl-2-pentanone (MIBK)	125	132	130	106	104	68.0-142			1.69	20
Methyl tert-butyl ether	25.0	26.5	26.2	106	105	68.0-125			1.18	20
Naphthalene	25.0	25.3	27.2	101	109	54.0-135			7.35	20
n-Propylbenzene	25.0	27.3	28.6	109	115	77.0-124			4.94	20
Styrene	25.0	25.4	26.5	102	106	73.0-130			4.36	20
1,1,1,2-Tetrachloroethane	25.0	24.5	23.9	98.1	95.8	75.0-125			2.44	20
1,1,2,2-Tetrachloroethane	25.0	26.1	26.8	105	107	65.0-130			2.44	20
Tetrachloroethene	25.0	25.9	26.0	103	104	72.0-132			0.394	20
Toluene	25.0	24.8	24.9	99.0	99.7	79.0-120			0.657	20
1,1,2-Trichlorotrifluoroethane	25.0	28.3	28.8	113	115	69.0-132			1.52	20
1,2,3-Trichlorobenzene	25.0	25.3	26.7	101	107	50.0-138			5.66	20
1,2,4-Trichlorobenzene	25.0	25.2	26.7	101	107	57.0-137			5.97	20
1,1,1-Trichloroethane	25.0	28.8	28.4	115	114	73.0-124			1.08	20
1,1,2-Trichloroethane	25.0	24.4	25.0	97.5	100	80.0-120			2.69	20
Trichloroethene	25.0	26.2	27.0	105	108	78.0-124			3.11	20
Trichlorofluoromethane	25.0	28.6	28.1	114	112	59.0-147			1.64	20
1,2,3-Trichloropropane	25.0	26.3	25.6	105	103	73.0-130			2.48	20
1,2,3-Trimethylbenzene	25.0	26.5	27.6	106	111	77.0-120			4.37	20
1,2,4-Trimethylbenzene	25.0	27.1	26.9	108	107	76.0-121			0.752	20
1,3,5-Trimethylbenzene	25.0	26.2	27.7	105	111	76.0-122			5.51	20
Vinyl chloride	25.0	29.9	29.8	120	119	67.0-131			0.377	20
Xylenes, Total	75.0	76.9	78.1	103	104	79.0-123			1.55	20
(S) Toluene-d8				*99.4*	*100*	*80.0-120*				
(S) Dibromofluoromethane				*106*	*103*	*75.0-120*				
(S) 4-Bromofluorobenzene				*98.7*	*103*	*77.0-126*				

Instrument: VOCMS20 • File ID: 0828_02

08/28/18 09:19

Sample ID	File ID	8260-PENTAFLUOROBENZENE Response	8260-1,4-DIFLUOROBENZENE Response	8260-2-BROMO-1-CHLOROPROPANE Response	8260-1,4-DICHLOROBENZENE-D4 Response
Standard	0828_02	412838	597504	98291	255329
Upper Limit		825676	1195008	196582	510658
Lower Limit		206419	298752	49146	127665
L1021001-03 WG1158295 1x	0828_15	396848	561545	90457	236122

Instrument: VOCMS20 • File ID: 0828_02-1

08/28/18 09:19

Sample ID	File ID	8260-PENTAFLUOROBENZENE Response	8260-1,4-DIFLUOROBENZENE Response	8260-2-BROMO-1-CHLOROPROPANE Response	8260-1,4-DICHLOROBENZENE-D4 Response
Standard	0828_02-1	412838	597504	98291	255329
Upper Limit		825676	1195008	196582	510658
Lower Limit		206419	298752	49146	127665
LCS R3337351-1 WG1158295 1x	0828_02LCS	412838	597504	98291	255329
LCSD R3337351-2 WG1158295 1x	0828_03	415370	603022	97531	247109
BLANK R3337351-3 WG1158295 1x	0828_05	392743	565061	89821	237251

Instrument: VOCMS20 • File ID: 0828_29

08/28/18 22:26

Sample ID	File ID	8260-PENTAFLUOROBENZENE Response	8260-1,4-DIFLUOROBENZENE Response	8260-2-BROMO-1-CHLOROPROPANE Response	8260-1,4-DICHLOROBENZENE-D4 Response
Standard	0828_29	414066	585447	97953	245996
Upper Limit		828132	1170894	195906	491992
Lower Limit		207033	292724	48977	122998
L1021001-01 WG1158295 1x	0828_39	409162	590917	97324	254900
L1021001-02 WG1158295 1x	0828_40	418928	601753	98535	255533

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Is
8 Gl
9 Al
10 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.
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.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.

