



Legend

- Background Sample
- Soil Sample Location
- Spill Path

0 120 240
Ft
1 inch = 120 ft

Project No: 021-205	Emerald 51X Spill Scout Energy Partners Lot 2, Section 31, T2N R102W, 6th PM Rio Blanco County, Colorado	 330 Grand Avenue, Unit C Grand Junction, CO 81501 970-549-1015	Figure
Map By: NDB			
Date: 11/13/2023		 100 Chevron Road Rangely, CO 81648 970-501-5157	1

Table 1
Emerald 51X Flowline Spill
Soil Data Summary

SAMPLE SUMMARY									
Location Description	Emeral 51X Flowline Spill								
Sample Type	Soil								

LABORATORY DATA SUMMARY									
Sample ID	EM51X-SS1	EM51X-SS2	EM51X-SS3	EMERALD 51 FLOWLINE	EM22-BG1	EM39-BG1	COGCC TABLE 915-1 CONCENTRATION LEVELS		
Depth	0-9"	0-9"	0-9"	6'	0-6"	0-6"			
Sample Date	8/24/2022	8/24/2022	8/24/2022	8/30/2022	6/16/2016	10/5/2020			
Analytical Parameters							Residential Soil Screening Level	Protection of Groundwater Screening Level	UNITS
TPH									
TPH (C6-C10)	0.301	0.192	0.136	0.194 J	NT	NT	500		mg/kg
TPH (C10-C28)	2.01 J	3.00 J	<4.00	1.97 J	NT	NT			
TPH (C28-C36)	11.0	19.9	0.773 J	4.56	NT	NT			
Volatile Organic Compounds									
1,2,4-Trimethylbenzene	0.00797	0.00575	<0.005	<0.005	NT	NT	30	0.0081	mg/kg
1,3,5-Trimethylbenzene	0.00270 J	0.00303 J	<0.005	<0.005	NT	NT	27	0.0087	mg/kg
Benzene	<0.001	<0.001	<0.001	<0.001	NT	NT	1.2	0.0026	mg/kg
Toluene	<0.005	<0.005	<0.005	<0.005	NT	NT	490	0.69	mg/kg
Ethylbenzene	0.00263	<0.0025	<0.0025	<0.0025	NT	NT	5.8	0.78	mg/kg
Total Xylene	0.0106	0.00588 J	0.000975 J	<0.0065	NT	NT	58	9.9	mg/kg
Metals									
Arsenic	6.93	7.85	5.21	5.77	9.1	3.9	0.68	0.29	mg/kg
Barium	146	169	106	108	170	110	15,000	82	mg/kg
Cadmium	0.290 J	0.292 J	0.199 J	0.270 J	<0.35	0.18 J	71	0.38	mg/kg
Chromium, Hexavalent	<1.00	<1.00	<1.00	<1.00	<1.1	1.3	0.3	0.00067	mg/kg
Copper	16.1	16.7	12.0	12.5	18	16	3,100	46	mg/kg
Lead	17.6	19.9	13.4	14.4	19	16	400	14	mg/kg
Nickel	19.4	19.5	14.8	15	23	14	1,500	26	mg/kg
Selenium	1.03 J	1.41 J	1.27 J	<2.00	1.7	1.2	390	0.26	mg/kg
Silver	<1.00	<1.00	<1.00	<1.00	<0.35	<0.22	390	0.8	mg/kg
Zinc	73.2	76.9	55.2	61.2	100	63	23,000	370	mg/kg
Soil Suitability for Reclamation									
Sodium Adsorption Ratio (SAR)	5.95	2.86	10.7	26.9	19	1.4	<6	<6	ratio
Electrical Conductivity (EC)	4.88	0.401	0.470	6.57	18	0.54	<4	<4	mmhos/cm
pH	7.65	8.05	8.79	8.02	8.00	8.12	6 - 8.3	6 - 8.3	su
Boron, Hot Water Soluble	2.450	0.666	0.552	1.97	NT	NT	2	2	mg/l
Polynuclear Aromatic Hyrdrocarbons									
1-Methylnaphthalene	<0.02	<0.02	<0.02	<0.02	NT	NT	18	0.006	mg/kg
2-Methylnaphthalene	<0.02	<0.02	<0.02	<0.02	NT	NT	24	0.019	mg/kg
Acenaphthene	<0.006	<0.006	<0.006	<0.006	NT	NT	360	0.55	mg/kg
Anthracene	<0.006	<0.006	<0.006	<0.006	NT	NT	1,800	5.8	mg/kg
Benzo(a)anthracene	<0.006	<0.006	<0.006	<0.006	NT	NT	1.1	0.011	mg/kg
Benzo(a)pyrene	<0.006	<0.006	<0.006	<0.006	NT	NT	0.11	0.24	mg/kg
Benzo(b)fluoranthene	<0.006	<0.006	<0.006	<0.006	NT	NT	1.1	0.3	mg/kg
Benzo(k)fluoranthene	<0.006	<0.006	<0.006	<0.006	NT	NT	11	2.9	mg/kg
Chrysene	<0.006	<0.006	<0.006	<0.006	NT	NT	110	9	mg/kg
Dibenzo(a,h)anthracene	<0.006	<0.006	<0.006	<0.006	NT	NT	0.11	0.096	mg/kg
Fluoranthene	<0.006	<0.006	<0.006	<0.006	NT	NT	240	8.9	mg/kg
Fluorene	<0.006	<0.006	<0.006	<0.006	NT	NT	240	0.54	mg/kg
Indeno(1,2,3-cd)pyrene	<0.006	<0.006	<0.006	<0.006	NT	NT	1.1	0.98	mg/kg
Napthalene	<0.02	<0.02	<0.02	<0.02	NT	NT	2	0.0038	mg/kg
Pyrene	<0.006	<0.006	<0.006	<0.006	NT	NT	180	1.3	mg/kg

mg/kg - milligrams per kilogram
mg/L - milligrams per liter
B - analyte detected in the associated Method Blank above the Reporting Limit
J - indicates an estimated value
H - analyzed outside of holding time
mmhos/cm - millimhos per centimeter
mv - millivolts
su - standard units
NA - not applicable
NT - parameter was not tested

Over COGCC Table 915-1 concentration levels but under BACKGROUND level.

Over COGCC Table 915-1 concentration levels and not within BACKGROUND level.

Over COGCC Table 915-1 concentration levels

Scout Energy - Rangely, CO

Sample Delivery Group: L1529311
Samples Received: 08/25/2022
Project Number:
Description: Emerald 51X Spill

Report To: Chris Patterson
100 Chevron Road
Rangely, CO 81648

Entire Report Reviewed By:



Chris Ward
Project Manager

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Pace Analytical National12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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

SAMPLE SUMMARY

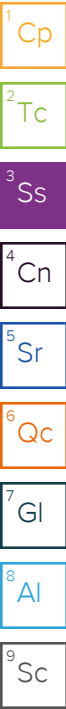
EM51X-SS1 L1529311-01 Solid

Collected by
Byron Abeyta

Collected date/time
08/24/22 13:50

Received date/time
08/25/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1918391	1	09/02/22 15:26	09/02/22 15:26	JDG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1928259	1	09/19/22 17:35	09/21/22 10:21	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1920030	1	09/03/22 07:00	09/03/22 09:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1927330	1	09/16/22 14:38	09/17/22 10:00	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1918717	1	08/30/22 15:44	08/31/22 14:07	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1920370	1	09/05/22 08:25	09/08/22 14:44	ZSA	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1918718	5	08/30/22 15:45	08/31/22 03:09	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1917881	1	08/26/22 19:13	08/30/22 02:31	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1918315	1	08/26/22 19:13	08/30/22 04:39	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1918648	1	09/01/22 05:32	09/01/22 10:58	NH	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1920011	1	09/01/22 13:30	09/02/22 08:31	JMB	Mt. Juliet, TN



EM51X-SS2 L1529311-02 Solid

Collected by
Byron Abeyta

Collected date/time
08/24/22 14:00

Received date/time
08/25/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1918391	1	09/02/22 15:29	09/02/22 15:29	JDG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1928259	1	09/19/22 17:35	09/21/22 10:26	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1920030	1	09/03/22 07:00	09/03/22 09:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1927330	1	09/16/22 14:38	09/17/22 10:00	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1918732	1	08/30/22 18:01	08/31/22 13:01	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1920612	1	09/02/22 11:36	09/04/22 11:48	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1918733	5	08/30/22 18:08	08/31/22 11:50	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1917881	1	08/26/22 19:13	08/30/22 02:53	AV	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1918315	1	08/26/22 19:13	08/30/22 05:00	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1918648	1	09/01/22 05:32	09/01/22 11:20	NH	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1920011	1	09/01/22 13:30	09/02/22 08:48	JMB	Mt. Juliet, TN

EM51X-SS3 L1529311-03 Solid

Collected by
Byron Abeyta

Collected date/time
08/24/22 14:10

Received date/time
08/25/22 09:00

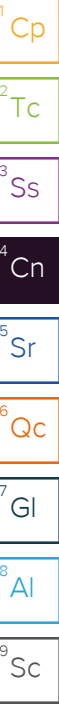
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1918391	1	09/02/22 15:32	09/02/22 15:32	JDG	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1928259	1	09/19/22 17:35	09/21/22 10:32	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1920030	1	09/03/22 07:00	09/03/22 09:00	NTG	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1927330	1	09/16/22 14:38	09/17/22 10:00	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1918732	1	08/30/22 18:01	08/31/22 13:10	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1920612	1	09/02/22 11:36	09/04/22 11:56	ABL	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1918733	5	08/30/22 18:08	08/31/22 12:13	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1917888	1	08/26/22 19:13	08/30/22 12:00	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1918315	1	08/26/22 19:13	08/30/22 05:21	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1918648	1	09/01/22 05:32	09/01/22 10:20	NH	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1920011	1	09/01/22 13:30	09/02/22 09:06	JMB	Mt. Juliet, TN

CASE NARRATIVE

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



Chris Ward
Project Manager



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	5.95		1	09/02/2022 15:26	WG1918391

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	09/21/2022 10:21	WG1928259

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	7.65	T8	1	09/03/2022 09:00	WG1920030

Sample Narrative:

L1529311-01 WG1920030: 7.65 at 21.7C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	4880		10.0	1	09/17/2022 10:00	WG1927330

Sample Narrative:

L1529311-01 WG1927330: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	146		0.0852	0.500	1	08/31/2022 14:07	WG1918717
Cadmium	0.290	J	0.0471	0.500	1	08/31/2022 14:07	WG1918717
Copper	16.1		0.400	2.00	1	08/31/2022 14:07	WG1918717
Lead	17.6		0.208	0.500	1	08/31/2022 14:07	WG1918717
Nickel	19.4		0.132	2.00	1	08/31/2022 14:07	WG1918717
Selenium	1.03	J	0.764	2.00	1	08/31/2022 14:07	WG1918717
Silver	U		0.127	1.00	1	08/31/2022 14:07	WG1918717
Zinc	73.2		0.832	5.00	1	08/31/2022 14:07	WG1918717

Metals (ICP) by Method 6010B-NE493 Ch 2

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	2.45		0.0167	0.200	1	09/08/2022 14:44	WG1920370

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	6.93		0.100	1.00	5	08/31/2022 03:09	WG1918718

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.301		0.0217	0.100	1	08/30/2022 02:31	WG1917881
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	108			77.0-120		08/30/2022 02:31	WG1917881

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	08/30/2022 04:39	WG1918315
Toluene	U		0.00130	0.00500	1	08/30/2022 04:39	WG1918315
Ethylbenzene	0.00263		0.000737	0.00250	1	08/30/2022 04:39	WG1918315
Xylenes, Total	0.0106		0.000880	0.00650	1	08/30/2022 04:39	WG1918315
1,2,4-Trimethylbenzene	0.00797		0.00158	0.00500	1	08/30/2022 04:39	WG1918315
1,3,5-Trimethylbenzene	0.00270	J	0.00200	0.00500	1	08/30/2022 04:39	WG1918315
(S) Toluene-d8	118			75.0-131		08/30/2022 04:39	WG1918315
(S) 4-Bromofluorobenzene	102			67.0-138		08/30/2022 04:39	WG1918315
(S) 1,2-Dichloroethane-d4	101			70.0-130		08/30/2022 04:39	WG1918315

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	2.01	J	1.61	4.00	1	09/01/2022 10:58	WG1918648
C28-C36 Motor Oil Range	11.0		0.274	4.00	1	09/01/2022 10:58	WG1918648
(S) o-Terphenyl	49.8			18.0-148		09/01/2022 10:58	WG1918648