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	T 104704245-17-14
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

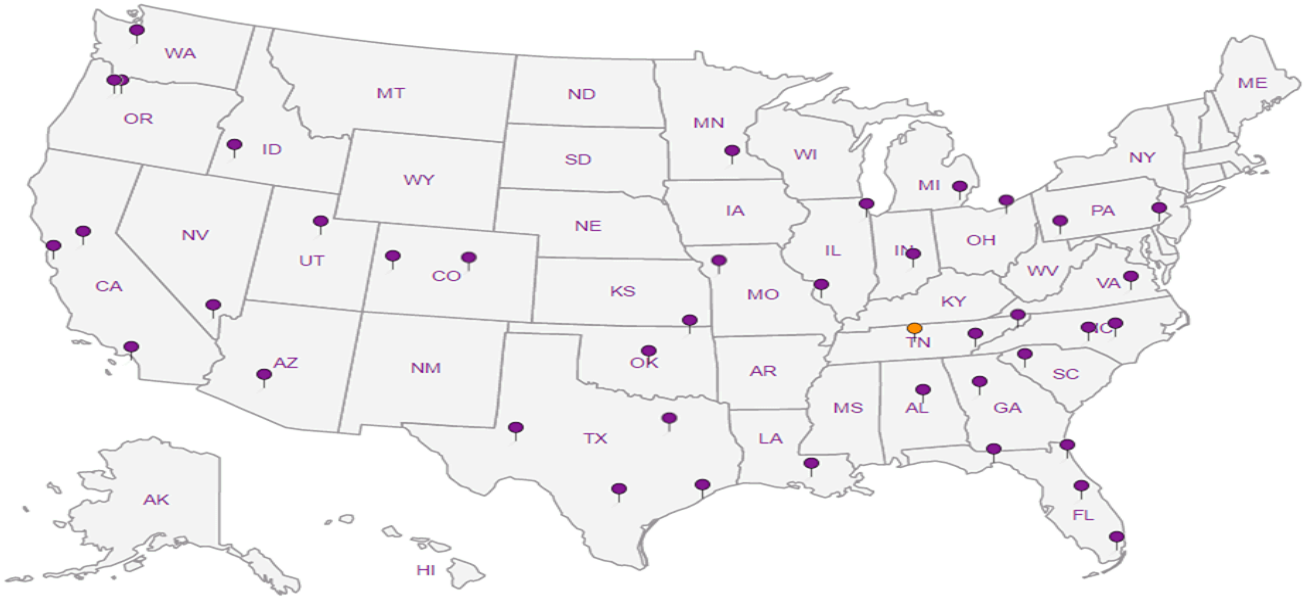
Third Party Federal Accreditations

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

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

Our Locations

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



Pace Analytical www.pacelabs.com

ESC

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

E051

Page: 1 of 1

2293008

Section A Required Client Information:

Company: MFA
Address: 601 E Front Ave CdA Idaho 83814
Email To: lpritz@MaulFoster.com
Phone: 509 710 5080 Fax:
Requested Due Date/TAT: Standard

Section B Required Project Information:

Report To: lpritz@MaulFoster.com
Copy To: E Naylor@MaulFoster.com; JMaul@MaulFoster.com
Purchase Order No.:
Project Name: CdA LA
Project Number: 1645.01.03-01

Section C Invoice Information:

Attention: accounting@maulfoster
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager:
Pace Profile #:

REGULATORY AGENCY: ☐ NPDES ☒ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: ID

Section D Required Client Information

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	Residual Chlorine (Y/N)	~~Pace Project No./ Lab I.D.~~
1	B-5-GW-08242018	WT	G			8/24/18	1305		3				X							L1021001-01
2	B-5-GW-08242018-Dup	WT	G			8/24/18	1305		3				X							02
3	Trip Blank	OT	OT			8/24/18	0800		2				X							03
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Lisa M Pritz MFA	8/24/18	1600	Sydni M PACE	8/25/18	8:45	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Lisa Pritz

SIGNATURE of SAMPLER: Lisa M Pritz

DATE Signed (MM/DD/YY): 8/24/18

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

4.8°C

ORIGINAL

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-C-010-rev.00, 09Nov2017

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client: MAUFOSCID	SDG#	L1021001	
Cooler Received/Opened On: 8/ 25 /18	Temperature:	4.8	
Received By: Sydni Nixon			
Signature: Sydni Nixon			

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?			
COC Signed / Accurate?			
Bottles arrive intact?			
Correct bottles used?			
Sufficient volume sent?			
If Applicable			
VOA Zero headspace?			
Preservation Correct / Checked?			

Pace Analytical®
National Center for Testing & Innovation

Login #:L1021001	Client: MAUFOSCID	Date:08/25/18	Evaluated by: Myra "Katie" Ingram

Non-Conformance (check applicable items)

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

Login Comments:

No analysis on the chain

Client informed by:		Call X		Email		Voice Mail		Date:08/24/18	Time:1800
TSR Initials:bjf	Client Contact: Lisa Pritzl								

Login Instructions:

Log all samples for V8260.

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ATTACHMENT D

DATA VALIDATION MEMORANDUM

DATA QUALITY ASSURANCE/QUALITY CONTROL REVIEW

PROJECT NO. 1645.01.03-01 | SEPTEMBER 21, 2018 | RAYMOND MANAGEMENT COMPANY

Maul Foster & Alongi, Inc. (MFA) conducted an independent review of the quality of analytical results for groundwater samples collected at the fomer Kootenai County Landfill. The samples were collected on August 24, 2018.

Pace Analytical National Center for Testing and Innovation (PA), formerly named ESC Lab Sciences (ESC), performed the analyses. PA report L1021001 was reviewed. The analysis performed and samples analyzed are listed below.

Analysis	Reference
Volatile Organic Compounds	USEPA 8260B

USEPA = U.S. Environmental Protection Agency.

Samples Analyzed
Report L1021001
B-5-GW-08242018
B-5-GW-08242018-DUP
TRIP BLANK

DATA QUALIFICATIONS

Analytical results were evaluated according to applicable sections of USEPA procedures (USEPA, 2017) and appropriate laboratory and method-specific guidelines (PA, 2017; USEPA, 1986).

The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned.

HOLDING TIMES, PRESERVATION, AND SAMPLE STORAGE

Holding Times

Extractions and analyses were performed within the recommended holding time criteria.

Preservation and Sample Storage

The samples were preserved and stored appropriately.

BLANKS

Method Blanks

A laboratory method blank analysis was performed at the required frequency. For purposes of data qualification, the method blank was associated with all samples prepared in the analytical batch. The laboratory method blank was non-detect to method detection limits (MDLs) for all target analytes.

Trip Blanks

A trip blank was submitted for USEPA Method 8260B analysis. The trip blank sample was non-detect to MDLs for all target analytes.

Equipment Rinsate Blanks

Equipment rinsate blanks were not required for this sampling event, as all samples were collected using dedicated, single-use equipment.

SURROGATE RECOVERY RESULTS

The samples were spiked with surrogate compounds to evaluate laboratory performance on individual samples. All surrogate recoveries were within acceptance limits.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

Matrix spike/matrix spike duplicate (MS/MSD) results are used to evaluate laboratory precision and accuracy. MS/MSD samples were not reported. Batch precision and accuracy were evaluated with the laboratory control sample/laboratory control sample duplicate (LCS/LCSD) results.

LABORATORY DUPLICATE RESULTS

Duplicate results are used to evaluate laboratory precision. Laboratory duplicate samples were not reported. Batch precision was evaluated with the LCS/LCSD results.

LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RESULTS

An LCS/LCSD is spiked with target analytes to provide information on laboratory precision and accuracy. The LCS/LCSD samples were extracted and analyzed at the required frequency. All LCS/LCSD results were within acceptance limits for percent recovery and RPD.

FIELD DUPLICATE RESULTS

Field duplicate samples measure both field and laboratory precision. One field duplicate was submitted for analysis (B-5-GW-08242018/B-5-GW-08242018-DUP). MFA uses acceptance criteria of 100 percent RPD for results that are less than five times the MRL, or 50 percent RPD for results that are greater than five times the MRL. Non-detect data are not used in the evaluation of field duplicate results. All analytes were within the acceptance criteria.

REPORTING LIMITS

PA reported results to MDLs. Results between MDLs and reporting limits were qualified by PA with "J" as estimated.

DATA PACKAGE

The data packages were reviewed for transcription errors, omissions, and anomalies.

In report L1021001, the chain of custody submitted to PA was not marked with any requested analyses. PA noted on the login instructions form that USEPA Method 8260 was required for all samples in the workorder. The sampler was notified. No additional action was required.

No additional issues were found.

REFERENCES

Pace (ESC). 2017. Quality Assurance Manual. Revision 16. ESC Lab Sciences, Mt. Juliet, Tennessee. May.

USEPA. 1986. Test methods for evaluating solid waste, physical/chemical methods. EPA publication SW-846. 3d ed. U.S. Environmental Protection Agency. Final updates I (1993), II (1995), IIA (1994), IIB (1995), III (1997), IIIA (1999), IIIB (2005), IV (2008), V (2015), VI phase I (2017), and VI phase II (2018).

USEPA. 2017. USEPA contract laboratory program, national functional guidelines for Superfund organic methods data review. EPA 540-R-2017-002. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. January.