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.00209	0.00600	1	09/02/2022 08:31	WG1920011
Anthracene	U		0.00230	0.00600	1	09/02/2022 08:31	WG1920011
Benzo(a)anthracene	U		0.00173	0.00600	1	09/02/2022 08:31	WG1920011
Benzo(b)fluoranthene	U		0.00153	0.00600	1	09/02/2022 08:31	WG1920011
Benzo(k)fluoranthene	U		0.00215	0.00600	1	09/02/2022 08:31	WG1920011
Benzo(a)pyrene	U		0.00179	0.00600	1	09/02/2022 08:31	WG1920011
Chrysene	U		0.00232	0.00600	1	09/02/2022 08:31	WG1920011
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	09/02/2022 08:31	WG1920011
Fluoranthene	U		0.00227	0.00600	1	09/02/2022 08:31	WG1920011
Fluorene	U		0.00205	0.00600	1	09/02/2022 08:31	WG1920011
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	09/02/2022 08:31	WG1920011
1-Methylnaphthalene	U		0.00449	0.0200	1	09/02/2022 08:31	WG1920011
2-Methylnaphthalene	U		0.00427	0.0200	1	09/02/2022 08:31	WG1920011
Naphthalene	U		0.00408	0.0200	1	09/02/2022 08:31	WG1920011
Pyrene	U		0.00200	0.00600	1	09/02/2022 08:31	WG1920011
(S) p-Terphenyl-d14	72.6			23.0-120		09/02/2022 08:31	WG1920011
(S) Nitrobenzene-d5	73.8			14.0-149		09/02/2022 08:31	WG1920011
(S) 2-Fluorobiphenyl	69.8			34.0-125		09/02/2022 08:31	WG1920011

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	2.86		1	09/02/2022 15:29	WG1918391

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	09/21/2022 10:26	WG1928259

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.05	T8	1	09/03/2022 09:00	WG1920030

Sample Narrative:

L1529311-02 WG1920030: 8.05 at 21.5C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	401		10.0	1	09/17/2022 10:00	WG1927330

Sample Narrative:

L1529311-02 WG1927330: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	169		0.0852	0.500	1	08/31/2022 13:01	WG1918732
Cadmium	0.292	J	0.0471	0.500	1	08/31/2022 13:01	WG1918732
Copper	16.7		0.400	2.00	1	08/31/2022 13:01	WG1918732
Lead	19.9		0.208	0.500	1	08/31/2022 13:01	WG1918732
Nickel	19.5		0.132	2.00	1	08/31/2022 13:01	WG1918732
Selenium	1.41	J	0.764	2.00	1	08/31/2022 13:01	WG1918732
Silver	U		0.127	1.00	1	08/31/2022 13:01	WG1918732
Zinc	76.9		0.832	5.00	1	08/31/2022 13:01	WG1918732

Metals (ICP) by Method 6010B-NE493 Ch 2

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.666		0.0167	0.200	1	09/04/2022 11:48	WG1920612

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	7.85		0.100	1.00	5	08/31/2022 11:50	WG1918733

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.192		0.0217	0.100	1	08/30/2022 02:53	WG1917881
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	109			77.0-120		08/30/2022 02:53	WG1917881



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	08/30/2022 05:00	WG1918315
Toluene	U		0.00130	0.00500	1	08/30/2022 05:00	WG1918315
Ethylbenzene	U		0.000737	0.00250	1	08/30/2022 05:00	WG1918315
Xylenes, Total	0.00588	<u>U</u>	0.000880	0.00650	1	08/30/2022 05:00	WG1918315
1,2,4-Trimethylbenzene	0.00575		0.00158	0.00500	1	08/30/2022 05:00	WG1918315
1,3,5-Trimethylbenzene	0.00303	<u>U</u>	0.00200	0.00500	1	08/30/2022 05:00	WG1918315
(S) Toluene-d8	122			75.0-131		08/30/2022 05:00	WG1918315
(S) 4-Bromofluorobenzene	103			67.0-138		08/30/2022 05:00	WG1918315
(S) 1,2-Dichloroethane-d4	102			70.0-130		08/30/2022 05:00	WG1918315

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	3.00	<u>U</u>	1.61	4.00	1	09/01/2022 11:20	WG1918648
C28-C36 Motor Oil Range	19.9		0.274	4.00	1	09/01/2022 11:20	WG1918648
(S) o-Terphenyl	51.1			18.0-148		09/01/2022 11:20	WG1918648

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.00209	0.00600	1	09/02/2022 08:48	WG1920011
Anthracene	U		0.00230	0.00600	1	09/02/2022 08:48	WG1920011
Benzo(a)anthracene	U		0.00173	0.00600	1	09/02/2022 08:48	WG1920011
Benzo(b)fluoranthene	U		0.00153	0.00600	1	09/02/2022 08:48	WG1920011
Benzo(k)fluoranthene	U		0.00215	0.00600	1	09/02/2022 08:48	WG1920011
Benzo(a)pyrene	U		0.00179	0.00600	1	09/02/2022 08:48	WG1920011
Chrysene	U		0.00232	0.00600	1	09/02/2022 08:48	WG1920011
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	09/02/2022 08:48	WG1920011
Fluoranthene	U		0.00227	0.00600	1	09/02/2022 08:48	WG1920011
Fluorene	U		0.00205	0.00600	1	09/02/2022 08:48	WG1920011
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	09/02/2022 08:48	WG1920011
1-Methylnaphthalene	U		0.00449	0.0200	1	09/02/2022 08:48	WG1920011
2-Methylnaphthalene	U		0.00427	0.0200	1	09/02/2022 08:48	WG1920011
Naphthalene	U		0.00408	0.0200	1	09/02/2022 08:48	WG1920011
Pyrene	U		0.00200	0.00600	1	09/02/2022 08:48	WG1920011
(S) p-Terphenyl-d14	87.6			23.0-120		09/02/2022 08:48	WG1920011
(S) Nitrobenzene-d5	92.3			14.0-149		09/02/2022 08:48	WG1920011
(S) 2-Fluorobiphenyl	87.3			34.0-125		09/02/2022 08:48	WG1920011

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	10.7		1	09/02/2022 15:32	WG1918391

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	09/21/2022 10:32	WG1928259

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.79	T8	1	09/03/2022 09:00	WG1920030

Sample Narrative:

L1529311-03 WG1920030: 8.79 at 21.7C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	470		10.0	1	09/17/2022 10:00	WG1927330

Sample Narrative:

L1529311-03 WG1927330: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	106		0.0852	0.500	1	08/31/2022 13:10	WG1918732
Cadmium	0.199	J	0.0471	0.500	1	08/31/2022 13:10	WG1918732
Copper	12.0		0.400	2.00	1	08/31/2022 13:10	WG1918732
Lead	13.4		0.208	0.500	1	08/31/2022 13:10	WG1918732
Nickel	14.8		0.132	2.00	1	08/31/2022 13:10	WG1918732
Selenium	1.27	J	0.764	2.00	1	08/31/2022 13:10	WG1918732
Silver	U		0.127	1.00	1	08/31/2022 13:10	WG1918732
Zinc	55.2		0.832	5.00	1	08/31/2022 13:10	WG1918732

Metals (ICP) by Method 6010B-NE493 Ch 2

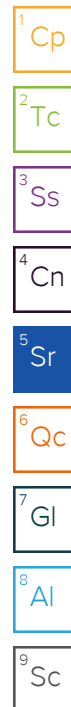
Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	0.552		0.0167	0.200	1	09/04/2022 11:56	WG1920612

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.21		0.100	1.00	5	08/31/2022 12:13	WG1918733

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.136		0.0217	0.100	1	08/30/2022 12:00	WG1917888
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	102			77.0-120		08/30/2022 12:00	WG1917888



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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U		0.000467	0.00100	1	08/30/2022 05:21	WG1918315
Toluene	U		0.00130	0.00500	1	08/30/2022 05:21	WG1918315
Ethylbenzene	U		0.000737	0.00250	1	08/30/2022 05:21	WG1918315
Xylenes, Total	0.000975	<u>J</u>	0.000880	0.00650	1	08/30/2022 05:21	WG1918315
1,2,4-Trimethylbenzene	U		0.00158	0.00500	1	08/30/2022 05:21	WG1918315
1,3,5-Trimethylbenzene	U		0.00200	0.00500	1	08/30/2022 05:21	WG1918315
(S) Toluene-d8	120			75.0-131		08/30/2022 05:21	WG1918315
(S) 4-Bromofluorobenzene	101			67.0-138		08/30/2022 05:21	WG1918315
(S) 1,2-Dichloroethane-d4	98.3			70.0-130		08/30/2022 05:21	WG1918315

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.61	4.00	1	09/01/2022 10:20	WG1918648
C28-C36 Motor Oil Range	0.773	<u>J</u>	0.274	4.00	1	09/01/2022 10:20	WG1918648
(S) o-Terphenyl	47.8			18.0-148		09/01/2022 10:20	WG1918648

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U		0.00209	0.00600	1	09/02/2022 09:06	WG1920011
Anthracene	U		0.00230	0.00600	1	09/02/2022 09:06	WG1920011
Benzo(a)anthracene	U		0.00173	0.00600	1	09/02/2022 09:06	WG1920011
Benzo(b)fluoranthene	U		0.00153	0.00600	1	09/02/2022 09:06	WG1920011
Benzo(k)fluoranthene	U		0.00215	0.00600	1	09/02/2022 09:06	WG1920011
Benzo(a)pyrene	U		0.00179	0.00600	1	09/02/2022 09:06	WG1920011
Chrysene	U		0.00232	0.00600	1	09/02/2022 09:06	WG1920011
Dibenz(a,h)anthracene	U		0.00172	0.00600	1	09/02/2022 09:06	WG1920011
Fluoranthene	U		0.00227	0.00600	1	09/02/2022 09:06	WG1920011
Fluorene	U		0.00205	0.00600	1	09/02/2022 09:06	WG1920011
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600	1	09/02/2022 09:06	WG1920011
1-Methylnaphthalene	U		0.00449	0.0200	1	09/02/2022 09:06	WG1920011
2-Methylnaphthalene	U		0.00427	0.0200	1	09/02/2022 09:06	WG1920011
Naphthalene	U		0.00408	0.0200	1	09/02/2022 09:06	WG1920011
Pyrene	U		0.00200	0.00600	1	09/02/2022 09:06	WG1920011
(S) p-Terphenyl-d14	74.0			23.0-120		09/02/2022 09:06	WG1920011
(S) Nitrobenzene-d5	91.1			14.0-149		09/02/2022 09:06	WG1920011
(S) 2-Fluorobiphenyl	78.8			34.0-125		09/02/2022 09:06	WG1920011



Method Blank (MB)

(MB) R3840139-1 09/21/22 08:58

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

L1529310-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1529310-01 09/21/22 09:12 • (DUP) R3840139-3 09/21/22 09:19

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

L1529631-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1529631-02 09/21/22 10:42 • (DUP) R3840139-10 09/21/22 10:47

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

Laboratory Control Sample (LCS)

(LCS) R3840139-2 09/21/22 09:03

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	10.2	102	80.0-120	

L1529310-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1529310-06 09/21/22 09:45 • (MS) R3840139-6 09/21/22 09:50 • (MSD) R3840139-7 09/21/22 10:06

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	2.40	3.03	12.0	15.2	1	75.0-125	J6	J3 J6	23.3	20

Sample Narrative:

OS: Sample is a reducer.

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1529310-06 Original Sample (OS) • Matrix Spike (MS)

(OS) L1529310-06 09/21/22 09:45 • (MS) R3840139-9 09/21/22 10:16

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Hexavalent Chromium	643	U	534	83.0	50	75.0-125	

Sample Narrative:

OS: Sample is a reducer.

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1529164-35 Original Sample (OS) • Duplicate (DUP)

(OS) L1529164-35 09/03/22 09:00 • (DUP) R3833546-2 09/03/22 09:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.25	8.24	1	0.121		1

Sample Narrative:

OS: 8.25 at 22C

DUP: 8.24 at 22.1C

L1529329-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1529329-04 09/03/22 09:00 • (DUP) R3833546-3 09/03/22 09:00

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	su	su		%		%
pH	8.13	8.13	1	0.000		1

Sample Narrative:

OS: 8.13 at 21.7C

DUP: 8.13 at 21.7C

Laboratory Control Sample (LCS)

(LCS) R3833546-1 09/03/22 09:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	su	su	%	%	
pH	10.0	9.90	99.0	99.0-101	

Sample Narrative:

LCS: 9.9 at 21.9C

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3838309-1 09/17/22 10:00

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

Sample Narrative:

BLANK: at 25C

L1529310-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1529310-05 09/17/22 10:00 • (DUP) R3838309-3 09/17/22 10:00

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	2320	2310	1	0.734		20

Sample Narrative:

OS: at 25C

DUP: at 25C

L1529631-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1529631-03 09/17/22 10:00 • (DUP) R3838309-4 09/17/22 10:00

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1060	1070	1	0.935		20

Sample Narrative:

OS: at 25C

DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3838309-2 09/17/22 10:00

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1020	91.2	85.0-115	

Sample Narrative:

LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3832641-1 08/31/22 12:40

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Barium	U		0.0852	0.500
Cadmium	U		0.0471	0.500
Copper	U		0.400	2.00
Lead	U		0.208	0.500
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00
Silver	U		0.127	1.00
Zinc	U		0.832	5.00

Laboratory Control Sample (LCS)

(LCS) R3832641-2 08/31/22 12:47

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	97.3	97.3	80.0-120	
Cadmium	100	93.4	93.4	80.0-120	
Copper	100	95.1	95.1	80.0-120	
Lead	100	94.0	94.0	80.0-120	
Nickel	100	96.4	96.4	80.0-120	
Selenium	100	92.9	92.9	80.0-120	
Silver	20.0	18.3	91.6	80.0-120	
Zinc	100	93.0	93.0	80.0-120	

L1529292-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1529292-04 08/31/22 12:50 • (MS) R3832641-5 08/31/22 12:57 • (MSD) R3832641-6 08/31/22 13:00

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	185	289	283	104	97.6	1	75.0-125			2.16	20
Cadmium	100	0.217	94.0	96.3	93.8	96.1	1	75.0-125			2.44	20
Copper	100	9.98	107	109	97.2	98.9	1	75.0-125			1.57	20
Lead	100	9.28	103	105	93.6	95.4	1	75.0-125			1.73	20
Nickel	100	15.1	112	114	97.1	99.3	1	75.0-125			1.98	20
Selenium	100	U	91.1	94.1	91.1	94.1	1	75.0-125			3.17	20
Silver	20.0	U	18.4	18.8	91.9	93.9	1	75.0-125			2.23	20
Zinc	100	37.8	124	126	85.7	88.1	1	75.0-125			1.90	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3832469-1 08/31/22 12:36

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Barium	U		0.0852	0.500
Cadmium	U		0.0471	0.500
Copper	U		0.400	2.00
Lead	U		0.208	0.500
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00
Silver	U		0.127	1.00
Zinc	U		0.832	5.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3832469-2 08/31/22 12:39

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	98.6	98.6	80.0-120	
Cadmium	100	93.8	93.8	80.0-120	
Copper	100	97.5	97.5	80.0-120	
Lead	100	96.4	96.4	80.0-120	
Nickel	100	95.1	95.1	80.0-120	
Selenium	100	96.7	96.7	80.0-120	
Silver	20.0	16.3	81.7	80.0-120	
Zinc	100	92.3	92.3	80.0-120	

L1530099-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1530099-02 08/31/22 12:42 • (MS) R3832469-5 08/31/22 12:50 • (MSD) R3832469-6 08/31/22 12:52

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	50.0	181	161	131	111	1	75.0-125	J5		11.9	20
Cadmium	100	0.198	93.3	95.2	93.1	95.0	1	75.0-125			1.98	20
Copper	100	12.6	109	110	96.7	97.4	1	75.0-125			0.621	20
Lead	100	18.1	116	114	97.8	96.2	1	75.0-125			1.36	20
Nickel	100	9.19	107	106	97.7	96.5	1	75.0-125			1.15	20
Selenium	100	U	95.7	98.1	95.7	98.1	1	75.0-125			2.40	20
Silver	20.0	U	16.1	16.4	80.3	82.0	1	75.0-125			2.16	20
Zinc	100	51.5	151	142	99.9	90.8	1	75.0-125			6.17	20

Method Blank (MB)

(MB) R3835174-1 09/08/22 13:54

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	U		0.0167	0.200

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

(LCS) R3835174-2 09/08/22 13:57 • (LCSD) R3835174-3 09/08/22 13:59

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	0.984	0.982	98.4	98.2	80.0-120			0.206	20

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Method Blank (MB)

(MB) R3833699-1 09/04/22 11:23

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	U		0.0167	0.200

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

(LCS) R3833699-2 09/04/22 11:26 • (LCSD) R3833699-3 09/04/22 11:28

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.01	0.986	101	98.6	80.0-120			2.31	20

1

Cp

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Tc

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Ss

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Cn

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Sr

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Qc

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Gl

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Al

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Sc

Method Blank (MB)

(MB) R3832322-1 08/31/22 01:31				
	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	mg/kg		mg/kg	mg/kg
Arsenic	U		0.100	1.00

Laboratory Control Sample (LCS)

(LCS) R3832322-2 08/31/22 01:34					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	mg/kg	mg/kg	%	%	
Arsenic	100	91.8	91.8	80.0-120	

L1529292-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1529292-04 08/31/22 01:37 • (MS) R3832322-4 08/31/22 01:47 • (MSD) R3832322-5 08/31/22 01:50												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Arsenic	100	4.26	87.4	89.9	83.2	85.7	5	75.0-125			2.85	20

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Cp

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Tc

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Ss

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Cn

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Sr

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Qc

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Gl

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Al

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Method Blank (MB)

(MB) R3832418-1 08/31/22 11:21

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00

Laboratory Control Sample (LCS)

(LCS) R3832418-2 08/31/22 11:24

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	95.5	95.5	80.0-120	

L1530099-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1530099-02 08/31/22 11:27 • (MS) R3832418-5 08/31/22 11:37 • (MSD) R3832418-6 08/31/22 11:40

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	2.51	94.4	92.1	91.9	89.6	5	75.0-125			2.54	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3832261-3 08/29/22 19:41

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	113			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3832261-1 08/29/22 16:51

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.11	92.9	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			101	77.0-120	

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Cp

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Tc

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Ss

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Cn

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Sr

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Qc

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Gl

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Al

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Sc

Method Blank (MB)

(MB) R3832010-2 08/30/22 06:26

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	103			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3832010-1 08/30/22 05:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.90	107	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			111	77.0-120	

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Cp

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Tc

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Ss

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Cn

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Sr

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Qc

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Gl

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Al

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Sc

Method Blank (MB)

(MB) R3831752-3 08/30/22 00:30

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	119			75.0-131
(S) 4-Bromofluorobenzene	95.1			67.0-138
(S) 1,2-Dichloroethane-d4	97.2			70.0-130

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

(LCS) R3831752-1 08/29/22 23:05 • (LCSD) R3831752-2 08/29/22 23:26

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.121	0.121	96.8	96.8	70.0-123			0.000	20
Toluene	0.125	0.131	0.134	105	107	75.0-121			2.26	20
Ethylbenzene	0.125	0.118	0.126	94.4	101	74.0-126			6.56	20
Xylenes, Total	0.375	0.378	0.403	101	107	72.0-127			6.40	20
1,2,4-Trimethylbenzene	0.125	0.123	0.136	98.4	109	70.0-126			10.0	20
1,3,5-Trimethylbenzene	0.125	0.120	0.123	96.0	98.4	73.0-127			2.47	20
(S) Toluene-d8				112	115	75.0-131				
(S) 4-Bromofluorobenzene				99.9	107	67.0-138				
(S) 1,2-Dichloroethane-d4				106	102	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3832876-1 09/01/22 09:56

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	U		0.274	4.00
(S) o-Terphenyl	73.6			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3832876-2 09/01/22 10:08

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	34.4	68.8	50.0-150	
(S) o-Terphenyl			76.9	18.0-148	

L1530947-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1530947-01 09/01/22 10:20 • (MS) R3832876-3 09/01/22 10:33 • (MSD) R3832876-4 09/01/22 10:45

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.0	5.21	31.5	32.7	52.6	55.0	1	50.0-150			3.74	20
(S) o-Terphenyl					54.7	56.0		18.0-148				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3833956-2 09/02/22 07:39

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acenaphthene	U		0.00209	0.00600
Anthracene	U		0.00230	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	U		0.00427	0.0200
Naphthalene	U		0.00408	0.0200
Pyrene	U		0.00200	0.00600
(S) p-Terphenyl-d14	87.9			23.0-120
(S) Nitrobenzene-d5	82.9			14.0-149
(S) 2-Fluorobiphenyl	83.7			34.0-125

1
Cp

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Tc

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Ss

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Cn

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Sr

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Qc

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Gl

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Al

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Sc

Laboratory Control Sample (LCS)

(LCS) R3833956-1 09/02/22 07:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0528	66.0	50.0-120	
Anthracene	0.0800	0.0525	65.6	50.0-126	
Benzo(a)anthracene	0.0800	0.0547	68.4	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0508	63.5	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0503	62.9	49.0-125	
Benzo(a)pyrene	0.0800	0.0497	62.1	42.0-120	
Chrysene	0.0800	0.0536	67.0	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0504	63.0	47.0-125	
Fluoranthene	0.0800	0.0563	70.4	49.0-129	
Fluorene	0.0800	0.0553	69.1	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0538	67.3	46.0-125	
1-Methylnaphthalene	0.0800	0.0533	66.6	51.0-121	
2-Methylnaphthalene	0.0800	0.0558	69.8	50.0-120	
Naphthalene	0.0800	0.0528	66.0	50.0-120	
Pyrene	0.0800	0.0516	64.5	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3833956-1 09/02/22 07:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
(S) p-Terphenyl-d14			84.1	23.0-120	
(S) Nitrobenzene-d5			95.7	14.0-149	
(S) 2-Fluorobiphenyl			85.1	34.0-125	

L1529310-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1529310-01 09/02/22 16:55 • (MS) R3833956-3 09/02/22 17:13 • (MSD) R3833956-4 09/02/22 17:30

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Acenaphthene	0.0788	U	0.0964	0.112	122	143	10	14.0-127		J5	15.0	27
Anthracene	0.0788	U	U	U	0.000	0.000	10	10.0-145	J6	J6	0.000	30
Benzo(a)anthracene	0.0788	U	0.0692	0.0570	87.8	72.7	10	10.0-139			19.3	30
Benzo(b)fluoranthene	0.0788	0.0367	0.0924	0.106	70.7	88.4	10	10.0-140			13.7	36
Benzo(k)fluoranthene	0.0788	U	0.0510	0.0543	64.7	69.3	10	10.0-137			6.27	31
Benzo(a)pyrene	0.0788	U	0.0967	0.112	123	143	10	10.0-141		J5	14.7	31
Chrysene	0.0788	0.147	0.194	0.309	59.6	207	10	10.0-145		J3 J5	45.7	30
Dibenz(a,h)anthracene	0.0788	U	0.0647	0.0657	82.1	83.8	10	10.0-132			1.53	31
Fluoranthene	0.0788	0.0880	0.151	0.183	79.9	121	10	10.0-153			19.2	33
Fluorene	0.0788	0.184	0.280	0.320	122	173	10	11.0-130		J5	13.3	29
Indeno(1,2,3-cd)pyrene	0.0788	U	0.0683	0.0676	86.7	86.2	10	10.0-137			1.03	32
1-Methylnaphthalene	0.0788	0.556	0.746	0.886	241	421	10	10.0-142	V	V	17.2	28
2-Methylnaphthalene	0.0788	0.568	0.772	0.904	259	429	10	10.0-137	V	V	15.8	28
Naphthalene	0.0788	0.123	0.254	0.299	166	224	10	10.0-135	J5	J5	16.3	27
Pyrene	0.0788	0.0856	0.144	0.178	74.1	118	10	10.0-148			21.1	35
(S) p-Terphenyl-d14					90.7	99.0		23.0-120				
(S) Nitrobenzene-d5					132	201		14.0-149		J1		
(S) 2-Fluorobiphenyl					74.1	74.2		34.0-125				

Sample Narrative:
OS: Dilution & surrogate failure due to matrix impact.

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

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.

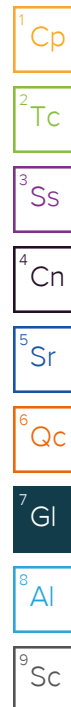
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. 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.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
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

* 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 Analytical.



NCF / OK

Scout Energy - Rangely, CO

Sample Delivery Group: L1536654
Samples Received: 09/16/2022
Project Number:
Description: Emerald 51 Spill

Report To: Chris Patterson
100 Chevron Road
Rangely, CO 81648

Entire Report Reviewed By:



Chris Ward
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.



Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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

SAMPLE SUMMARY

EMERALD 51 FLOWLINE L1536654-01 Solid

Collected by
Scout

Collected date/time
08/30/22 11:00

Received date/time
09/16/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1932142	1	09/27/22 10:31	09/27/22 10:31	CCE	Mt. Juliet, TN
Wet Chemistry by Method 7199	WG1928878	1	09/20/22 17:20	09/27/22 09:58	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9045D	WG1931177	1	09/23/22 14:00	09/23/22 16:00	SGB	Mt. Juliet, TN
Wet Chemistry by Method 9050AMod	WG1928750	1	09/24/22 10:39	09/24/22 12:20	NTG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1930745	1	09/29/22 16:38	10/03/22 10:43	ZSA	Mt. Juliet, TN
Metals (ICP) by Method 6010B-NE493 Ch 2	WG1928100	1	09/19/22 11:06	09/29/22 18:27	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020	WG1930747	5	09/29/22 16:44	10/03/22 00:24	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1927810	1	09/16/22 20:24	09/17/22 06:31	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1929036	1	09/16/22 20:24	09/20/22 18:37	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015M	WG1929299	1	09/22/22 09:25	09/22/22 18:06	JAS	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG1929289	1	09/21/22 11:26	09/22/22 14:06	WAW	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

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



Chris Ward
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

EMERALD 51 FLOWLINE

Collected date/time: 08/30/22 11:00

SAMPLE RESULTS - 01

L1536654

Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	26.9		1	09/27/2022 10:31	WG1932142

Wet Chemistry by Method 7199

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Hexavalent Chromium	U		0.255	1.00	1	09/27/2022 09:58	WG1928878

Wet Chemistry by Method 9045D

Analyte	Result su	Qualifier	Dilution	Analysis date / time	Batch
pH	8.02	T8	1	09/23/2022 16:00	WG1931177

Sample Narrative:

L1536654-01 WG1931177: 8.02 at 19.8C

Wet Chemistry by Method 9050AMod

Analyte	Result umhos/cm	Qualifier	RDL umhos/cm	Dilution	Analysis date / time	Batch
Specific Conductance	6570		10.0	1	09/24/2022 12:20	WG1928750

Sample Narrative:

L1536654-01 WG1928750: at 25C

Metals (ICP) by Method 6010B

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Barium	108		0.0852	0.500	1	10/03/2022 10:43	WG1930745
Cadmium	0.270	J	0.0471	0.500	1	10/03/2022 10:43	WG1930745
Copper	12.5		0.400	2.00	1	10/03/2022 10:43	WG1930745
Lead	14.4		0.208	0.500	1	10/03/2022 10:43	WG1930745
Nickel	15.0		0.132	2.00	1	10/03/2022 10:43	WG1930745
Selenium	U		0.764	2.00	1	10/03/2022 10:43	WG1930745
Silver	U		0.127	1.00	1	10/03/2022 10:43	WG1930745
Zinc	61.2		0.832	5.00	1	10/03/2022 10:43	WG1930745

Metals (ICP) by Method 6010B-NE493 Ch 2

Analyte	Result mg/l	Qualifier	MDL mg/l	RDL mg/l	Dilution	Analysis date / time	Batch
Hot Water Sol. Boron	1.97		0.0167	0.200	1	09/29/2022 18:27	WG1928100

Metals (ICPMS) by Method 6020

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Arsenic	5.77		0.100	1.00	5	10/03/2022 00:24	WG1930747

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.194	J3 T8	0.0217	0.100	1	09/17/2022 06:31	WG1927810
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	89.0			77.0-120		09/17/2022 06:31	WG1927810

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	U	T8	0.000467	0.00100	1	09/20/2022 18:37	WG1929036
Toluene	U	T8	0.00130	0.00500	1	09/20/2022 18:37	WG1929036
Ethylbenzene	U	T8	0.000737	0.00250	1	09/20/2022 18:37	WG1929036
Xylenes, Total	U	T8	0.000880	0.00650	1	09/20/2022 18:37	WG1929036
1,2,4-Trimethylbenzene	U	T8	0.00158	0.00500	1	09/20/2022 18:37	WG1929036
1,3,5-Trimethylbenzene	U	T8	0.00200	0.00500	1	09/20/2022 18:37	WG1929036
(S) Toluene-d8	106			75.0-131		09/20/2022 18:37	WG1929036
(S) 4-Bromofluorobenzene	95.3			67.0-138		09/20/2022 18:37	WG1929036
(S) 1,2-Dichloroethane-d4	108			70.0-130		09/20/2022 18:37	WG1929036

Semi-Volatile Organic Compounds (GC) by Method 8015M

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	1.97	J T8	1.61	4.00	1	09/22/2022 18:06	WG1929299
C28-C36 Motor Oil Range	4.56	B T8	0.274	4.00	1	09/22/2022 18:06	WG1929299
(S) o-Terphenyl	83.5			18.0-148		09/22/2022 18:06	WG1929299

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

Analyte	Result mg/kg	Qualifier	MDL mg/kg	RDL mg/kg	Dilution	Analysis date / time	Batch
Acenaphthene	U	T8	0.00209	0.00600	1	09/22/2022 14:06	WG1929289
Anthracene	U	T8	0.00230	0.00600	1	09/22/2022 14:06	WG1929289
Benzo(a)anthracene	U	T8	0.00173	0.00600	1	09/22/2022 14:06	WG1929289
Benzo(b)fluoranthene	U	T8	0.00153	0.00600	1	09/22/2022 14:06	WG1929289
Benzo(k)fluoranthene	U	T8	0.00215	0.00600	1	09/22/2022 14:06	WG1929289
Benzo(a)pyrene	U	T8	0.00179	0.00600	1	09/22/2022 14:06	WG1929289
Chrysene	U	T8	0.00232	0.00600	1	09/22/2022 14:06	WG1929289
Dibenz(a,h)anthracene	U	T8	0.00172	0.00600	1	09/22/2022 14:06	WG1929289
Fluoranthene	U	T8	0.00227	0.00600	1	09/22/2022 14:06	WG1929289
Fluorene	U	T8	0.00205	0.00600	1	09/22/2022 14:06	WG1929289
Indeno(1,2,3-cd)pyrene	U	T8	0.00181	0.00600	1	09/22/2022 14:06	WG1929289
1-Methylnaphthalene	U	T8	0.00449	0.0200	1	09/22/2022 14:06	WG1929289
2-Methylnaphthalene	U	T8	0.00427	0.0200	1	09/22/2022 14:06	WG1929289
Naphthalene	U	T8	0.00408	0.0200	1	09/22/2022 14:06	WG1929289
Pyrene	U	T8	0.00200	0.00600	1	09/22/2022 14:06	WG1929289
(S) p-Terphenyl-d14	75.9			23.0-120		09/22/2022 14:06	WG1929289
(S) Nitrobenzene-d5	78.0			14.0-149		09/22/2022 14:06	WG1929289
(S) 2-Fluorobiphenyl	71.6			34.0-125		09/22/2022 14:06	WG1929289

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3841738-1 09/27/22 07:15

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

L1532033-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1532033-04 09/27/22 08:35 • (DUP) R3841738-6 09/27/22 08:41

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

L1536654-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1536654-01 09/27/22 09:58 • (DUP) R3841738-7 09/27/22 10:04

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

Laboratory Control Sample (LCS)

(LCS) R3841738-2 09/27/22 07:22

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	mg/kg	mg/kg	%	%	
Hexavalent Chromium	10.0	10.0	100	80.0-120	

L1532031-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1532031-02 09/27/22 07:33 • (MS) R3841738-3 09/27/22 07:38 • (MSD) R3841738-4 09/27/22 07:43

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	mg/kg	mg/kg	mg/kg	mg/kg	%	%		%			%	%
Hexavalent Chromium	20.0	U	17.3	16.5	86.4	82.5	1	75.0-125			4.61	20

L1532031-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1532031-02 09/27/22 07:33 • (MS) R3841738-5 09/27/22 07:53

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	mg/kg	mg/kg	mg/kg	%		%	
Hexavalent Chromium	636	U	607	95.5	50	75.0-125	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1536288-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1536288-02 09/23/22 16:00 • (DUP) R3840756-2 09/23/22 16:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	7.70	7.74	1	0.518		1

Sample Narrative:

OS: 7.7 at 20.6C

DUP: 7.74 at 20.4C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

L1536360-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1536360-02 09/23/22 16:00 • (DUP) R3840756-3 09/23/22 16:00

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	su	su		%		%
pH	>13	>13	1	0.000		1

Sample Narrative:

OS: 13.15 at 26C

DUP: 13.17 at 25.6C

Laboratory Control Sample (LCS)

(LCS) R3840756-1 09/23/22 16:00

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	su	su	%	%	
pH	10.0	9.92	99.2	99.0-101	

Sample Narrative:

LCS: 9.92 at 21.2C

Method Blank (MB)

(MB) R3840953-1 09/24/22 12:20

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

Sample Narrative:
BLANK: at 25C

L1536652-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1536652-01 09/24/22 12:20 • (DUP) R3840953-3 09/24/22 12:20

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	8720	8730	1	0.115		20

Sample Narrative:
OS: at 25C
DUP: at 25C

L1536693-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1536693-02 09/24/22 12:20 • (DUP) R3840953-4 09/24/22 12:20

Analyte	Original Result umhos/cm	DUP Result umhos/cm	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Specific Conductance	1500	1500	1	0.134		20

Sample Narrative:
OS: at 25C
DUP: at 25C

Laboratory Control Sample (LCS)

(LCS) R3840953-2 09/24/22 12:20

Analyte	Spike Amount umhos/cm	LCS Result umhos/cm	LCS Rec. %	Rec. Limits %	LCS Qualifier
Specific Conductance	1120	1120	100	85.0-115	

Sample Narrative:
LCS: at 25C

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3844196-1 10/03/22 09:53

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Barium	U		0.0852	0.500
Cadmium	U		0.0471	0.500
Copper	U		0.400	2.00
Lead	U		0.208	0.500
Nickel	U		0.132	2.00
Selenium	U		0.764	2.00
Silver	U		0.127	1.00
Zinc	U		0.832	5.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3844196-2 10/03/22 09:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Barium	100	95.2	95.2	80.0-120	
Cadmium	100	93.0	93.0	80.0-120	
Copper	100	94.2	94.2	80.0-120	
Lead	100	88.1	88.1	80.0-120	
Nickel	100	91.8	91.8	80.0-120	
Selenium	100	93.2	93.2	80.0-120	
Silver	20.0	18.2	91.2	80.0-120	
Zinc	100	90.3	90.3	80.0-120	

L1536712-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1536712-03 10/03/22 09:59 • (MS) R3844196-5 10/03/22 10:07 • (MSD) R3844196-6 10/03/22 10:10

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Barium	100	90.8	179	213	88.1	122	1	75.0-125			17.3	20
Cadmium	100	0.0616	93.2	95.0	93.2	95.0	1	75.0-125			1.84	20
Copper	100	43.7	143	171	99.0	127	1	75.0-125		J5	18.1	20
Lead	100	14.8	105	116	90.6	102	1	75.0-125			9.94	20
Nickel	100	32.2	126	130	94.1	97.9	1	75.0-125			2.90	20
Selenium	100	1.21	93.9	96.4	92.7	95.2	1	75.0-125			2.58	20
Silver	20.0	U	18.8	19.0	93.9	95.0	1	75.0-125			1.15	20
Zinc	100	32.9	118	121	84.8	87.7	1	75.0-125			2.44	20

Method Blank (MB)

(MB) R3843060-1 09/29/22 17:29

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Hot Water Sol. Boron	0.0182	⬇	0.0167	0.200

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

(LCS) R3843060-2 09/29/22 17:32 • (LCSD) R3843060-3 09/29/22 17:35

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Hot Water Sol. Boron	1.00	1.06	1.04	106	104	80.0-120			2.68	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3844203-1 10/03/22 16:47

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Arsenic	U		0.100	1.00

Laboratory Control Sample (LCS)

(LCS) R3844203-2 10/03/22 16:50

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Arsenic	100	99.6	99.6	80.0-120	

L1536712-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1536712-03 10/03/22 16:54 • (MS) R3844203-5 10/03/22 17:03 • (MSD) R3844203-6 10/03/22 17:06

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Arsenic	100	11.6	98.6	105	87.1	93.9	5	75.0-125			6.69	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3839465-2 09/17/22 00:13

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	94.3			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3839465-1 09/16/22 23:21

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.78	105	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			107	77.0-120	

L1536654-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1536654-01 09/17/22 06:31 • (MS) R3839465-3 09/17/22 07:31 • (MSD) R3839465-4 09/17/22 07:51

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.45	0.194	3.15	5.36	54.2	93.9	1	10.0-151		J3	51.9	28
(S) a,a,a-Trifluorotoluene(FID)					94.2	108		77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3839444-3 09/20/22 13:35

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000467	0.00100
Toluene	U		0.00130	0.00500
Ethylbenzene	U		0.000737	0.00250
Xylenes, Total	U		0.000880	0.00650
1,2,4-Trimethylbenzene	U		0.00158	0.00500
1,3,5-Trimethylbenzene	U		0.00200	0.00500
(S) Toluene-d8	106			75.0-131
(S) 4-Bromofluorobenzene	97.4			67.0-138
(S) 1,2-Dichloroethane-d4	109			70.0-130

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

(LCS) R3839444-1 09/20/22 12:13 • (LCSD) R3839444-2 09/20/22 12:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.106	0.111	84.8	88.8	70.0-123			4.61	20
Toluene	0.125	0.107	0.111	85.6	88.8	75.0-121			3.67	20
Ethylbenzene	0.125	0.105	0.107	84.0	85.6	74.0-126			1.89	20
Xylenes, Total	0.375	0.313	0.325	83.5	86.7	72.0-127			3.76	20
1,2,4-Trimethylbenzene	0.125	0.0992	0.100	79.4	80.0	70.0-126			0.803	20
1,3,5-Trimethylbenzene	0.125	0.0992	0.102	79.4	81.6	73.0-127			2.78	20
(S) Toluene-d8				102	103	75.0-131				
(S) 4-Bromofluorobenzene				102	102	67.0-138				
(S) 1,2-Dichloroethane-d4				107	116	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Method Blank (MB)

(MB) R3840540-2 09/22/22 17:53

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C36 Motor Oil Range	1.06	⬇	0.274	4.00
(S) o-Terphenyl	98.5			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3840540-1 09/22/22 17:41

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	41.4	82.8	50.0-150	
(S) o-Terphenyl			81.4	18.0-148	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3840096-2 09/22/22 09:09

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Acenaphthene	U		0.00209	0.00600
Anthracene	U		0.00230	0.00600
Benzo(a)anthracene	U		0.00173	0.00600
Benzo(b)fluoranthene	U		0.00153	0.00600
Benzo(k)fluoranthene	U		0.00215	0.00600
Benzo(a)pyrene	U		0.00179	0.00600
Chrysene	U		0.00232	0.00600
Dibenz(a,h)anthracene	U		0.00172	0.00600
Fluoranthene	U		0.00227	0.00600
Fluorene	U		0.00205	0.00600
Indeno(1,2,3-cd)pyrene	U		0.00181	0.00600
1-Methylnaphthalene	U		0.00449	0.0200
2-Methylnaphthalene	0.0140	U	0.00427	0.0200
Naphthalene	0.00496	U	0.00408	0.0200
Pyrene	U		0.00200	0.00600
(S) p-Terphenyl-d14	81.1			23.0-120
(S) Nitrobenzene-d5	87.3			14.0-149
(S) 2-Fluorobiphenyl	79.0			34.0-125

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS)

(LCS) R3840096-1 09/22/22 08:49

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Acenaphthene	0.0800	0.0619	77.4	50.0-120	
Anthracene	0.0800	0.0676	84.5	50.0-126	
Benzo(a)anthracene	0.0800	0.0695	86.9	45.0-120	
Benzo(b)fluoranthene	0.0800	0.0545	68.1	42.0-121	
Benzo(k)fluoranthene	0.0800	0.0568	71.0	49.0-125	
Benzo(a)pyrene	0.0800	0.0558	69.8	42.0-120	
Chrysene	0.0800	0.0623	77.9	49.0-122	
Dibenz(a,h)anthracene	0.0800	0.0574	71.8	47.0-125	
Fluoranthene	0.0800	0.0649	81.1	49.0-129	
Fluorene	0.0800	0.0640	80.0	49.0-120	
Indeno(1,2,3-cd)pyrene	0.0800	0.0632	79.0	46.0-125	
1-Methylnaphthalene	0.0800	0.0621	77.6	51.0-121	
2-Methylnaphthalene	0.0800	0.0644	80.5	50.0-120	
Naphthalene	0.0800	0.0626	78.3	50.0-120	
Pyrene	0.0800	0.0637	79.6	43.0-123	

Laboratory Control Sample (LCS)

(LCS) R3840096-1 09/22/22 08:49

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
(S) p-Terphenyl-d14			80.2	23.0-120	
(S) Nitrobenzene-d5			94.8	14.0-149	
(S) 2-Fluorobiphenyl			83.1	34.0-125	

L1536420-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1536420-01 09/22/22 10:28 • (MS) R3840096-3 09/22/22 10:48 • (MSD) R3840096-4 09/22/22 11:08

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acenaphthene	0.0796	U	0.0537	0.0597	67.5	75.0	1	14.0-127			10.6	27
Anthracene	0.0796	U	0.0582	0.0629	73.1	79.0	1	10.0-145			7.76	30
Benzo(a)anthracene	0.0796	U	0.0591	0.0643	74.2	80.8	1	10.0-139			8.43	30
Benzo(b)fluoranthene	0.0796	U	0.0487	0.0541	61.2	68.0	1	10.0-140			10.5	36
Benzo(k)fluoranthene	0.0796	U	0.0512	0.0564	64.3	70.9	1	10.0-137			9.67	31
Benzo(a)pyrene	0.0796	U	0.0582	0.0639	73.1	80.3	1	10.0-141			9.34	31
Chrysene	0.0796	U	0.0567	0.0616	71.2	77.4	1	10.0-145			8.28	30
Dibenz(a,h)anthracene	0.0796	U	0.0509	0.0559	63.9	70.2	1	10.0-132			9.36	31
Fluoranthene	0.0796	U	0.0560	0.0613	70.4	77.0	1	10.0-153			9.04	33
Fluorene	0.0796	U	0.0548	0.0616	68.8	77.4	1	11.0-130			11.7	29
Indeno(1,2,3-cd)pyrene	0.0796	U	0.0535	0.0592	67.2	74.4	1	10.0-137			10.1	32
1-Methylnaphthalene	0.0796	U	0.0536	0.0597	67.3	75.0	1	10.0-142			10.8	28
2-Methylnaphthalene	0.0796	U	0.0551	0.0614	69.2	77.1	1	10.0-137			10.8	28
Naphthalene	0.0796	U	0.0536	0.0611	67.3	76.8	1	10.0-135			13.1	27
Pyrene	0.0796	U	0.0565	0.0619	71.0	77.8	1	10.0-148			9.12	35
(S) p-Terphenyl-d14					76.3	81.1		23.0-120				
(S) Nitrobenzene-d5					84.1	89.3		14.0-149				
(S) 2-Fluorobiphenyl					78.9	84.0		34.0-125				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

GLOSSARY OF TERMS

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.

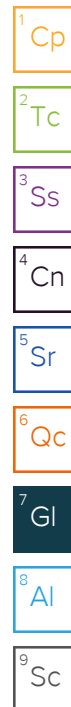
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location.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

B	The same analyte is found in the associated blank.
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.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
T8	Sample(s) received past/too close to holding time expiration.



ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey--NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio--VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
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

* 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 Analytical.



[illegible]



04-Nov-2016

Tim Dobransky
Olsson Associates
760 Horizon Drive
Suite 102
Grand Junction, CO 81506

Re: **Emerald 22 Spill**

Work Order: **16061154**

Dear Tim,

ALS Environmental received 4 samples on 20-Jun-2016 09:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 30.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Chad Whelton".

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager



Certificate No: MN 998501

Report of Laboratory Analysis

ADDRESS 3352 128th Avenue Holland, Michigan 49424-9263 | PHONE (616) 399-6070 | FAX (616) 399-6185

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Olsson Associates
Project: Emerald 22 Spill
Work Order: 16061154

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
16061154-01	EM22-SS1	Soil		6/16/2016 15:00	6/20/2016 09:00	<input type="checkbox"/>
16061154-02	EM22-SS2	Soil		6/16/2016 15:10	6/20/2016 09:00	<input type="checkbox"/>
16061154-03	EM22-SS3	Soil		6/16/2016 15:20	6/20/2016 09:00	<input type="checkbox"/>
16061154-04	EM22-BG1	Soil		6/16/2016 15:30	6/20/2016 09:00	<input type="checkbox"/>

Client: Olsson Associates**Project:** Emerald 22 Spill**Work Order:** 16061154**Case Narrative**

Batch 87649, Method SVO_8270_S, Sample 16061154-02A: The PNA reporting limits are elevated due to dilution needed to eliminate matrix-related interference.

Batch 87649, Method SVO_8270_S, Sample 16061154-02A MS/MSD: The MS and MSD recoveries were above the upper control limits for Benzo(a)pyrene and Indeno(1,2,3-cd)pyrene. The corresponding results in the parent sample were non-detect. No qualification is required.

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
% of sample	Percent of Sample
mg/Kg-dry	Milligrams per Kilogram Dry Weight
mg/L	Milligrams per Liter
mmhos/cm @25°C	Millimhos-Centimeter at 25 Degrees Celcius
none	
s.u.	Standard Units

ALS Group USA, Corp

Date: 04-Nov-16

Client: Olsson Associates

Project: Emerald 22 Spill

Sample ID: EM22-SS1

Collection Date: 6/16/2016 03:00 PM

Work Order: 16061154

Lab ID: 16061154-01

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	210		SW8015M		Prep: SW3546 / 6/24/16	Analyst: IT
<i>Surr: 4-Terphenyl-d14</i>	<i>82.2</i>		<i>91</i>	<i>mg/Kg-dry</i>	<i>10</i>	<i>6/24/2016 07:27 PM</i>
			<i>39-133</i>	<i>%REC</i>	<i>10</i>	<i>6/24/2016 07:27 PM</i>
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	ND		SW8015D		Prep: SW5035 / 6/21/16	Analyst: IT
<i>Surr: Toluene-d8</i>	<i>93.2</i>		<i>3.0</i>	<i>mg/Kg-dry</i>	<i>1</i>	<i>6/21/2016 04:55 PM</i>
			<i>50-150</i>	<i>%REC</i>	<i>1</i>	<i>6/21/2016 04:55 PM</i>
MERCURY BY CVAA						
Mercury	0.035		SW7471B		Prep: SW7471 / 6/28/16	Analyst: LR
			0.015	mg/Kg-dry	1	6/28/2016 04:49 PM
METALS ANALYSIS BY ICP						
Arsenic	7.5		SW846 6010C		Prep: SW3050B / 6/21/16	Analyst: JEC
Barium	230		0.42	mg/Kg-dry	1	6/25/2016 07:01 AM
Cadmium	ND		0.42	mg/Kg-dry	1	6/25/2016 07:01 AM
Chromium	12		0.42	mg/Kg-dry	1	6/25/2016 07:01 AM
Copper	15		0.42	mg/Kg-dry	1	6/25/2016 07:01 AM
Lead	20		0.42	mg/Kg-dry	1	6/25/2016 07:01 AM
Nickel	20		0.42	mg/Kg-dry	1	6/25/2016 07:01 AM
Selenium	1.1		0.84	mg/Kg-dry	1	6/25/2016 07:01 AM
Silver	ND		0.42	mg/Kg-dry	1	6/25/2016 07:01 AM
Zinc	89		0.84	mg/Kg-dry	1	6/25/2016 07:01 AM
SOLUBLE CATIONS FOR SAR						
			SW846 6010C		Prep: USDA Method 20B / 6/27/16	Analyst: JEC
Calcium	540		5.0	mg/L	10	6/28/2016 06:20 PM
Magnesium	220		2.0	mg/L	10	6/28/2016 06:20 PM
Sodium	730		2.0	mg/L	10	6/28/2016 06:20 PM
SODIUM ADSORPTION RATIO						
			USDA H60 METHO		Prep: USDA Method 20B / 6/27/16	Analyst: JEC
Sodium Adsorption Ratio	6.7		0.010	none	1	6/28/2016
SEMI-VOLATILE ORGANIC COMPOUNDS						
			SW846 8270D		Prep: SW3546 / 6/22/16	Analyst: RS
Acenaphthene	ND		0.015	mg/Kg-dry	1	6/23/2016 02:23 AM
Anthracene	ND		0.015	mg/Kg-dry	1	6/23/2016 02:23 AM
Benzo(a)anthracene	ND		0.015	mg/Kg-dry	1	6/23/2016 02:23 AM
Benzo(a)pyrene	ND		0.015	mg/Kg-dry	1	6/23/2016 02:23 AM
Benzo(b)fluoranthene	ND		0.015	mg/Kg-dry	1	6/23/2016 02:23 AM
Benzo(k)fluoranthene	ND		0.015	mg/Kg-dry	1	6/23/2016 02:23 AM
Chrysene	ND		0.015	mg/Kg-dry	1	6/23/2016 02:23 AM
Dibenzo(a,h)anthracene	ND		0.015	mg/Kg-dry	1	6/23/2016 02:23 AM
Fluoranthene	ND		0.015	mg/Kg-dry	1	6/23/2016 02:23 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 04-Nov-16

Client: Olsson Associates

Project: Emerald 22 Spill

Sample ID: EM22-SS1

Collection Date: 6/16/2016 03:00 PM

Work Order: 16061154

Lab ID: 16061154-01

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		0.015	mg/Kg-dry	1	6/23/2016 02:23 AM
Indeno(1,2,3-cd)pyrene	ND		0.015	mg/Kg-dry	1	6/23/2016 02:23 AM
Naphthalene	ND		0.015	mg/Kg-dry	1	6/23/2016 02:23 AM
Pyrene	ND		0.015	mg/Kg-dry	1	6/23/2016 02:23 AM
Surr: 2-Fluorobiphenyl	66.3		12-100	%REC	1	6/23/2016 02:23 AM
Surr: 4-Terphenyl-d14	76.9		25-137	%REC	1	6/23/2016 02:23 AM
Surr: Nitrobenzene-d5	59.4		37-107	%REC	1	6/23/2016 02:23 AM
VOLATILE ORGANIC COMPOUNDS			SW8260B	Prep: SW5035 / 6/21/16		Analyst: AK
Benzene	ND		0.036	mg/Kg-dry	1	6/28/2016 10:10 PM
Ethylbenzene	ND		0.036	mg/Kg-dry	1	6/28/2016 10:10 PM
m,p-Xylene	ND		0.073	mg/Kg-dry	1	6/28/2016 10:10 PM
o-Xylene	ND		0.036	mg/Kg-dry	1	6/28/2016 10:10 PM
Toluene	ND		0.036	mg/Kg-dry	1	6/28/2016 10:10 PM
Xylenes, Total	ND		0.11	mg/Kg-dry	1	6/28/2016 10:10 PM
Surr: 1,2-Dichloroethane-d4	110		70-130	%REC	1	6/28/2016 10:10 PM
Surr: 4-Bromofluorobenzene	96.0		70-130	%REC	1	6/28/2016 10:10 PM
Surr: Dibromofluoromethane	114		70-130	%REC	1	6/28/2016 10:10 PM
Surr: Toluene-d8	95.0		70-130	%REC	1	6/28/2016 10:10 PM
ELECTRICAL CONDUCTIVITY (SAR)			USDA H60 METHO	Prep: USDA Method 20B / 6/27/16		Analyst: JB
Electrical Conductivity @ Saturation	9.0		0.050	mmhos/cm @2	10	6/28/2016 11:15 AM
CHROMIUM, TRIVALENT			CALCULATION			Analyst: MB
Chromium, Trivalent	12		0.55	mg/Kg-dry	1	6/29/2016 02:30 PM
CHROMIUM, HEXAVALENT			SW7196A	Prep: SW3060A / 6/20/16		Analyst: LW
Chromium, Hexavalent	ND		1.1	mg/Kg-dry	1	6/22/2016 10:00 AM
MOISTURE			SW3550C			Analyst: EDL
Moisture	9.5		0.050	% of sample	1	6/22/2016 03:20 PM
PH			SW9045D	Prep: EXTRACT / 6/22/16		Analyst: EDL
pH	7.8			s.u.	1	6/22/2016 08:59 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 04-Nov-16

Client: Olsson Associates

Project: Emerald 22 Spill

Sample ID: EM22-SS2

Collection Date: 6/16/2016 03:10 PM

Work Order: 16061154

Lab ID: 16061154-02

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	630		SW8015M		Prep: SW3546 / 6/29/16	Analyst: IT
<i>Surr: 4-Terphenyl-d14</i>	<i>108</i>		<i>180</i>	<i>mg/Kg-dry</i>	<i>20</i>	<i>6/30/2016 02:08 PM</i>
			<i>39-133</i>	<i>%REC</i>	<i>20</i>	<i>6/30/2016 02:08 PM</i>
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	ND		SW8015D		Prep: SW5035 / 6/21/16	Analyst: IT
<i>Surr: Toluene-d8</i>	<i>97.4</i>		<i>3.0</i>	<i>mg/Kg-dry</i>	<i>1</i>	<i>6/21/2016 05:20 PM</i>
			<i>50-150</i>	<i>%REC</i>	<i>1</i>	<i>6/21/2016 05:20 PM</i>
MERCURY BY CVAA						
Mercury	0.046		SW7471B		Prep: SW7471 / 6/28/16	Analyst: LR
			0.015	mg/Kg-dry	1	6/28/2016 04:52 PM
METALS ANALYSIS BY ICP						
Arsenic	7.8		SW846 6010C		Prep: SW3050B / 6/21/16	Analyst: JEC
Barium	420		0.43	mg/Kg-dry	1	6/25/2016 07:06 AM
Cadmium	ND		0.43	mg/Kg-dry	1	6/25/2016 07:06 AM
Chromium	13		0.43	mg/Kg-dry	1	6/25/2016 07:06 AM
Copper	15		0.43	mg/Kg-dry	1	6/25/2016 07:06 AM
Lead	34		0.43	mg/Kg-dry	1	6/25/2016 07:06 AM
Nickel	18		0.43	mg/Kg-dry	1	6/25/2016 07:06 AM
Selenium	ND		0.86	mg/Kg-dry	1	6/25/2016 07:06 AM
Silver	ND		0.43	mg/Kg-dry	1	6/25/2016 07:06 AM
Zinc	95		0.86	mg/Kg-dry	1	6/25/2016 07:06 AM
SOLUBLE CATIONS FOR SAR						
			SW846 6010C		Prep: USDA Method 20B / 6/27/16	Analyst: JEC
Calcium	410		5.0	mg/L	10	6/28/2016 06:25 PM
Magnesium	76		2.0	mg/L	10	6/28/2016 06:25 PM
Sodium	2,800		2.0	mg/L	10	6/28/2016 06:25 PM
SODIUM ADSORPTION RATIO						
			USDA H60 METHO		Prep: USDA Method 20B / 6/27/16	Analyst: JEC
Sodium Adsorption Ratio	34		0.010	none	1	6/28/2016
SEMI-VOLATILE ORGANIC COMPOUNDS						
			SW846 8270D		Prep: SW3546 / 6/22/16	Analyst: RS
Acenaphthene	ND		0.15	mg/Kg-dry	10	6/22/2016 06:34 PM
Anthracene	ND		0.15	mg/Kg-dry	10	6/22/2016 06:34 PM
Benzo(a)anthracene	ND		0.15	mg/Kg-dry	10	6/22/2016 06:34 PM
Benzo(a)pyrene	ND		0.15	mg/Kg-dry	10	6/22/2016 06:34 PM
Benzo(b)fluoranthene	ND		0.15	mg/Kg-dry	10	6/22/2016 06:34 PM
Benzo(k)fluoranthene	ND		0.15	mg/Kg-dry	10	6/22/2016 06:34 PM
Chrysene	ND		0.15	mg/Kg-dry	10	6/22/2016 06:34 PM
Dibenzo(a,h)anthracene	ND		0.15	mg/Kg-dry	10	6/22/2016 06:34 PM
Fluoranthene	ND		0.15	mg/Kg-dry	10	6/22/2016 06:34 PM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 04-Nov-16

Client: Olsson Associates

Project: Emerald 22 Spill

Sample ID: EM22-SS2

Collection Date: 6/16/2016 03:10 PM

Work Order: 16061154

Lab ID: 16061154-02

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		0.15	mg/Kg-dry	10	6/22/2016 06:34 PM
Indeno(1,2,3-cd)pyrene	ND		0.15	mg/Kg-dry	10	6/22/2016 06:34 PM
Naphthalene	ND		0.15	mg/Kg-dry	10	6/22/2016 06:34 PM
Pyrene	ND		0.15	mg/Kg-dry	10	6/22/2016 06:34 PM
Surr: 2-Fluorobiphenyl	60.2		12-100	%REC	10	6/22/2016 06:34 PM
Surr: 4-Terphenyl-d14	65.4		25-137	%REC	10	6/22/2016 06:34 PM
Surr: Nitrobenzene-d5	50.4		37-107	%REC	10	6/22/2016 06:34 PM
VOLATILE ORGANIC COMPOUNDS			SW8260B	Prep: SW5035 / 6/21/16		Analyst: AK
Benzene	ND		0.036	mg/Kg-dry	1	6/28/2016 10:34 PM
Ethylbenzene	ND		0.036	mg/Kg-dry	1	6/28/2016 10:34 PM
m,p-Xylene	ND		0.072	mg/Kg-dry	1	6/28/2016 10:34 PM
o-Xylene	ND		0.036	mg/Kg-dry	1	6/28/2016 10:34 PM
Toluene	ND		0.036	mg/Kg-dry	1	6/28/2016 10:34 PM
Xylenes, Total	ND		0.11	mg/Kg-dry	1	6/28/2016 10:34 PM
Surr: 1,2-Dichloroethane-d4	112		70-130	%REC	1	6/28/2016 10:34 PM
Surr: 4-Bromofluorobenzene	94.8		70-130	%REC	1	6/28/2016 10:34 PM
Surr: Dibromofluoromethane	113		70-130	%REC	1	6/28/2016 10:34 PM
Surr: Toluene-d8	94.6		70-130	%REC	1	6/28/2016 10:34 PM
ELECTRICAL CONDUCTIVITY (SAR)			USDA H60 METHO	Prep: USDA Method 20B / 6/27/16		Analyst: JB
Electrical Conductivity @ Saturation	21		0.050	mmhos/cm @2	10	6/28/2016 11:15 AM
CHROMIUM, TRIVALENT			CALCULATION			Analyst: MB
Chromium, Trivalent	13		0.55	mg/Kg-dry	1	6/29/2016 02:30 PM
CHROMIUM, HEXAVALENT			SW7196A	Prep: SW3060A / 6/20/16		Analyst: LW
Chromium, Hexavalent	ND		1.0	mg/Kg-dry	1	6/22/2016 10:00 AM
MOISTURE			SW3550C			Analyst: EDL
Moisture	9.3		0.050	% of sample	1	6/22/2016 03:20 PM
PH			SW9045D	Prep: EXTRACT / 6/22/16		Analyst: EDL
pH	8.1			s.u.	1	6/22/2016 08:59 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 04-Nov-16

Client: Olsson Associates

Project: Emerald 22 Spill

Sample ID: EM22-SS3

Collection Date: 6/16/2016 03:20 PM

Work Order: 16061154

Lab ID: 16061154-03

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	58		SW8015M		Prep: SW3546 / 6/29/16	Analyst: IT
<i>Surr: 4-Terphenyl-d14</i>	<i>64.8</i>		<i>39-133</i>	<i>%REC</i>	<i>1</i>	<i>6/30/2016 02:40 PM</i>
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	ND		SW8015D		Prep: SW5035 / 6/21/16	Analyst: IT
<i>Surr: Toluene-d8</i>	<i>92.2</i>		<i>50-150</i>	<i>%REC</i>	<i>1</i>	<i>6/21/2016 05:45 PM</i>
MERCURY BY CVAA						
Mercury	0.022		SW7471B		Prep: SW7471 / 6/29/16	Analyst: LR
METALS ANALYSIS BY ICP						
Arsenic	7.2		SW846 6010C		Prep: SW3050B / 6/21/16	Analyst: BL
Barium	150		0.36	mg/Kg-dry	1	6/27/2016 04:17 PM
Cadmium	ND		0.36	mg/Kg-dry	1	6/25/2016 07:29 AM
Chromium	9.9		0.36	mg/Kg-dry	1	6/27/2016 04:17 PM
Copper	13		0.36	mg/Kg-dry	1	6/25/2016 07:29 AM
Lead	17		0.36	mg/Kg-dry	1	6/25/2016 07:29 AM
Nickel	16		0.36	mg/Kg-dry	1	6/25/2016 07:29 AM
Selenium	ND		0.71	mg/Kg-dry	1	6/27/2016 04:17 PM
Silver	ND		0.36	mg/Kg-dry	1	6/25/2016 07:29 AM
Zinc	80		0.71	mg/Kg-dry	1	6/25/2016 07:29 AM
SOLUBLE CATIONS FOR SAR						
Calcium	370		SW846 6010C		Prep: USDA Method 20B / 6/27/16	Analyst: JEC
Magnesium	88		5.0	mg/L	10	6/28/2016 06:37 PM
Sodium	1,800		2.0	mg/L	10	6/28/2016 06:37 PM
SODIUM ADSORPTION RATIO						
Sodium Adsorption Ratio	22		USDA H60 METHO		Prep: USDA Method 20B / 6/27/16	Analyst: JEC
			0.010	none	1	6/28/2016
SEMI-VOLATILE ORGANIC COMPOUNDS						
Acenaphthene	ND		SW846 8270D		Prep: SW3546 / 6/22/16	Analyst: RS
Anthracene	ND		0.014	mg/Kg-dry	1	6/23/2016 02:50 AM
Benzo(a)anthracene	ND		0.014	mg/Kg-dry	1	6/23/2016 02:50 AM
Benzo(a)pyrene	ND		0.014	mg/Kg-dry	1	6/23/2016 02:50 AM
Benzo(b)fluoranthene	ND		0.014	mg/Kg-dry	1	6/23/2016 02:50 AM
Benzo(k)fluoranthene	ND		0.014	mg/Kg-dry	1	6/23/2016 02:50 AM
Chrysene	ND		0.014	mg/Kg-dry	1	6/23/2016 02:50 AM
Dibenzo(a,h)anthracene	ND		0.014	mg/Kg-dry	1	6/23/2016 02:50 AM
Fluoranthene	ND		0.014	mg/Kg-dry	1	6/23/2016 02:50 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 04-Nov-16

Client: Olsson Associates

Project: Emerald 22 Spill

Sample ID: EM22-SS3

Collection Date: 6/16/2016 03:20 PM

Work Order: 16061154

Lab ID: 16061154-03

Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		0.014	mg/Kg-dry	1	6/23/2016 02:50 AM
Indeno(1,2,3-cd)pyrene	ND		0.014	mg/Kg-dry	1	6/23/2016 02:50 AM
Naphthalene	ND		0.014	mg/Kg-dry	1	6/23/2016 02:50 AM
Pyrene	ND		0.014	mg/Kg-dry	1	6/23/2016 02:50 AM
Surr: 2-Fluorobiphenyl	55.6		12-100	%REC	1	6/23/2016 02:50 AM
Surr: 4-Terphenyl-d14	66.8		25-137	%REC	1	6/23/2016 02:50 AM
Surr: Nitrobenzene-d5	49.8		37-107	%REC	1	6/23/2016 02:50 AM
VOLATILE ORGANIC COMPOUNDS			SW8260B	Prep: SW5035 / 6/21/16		Analyst: AK
Benzene	ND		0.034	mg/Kg-dry	1	6/28/2016 10:58 PM
Ethylbenzene	ND		0.034	mg/Kg-dry	1	6/28/2016 10:58 PM
m,p-Xylene	ND		0.068	mg/Kg-dry	1	6/28/2016 10:58 PM
o-Xylene	ND		0.034	mg/Kg-dry	1	6/28/2016 10:58 PM
Toluene	ND		0.034	mg/Kg-dry	1	6/28/2016 10:58 PM
Xylenes, Total	ND		0.10	mg/Kg-dry	1	6/28/2016 10:58 PM
Surr: 1,2-Dichloroethane-d4	112		70-130	%REC	1	6/28/2016 10:58 PM
Surr: 4-Bromofluorobenzene	97.2		70-130	%REC	1	6/28/2016 10:58 PM
Surr: Dibromofluoromethane	115		70-130	%REC	1	6/28/2016 10:58 PM
Surr: Toluene-d8	92.4		70-130	%REC	1	6/28/2016 10:58 PM
ELECTRICAL CONDUCTIVITY (SAR)			USDA H60 METHO	Prep: USDA Method 20B / 6/27/16		Analyst: JB
Electrical Conductivity @ Saturation	18		0.050	mmhos/cm @2	10	6/28/2016 11:15 AM
CHROMIUM, TRIVALENT			CALCULATION			Analyst: MB
Chromium, Trivalent	9.9		0.53	mg/Kg-dry	1	6/29/2016 02:30 PM
CHROMIUM, HEXAVALENT			SW7196A	Prep: SW3060A / 6/20/16		Analyst: LW
Chromium, Hexavalent	ND		1.0	mg/Kg-dry	1	6/22/2016 10:00 AM
MOISTURE			SW3550C			Analyst: EDL
Moisture	5.9		0.050	% of sample	1	6/22/2016 03:20 PM
PH			SW9045D	Prep: EXTRACT / 6/22/16		Analyst: EDL
pH	7.6			s.u.	1	6/22/2016 08:59 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 04-Nov-16

Client: Olsson Associates
Project: Emerald 22 Spill
Sample ID: EM22-BG1
Collection Date: 6/16/2016 03:30 PM

Work Order: 16061154
Lab ID: 16061154-04
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA						
Mercury	0.033		SW7471B 0.017	mg/Kg-dry	Prep: SW7471 / 6/29/16 1	Analyst: LR 6/29/2016 03:33 PM
METALS ANALYSIS BY ICP						
Arsenic	9.1		SW846 6010C 0.71	mg/Kg-dry	Prep: SW3050B / 6/21/16 2	Analyst: JEC 6/29/2016 11:31 AM
Barium	170		0.35	mg/Kg-dry	1	6/25/2016 07:34 AM
Cadmium	ND		0.35	mg/Kg-dry	1	6/27/2016 04:24 PM
Chromium	17		0.71	mg/Kg-dry	2	6/29/2016 11:31 AM
Copper	18		0.35	mg/Kg-dry	1	6/25/2016 07:34 AM
Lead	19		0.35	mg/Kg-dry	1	6/25/2016 07:34 AM
Nickel	23		0.35	mg/Kg-dry	1	6/25/2016 07:34 AM
Selenium	1.7		1.4	mg/Kg-dry	2	6/29/2016 11:31 AM
Silver	ND		0.35	mg/Kg-dry	1	6/25/2016 07:34 AM
Zinc	100		0.71	mg/Kg-dry	1	6/25/2016 07:34 AM
SOLUBLE CATIONS FOR SAR						
Calcium	540		SW846 6010C 5.0	mg/L	Prep: USDA Method 20B / 6/27/16 10	Analyst: JEC 6/28/2016 07:10 PM
Magnesium	320		2.0	mg/L	10	6/28/2016 07:10 PM
Sodium	2,200		2.0	mg/L	10	6/28/2016 07:10 PM
SODIUM ADSORPTION RATIO						
Sodium Adsorption Ratio	19		USDA H60 METHO 0.010	none	Prep: USDA Method 20B / 6/27/16 1	Analyst: JEC 6/28/2016
ELECTRICAL CONDUCTIVITY (SAR)						
Electrical Conductivity @ Saturation	18		USDA H60 METHO 0.050	mmhos/cm @2	Prep: USDA Method 20B / 6/27/16 10	Analyst: JB 6/28/2016 11:15 AM
CHROMIUM, TRIVALENT						
Chromium, Trivalent	17		CALCULATION 0.56	mg/Kg-dry	1	Analyst: MB 6/29/2016 02:30 PM
CHROMIUM, HEXAVALENT						
Chromium, Hexavalent	ND		SW7196A 1.1	mg/Kg-dry	Prep: SW3060A / 6/20/16 1	Analyst: LW 6/22/2016 10:00 AM
MOISTURE						
Moisture	11		SW3550C 0.050	% of sample	1	Analyst: EDL 6/22/2016 03:20 PM
PH						
pH	8.0		SW9045D	s.u.	Prep: EXTRACT / 6/22/16 1	Analyst: EDL 6/22/2016 08:59 AM

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Olsson Associates
Work Order: 16061154
Project: Emerald 22 Spill

QC BATCH REPORT

Batch ID: **87783** Instrument ID **GC8** Method: **SW8015M**

MBLK		Sample ID: DBLKS1-87783-87783				Units: mg/Kg		Analysis Date: 6/24/2016 12:58 PM		
Client ID:		Run ID: GC8_160624A				SeqNo: 3893579		Prep Date: 6/24/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	ND	8.3								
<i>Surr: 4-Terphenyl-d14</i>	2.565	0	3.333	0	76.9	39-133	0			

LCS		Sample ID: DLCSS1-87783-87783				Units: mg/Kg		Analysis Date: 6/24/2016 01:28 PM		
Client ID:		Run ID: GC8_160624A				SeqNo: 3893581		Prep Date: 6/24/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	324.2	8.3	333.3	0	97.2	61-109	0			
<i>Surr: 4-Terphenyl-d14</i>	1.983	0	3.333	0	59.5	39-133	0			

MS		Sample ID: 16061108-01A MS				Units: mg/Kg		Analysis Date: 6/24/2016 01:58 PM		
Client ID:		Run ID: GC8_160624A				SeqNo: 3893582		Prep Date: 6/24/2016		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	8632	330	331.9	8248	116	48-110	0			SO
<i>Surr: 4-Terphenyl-d14</i>	7.779	0	3.319	0	234	39-133	0			S

MSD		Sample ID: 16061108-01A MSD				Units: mg/Kg		Analysis Date: 6/24/2016 02:28 PM		
Client ID:		Run ID: GC8_160624A				SeqNo: 3893583		Prep Date: 6/24/2016		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	8660	330	328.9	8248	125	48-110	8632	0.322	30	SO
<i>Surr: 4-Terphenyl-d14</i>	7.447	0	3.289	0	226	39-133	7.779	4.36	30	S

The following samples were analyzed in this batch:

16061154-01A

Client: Olsson Associates
 Work Order: 16061154
 Project: Emerald 22 Spill

QC BATCH REPORT

Batch ID: **87930** Instrument ID **GC8** Method: **SW8015M**

MBLK		Sample ID: DBLKS1-87930-87930				Units: mg/Kg		Analysis Date: 6/30/2016 10:05 AM		
Client ID:		Run ID: GC8_160630A				SeqNo: 3901820		Prep Date: 6/29/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	ND	8.3								
Surr: 4-Terphenyl-d14	2.634	0	3.333	0	79	39-133	0			

LCS		Sample ID: DLCSS1-87930-87930				Units: mg/Kg		Analysis Date: 6/30/2016 10:35 AM		
Client ID:		Run ID: GC8_160630A				SeqNo: 3901821		Prep Date: 6/29/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	321.1	8.3	333.3	0	96.3	61-109	0			
Surr: 4-Terphenyl-d14	2.157	0	3.333	0	64.7	39-133	0			

MS		Sample ID: 16061539-01C MS				Units: mg/Kg		Analysis Date: 6/30/2016 11:05 AM		
Client ID:		Run ID: GC8_160630A				SeqNo: 3901822		Prep Date: 6/29/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	310.2	8.3	331.8	43.48	80.4	48-110	0			
Surr: 4-Terphenyl-d14	2.3	0	3.318	0	69.3	39-133	0			

MSD		Sample ID: 16061539-01C MSD				Units: mg/Kg		Analysis Date: 6/30/2016 11:35 AM		
Client ID:		Run ID: GC8_160630A				SeqNo: 3901823		Prep Date: 6/29/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	299.7	8.2	329.4	43.48	77.8	48-110	310.2	3.44	30	
Surr: 4-Terphenyl-d14	2.235	0	3.294	0	67.9	39-133	2.3	2.86	30	

The following samples were analyzed in this batch:

16061154-02A	16061154-03A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
 Work Order: 16061154
 Project: Emerald 22 Spill

QC BATCH REPORT

Batch ID: **87604** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: MBLK-87604-87604				Units: µg/Kg-dry		Analysis Date: 6/21/2016 03:16 PM		
Client ID:		Run ID: GC9_160621A				SeqNo: 3886859		Prep Date: 6/21/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	ND	2,500								
Surr: Toluene-d8	4908	0	5000	0	98.2	50-150	0			

LCS		Sample ID: LCS-87604-87604				Units: µg/Kg-dry		Analysis Date: 6/21/2016 02:51 PM		
Client ID:		Run ID: GC9_160621A				SeqNo: 3886858		Prep Date: 6/21/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	512700	2,500	500000	0	103	70-130	0			
Surr: Toluene-d8	5182	0	5000	0	104	50-150	0			

MS		Sample ID: 16061154-01A MS				Units: µg/Kg-dry		Analysis Date: 6/21/2016 06:09 PM		
Client ID: EM22-SS1		Run ID: GC9_160621A				SeqNo: 3886865		Prep Date: 6/21/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	610300	3,000	605000	0	101	70-130	0			
Surr: Toluene-d8	5899	0	6050	0	97.5	50-150	0			

MSD		Sample ID: 16061154-01A MSD				Units: µg/Kg-dry		Analysis Date: 6/21/2016 06:34 PM		
Client ID: EM22-SS1		Run ID: GC9_160621A				SeqNo: 3886866		Prep Date: 6/21/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	699200	3,000	605000	0	116	70-130	610300	13.6	30	
Surr: Toluene-d8	6727	0	6050	0	111	50-150	5899	13.1	30	

The following samples were analyzed in this batch:

16061154-01A	16061154-02A	16061154-03A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
 Work Order: 16061154
 Project: Emerald 22 Spill

QC BATCH REPORT

Batch ID: **87911** Instrument ID **HG1** Method: **SW7471B**

MBLK		Sample ID: MBLK-87911-87911					Units: mg/Kg		Analysis Date: 6/28/2016 04:05 PM		
Client ID:			Run ID: HG1_160628A				SeqNo: 3897269		Prep Date: 6/28/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Mercury ND 0.020

LCS		Sample ID: LCS-87911-87911				Units: mg/Kg		Analysis Date: 6/28/2016 04:07 PM		
Client ID:		Run ID: HG1_160628A			SeqNo: 3897270		Prep Date: 6/28/2016		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.18 0.020 0.1665 0 108 80-120 0

MS		Sample ID: 16061431-01CMS					Units: mg/Kg		Analysis Date: 6/28/2016 04:18 PM		
Client ID:			Run ID: HG1_160628A			SeqNo: 3897275		Prep Date: 6/28/2016		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Mercury 0.1297 0.014 0.1147 0.0004005 113 75-125 0

MSD		Sample ID: 16061431-01CMSD					Units: mg/Kg		Analysis Date: 6/28/2016 04:20 PM		
Client ID:			Run ID: HG1_160628A			SeqNo: 3897276		Prep Date: 6/28/2016		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Mercury 0.1269 0.014 0.1147 0.0004005 110 75-125 0.1297 2.24 35

The following samples were analyzed in this batch:

16061154-01A	16061154-02A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
 Work Order: 16061154
 Project: Emerald 22 Spill

QC BATCH REPORT

Batch ID: **87964** Instrument ID **HG1** Method: **SW7471B**

MBLK		Sample ID: MBLK-87964-87964				Units: mg/Kg		Analysis Date: 6/29/2016 02:10 PM		
Client ID:		Run ID: HG1_160629A				SeqNo: 3899605		Prep Date: 6/29/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury ND 0.020

LCS		Sample ID: LCS-87964-87964				Units: mg/Kg		Analysis Date: 6/29/2016 02:12 PM		
Client ID:		Run ID: HG1_160629A				SeqNo: 3899613		Prep Date: 6/29/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1783 0.020 0.1665 0 107 80-120 0

MS		Sample ID: 16061555-04BMS				Units: mg/Kg		Analysis Date: 6/29/2016 02:23 PM		
Client ID:			Run ID: HG1_160629A			SeqNo: 3899618		Prep Date: 6/29/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1278 0.013 0.111 0.00324 112 75-125 0

MSD		Sample ID: 16061555-04BMSD				Units: mg/Kg		Analysis Date: 6/29/2016 02:25 PM		
Client ID:		Run ID: HG1_160629A			SeqNo: 3899619		Prep Date: 6/29/2016		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.129 0.014 0.113 0.00324 111 75-125 0.1278 0.92 35

The following samples were analyzed in this batch:

16061154-03A	16061154-04A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
 Work Order: 16061154
 Project: Emerald 22 Spill

QC BATCH REPORT

Batch ID: **87603** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK		Sample ID: MBLK-87603-87603				Units: mg/Kg		Analysis Date: 6/25/2016 06:15 AM		
Client ID:		Run ID: ICP2_160625A				SeqNo: 3893963		Prep Date: 6/21/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	ND	0.25								
Barium	ND	0.25								
Cadmium	ND	0.50								
Chromium	0.01574	0.25								J
Copper	ND	0.50								
Lead	ND	0.25								
Nickel	ND	0.25								
Selenium	ND	0.50								
Silver	ND	0.25								
Zinc	0.04273	0.50								J

LCS		Sample ID: LCS-87603-87603				Units: mg/Kg		Analysis Date: 6/25/2016 06:21 AM		
Client ID:		Run ID: ICP2_160625A				SeqNo: 3893964		Prep Date: 6/21/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.848	0.25	5	0	97	80-120	0			
Barium	5.216	0.25	5	0	104	80-120	0			
Cadmium	4.76	0.50	5	0	95.2	80-120	0			
Chromium	5.189	0.25	5	0	104	80-120	0			
Copper	4.89	0.50	5	0	97.8	80-120	0			
Lead	5.017	0.25	5	0	100	80-120	0			
Nickel	5.095	0.25	5	0	102	80-120	0			
Selenium	4.909	0.50	5	0	98.2	80-120	0			
Zinc	5.096	0.50	5	0	102	80-120	0			

MS		Sample ID: 16061175-06BMS				Units: mg/Kg		Analysis Date: 6/25/2016 08:51 AM		
Client ID:		Run ID: ICP2_160625A				SeqNo: 3894024		Prep Date: 6/21/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Copper	13.14	0.78	7.788	3.763	120	75-125	0			
Lead	35.65	0.39	7.788	41.12	-70.2	75-125	0			SO
Nickel	9.495	0.39	7.788	1.615	101	75-125	0			
Silver	7.884	0.39	7.788	-0.01478	101	75-125	0			
Zinc	40.96	0.78	7.788	25.67	196	75-125	0			S

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
 Work Order: 16061154
 Project: Emerald 22 Spill

QC BATCH REPORT

Batch ID: **87603** Instrument ID **ICP2** Method: **SW846 6010C**

MS				Sample ID: 16061175-06BMS			Units: mg/Kg		Analysis Date: 6/27/2016 05:51 PM		
Client ID:			Run ID: ICP2_160627B			SeqNo: 3895669		Prep Date: 6/21/2016		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	9.718	0.39	7.788	2.838	88.3	75-125	0				
Cadmium	7.466	0.78	7.788	0.1771	93.6	75-125	0				
Chromium	11.64	0.39	7.788	1.592	129	75-125	0			S	
Selenium	8.056	0.78	7.788	-0.2213	106	75-125	0				

MSD				Sample ID: 16061175-06BMSD			Units: mg/Kg		Analysis Date: 6/25/2016 08:56 AM		
Client ID:		Run ID: ICP2_160625A			SeqNo: 3894025		Prep Date: 6/21/2016		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Copper	12.4	0.78	7.837	3.763	110	75-125	13.14	5.75	20		
Lead	37.17	0.39	7.837	41.12	-50.4	75-125	35.65	4.15	20	SO	
Nickel	9.881	0.39	7.837	1.615	105	75-125	9.495	3.99	20		
Silver	7.981	0.39	7.837	-0.01478	102	75-125	7.884	1.23	20		
Zinc	38.13	0.78	7.837	25.67	159	75-125	40.96	7.16	20	S	

MSD				Sample ID: 16061175-06BMSD			Units: mg/Kg		Analysis Date: 6/27/2016 05:56 PM		
Client ID:			Run ID: ICP2_160627B			SeqNo: 3895670		Prep Date: 6/21/2016		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	10.17	0.39	7.837	2.838	93.5	75-125	9.718	4.52	20		
Cadmium	7.575	0.78	7.837	0.1771	94.4	75-125	7.466	1.45	20		
Chromium	10.96	0.39	7.837	1.592	120	75-125	11.64	6.02	20		
Selenium	8.363	0.78	7.837	-0.2213	110	75-125	8.056	3.75	20		

The following samples were analyzed in this batch:

16061154-01A	16061154-02A	16061154-03A
16061154-04A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
Work Order: 16061154
Project: Emerald 22 Spill

QC BATCH REPORT

Batch ID: **87776** Instrument ID **ICP2** Method: **SW846 6010C**

DUP		Sample ID: 16061154-02BDUP				Units: mg/L		Analysis Date: 6/28/2016 06:31 PM		
Client ID: EM22-SS2		Run ID: ICP2_160628A				SeqNo: 3898045		Prep Date: 6/27/2016		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	474.7	5.0	0	0	0	0-0	373	24		
Magnesium	89.33	2.0	0	0	0	0-0	87.57	1.99		
Sodium	3150	2.0	0	0	0	0-0	1788	55.2		

DUP		Sample ID: 16061154-02BDUP				Units: none		Analysis Date: 6/28/2016		
Client ID: EM22-SS2		Run ID: SAR_160628A				SeqNo: 3898918		Prep Date: 6/27/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	34.78	0.010	0	0	0		33.82	2.82	50	

The following samples were analyzed in this batch:

16061154-01B	16061154-02B	16061154-03B
16061154-04B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
 Work Order: 16061154
 Project: Emerald 22 Spill

QC BATCH REPORT

Batch ID: **87649** Instrument ID **SVMS7** Method: **SW846 8270D**

MBLK		Sample ID: SBLKS1-87649-87649				Units: µg/Kg		Analysis Date: 6/22/2016 04:48 PM		
Client ID:		Run ID: SVMS7_160622A				SeqNo: 3889331		Prep Date: 6/22/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	ND	13								
Anthracene	ND	13								
Benzo(a)anthracene	ND	13								
Benzo(a)pyrene	ND	13								
Benzo(b)fluoranthene	ND	13								
Benzo(k)fluoranthene	ND	13								
Chrysene	ND	13								
Dibenzo(a,h)anthracene	ND	13								
Fluoranthene	ND	13								
Fluorene	ND	13								
Indeno(1,2,3-cd)pyrene	ND	13								
Naphthalene	ND	13								
Pyrene	ND	13								
Surr: 2-Fluorobiphenyl	2629	0	3333	0	78.9	12-100	0			
Surr: 4-Terphenyl-d14	3461	0	3333	0	104	25-137	0			
Surr: Nitrobenzene-d5	2392	0	3333	0	71.8	37-107	0			

LCS		Sample ID: SLCSS1-87649-87649				Units: µg/Kg		Analysis Date: 6/22/2016 05:13 PM		
Client ID:		Run ID: SVMS7_160622A				SeqNo: 3889332		Prep Date: 6/22/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1141	13	1333	0	85.5	45-110	0			
Anthracene	1253	13	1333	0	93.9	55-105	0			
Benzo(a)anthracene	1234	13	1333	0	92.5	50-110	0			
Benzo(a)pyrene	1184	13	1333	0	88.8	50-110	0			
Benzo(b)fluoranthene	1209	13	1333	0	90.6	45-115	0			
Benzo(k)fluoranthene	1188	13	1333	0	89.1	45-115	0			
Chrysene	1171	13	1333	0	87.8	55-110	0			
Dibenzo(a,h)anthracene	1207	13	1333	0	90.5	40-125	0			
Fluoranthene	1191	13	1333	0	89.3	55-115	0			
Fluorene	1201	13	1333	0	90	50-110	0			
Indeno(1,2,3-cd)pyrene	1276	13	1333	0	95.7	40-120	0			
Naphthalene	1045	13	1333	0	78.4	40-105	0			
Pyrene	1302	13	1333	0	97.6	45-125	0			
Surr: 2-Fluorobiphenyl	2577	0	3333	0	77.3	12-100	0			
Surr: 4-Terphenyl-d14	3020	0	3333	0	90.6	25-137	0			
Surr: Nitrobenzene-d5	2388	0	3333	0	71.6	37-107	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
 Work Order: 16061154
 Project: Emerald 22 Spill

QC BATCH REPORT

Batch ID: 87649 Instrument ID SVMS7 Method: SW846 8270D

MS				Sample ID: 16061154-02A MS			Units: µg/Kg		Analysis Date: 6/22/2016 05:40 PM	
Client ID: EM22-SS2				Run ID: SVMS7_160622A			SeqNo: 3889333		Prep Date: 6/22/2016	
							DF: 10			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1066	130	1325	0	80.5	45-110	0			
Anthracene	1093	130	1325	0	82.5	55-105	0			
Benzo(a)anthracene	1258	130	1325	0	95	50-110	0			
Benzo(a)pyrene	1583	130	1325	0	119	50-110	0			S
Benzo(b)fluoranthene	1517	130	1325	0	114	45-115	0			
Benzo(k)fluoranthene	1146	130	1325	0	86.5	45-115	0			
Chrysene	1040	130	1325	0	78.5	55-110	0			
Dibenzo(a,h)anthracene	1523	130	1325	0	115	40-125	0			
Fluoranthene	1205	130	1325	0	91	55-115	0			
Fluorene	1093	130	1325	0	82.5	50-110	0			
Indeno(1,2,3-cd)pyrene	1709	130	1325	0	129	40-120	0			S
Naphthalene	920.7	130	1325	0	69.5	40-105	0			
Pyrene	1093	130	1325	0	82.5	45-125	0			
Surr: 2-Fluorobiphenyl	2411	0	3312	0	72.8	12-100	0			
Surr: 4-Terphenyl-d14	2464	0	3312	0	74.4	25-137	0			
Surr: Nitrobenzene-d5	2086	0	3312	0	63	37-107	0			

MSD				Sample ID: 16061154-02A MSD			Units: µg/Kg		Analysis Date: 6/22/2016 06:07 PM	
Client ID: EM22-SS2				Run ID: SVMS7_160622A			SeqNo: 3889334		Prep Date: 6/22/2016	
							DF: 10			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	953.1	130	1324	0	72	45-110	1066	11.2	30	
Anthracene	986.2	130	1324	0	74.5	55-105	1093	10.3	30	
Benzo(a)anthracene	1145	130	1324	0	86.5	50-110	1258	9.44	30	
Benzo(a)pyrene	1463	130	1324	0	110	50-110	1583	7.9	30	S
Benzo(b)fluoranthene	1363	130	1324	0	103	45-115	1517	10.6	30	
Benzo(k)fluoranthene	992.8	130	1324	0	75	45-115	1146	14.3	30	
Chrysene	939.8	130	1324	0	71	55-110	1040	10.1	30	
Dibenzo(a,h)anthracene	1397	130	1324	0	105	40-125	1523	8.69	30	
Fluoranthene	1125	130	1324	0	85	55-115	1205	6.89	30	
Fluorene	972.9	130	1324	0	73.5	50-110	1093	11.6	30	
Indeno(1,2,3-cd)pyrene	1602	130	1324	0	121	40-120	1709	6.47	30	S
Naphthalene	820.7	130	1324	0	62	40-105	920.7	11.5	30	
Pyrene	939.8	130	1324	0	71	45-125	1093	15.1	30	
Surr: 2-Fluorobiphenyl	2078	0	3309	0	62.8	12-100	2411	14.8	40	
Surr: 4-Terphenyl-d14	2131	0	3309	0	64.4	25-137	2464	14.5	40	
Surr: Nitrobenzene-d5	1913	0	3309	0	57.8	37-107	2086	8.68	40	

The following samples were analyzed in this batch:

16061154-01A	16061154-02A	16061154-03A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
Work Order: 16061154
Project: Emerald 22 Spill

QC BATCH REPORT

Batch ID: **87602** Instrument ID **VMS6** Method: **SW8260B**

MBLK				Sample ID: MBLK-87602-87602				Units: µg/Kg-dry			Analysis Date: 6/21/2016 02:45 PM		
Client ID:			Run ID: VMS6_160621A				SeqNo: 3887090		Prep Date: 6/21/2016		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Benzene	ND	30											
Ethylbenzene	ND	30											
m,p-Xylene	ND	60											
o-Xylene	ND	30											
Toluene	ND	30											
Xylenes, Total	ND	90											
Surr: 1,2-Dichloroethane-d4	1032	0	1000	0	103	70-130		0					
Surr: 4-Bromofluorobenzene	968.5	0	1000	0	96.8	70-130		0					
Surr: Dibromofluoromethane	974	0	1000	0	97.4	70-130		0					
Surr: Toluene-d8	976.5	0	1000	0	97.6	70-130		0					

LCS				Sample ID: LCS-87602-87602		Units: µg/Kg-dry		Analysis Date: 6/21/2016 01:27 PM			
Client ID:			Run ID: VMS6_160621A			SeqNo: 3887089		Prep Date: 6/21/2016		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	1059	30	1000	0	106	75-125	0				
Ethylbenzene	1004	30	1000	0	100	75-125	0				
m,p-Xylene	2040	60	2000	0	102	80-125	0				
o-Xylene	997.5	30	1000	0	99.8	75-125	0				
Toluene	995	30	1000	0	99.5	70-125	0				
Xylenes, Total	3037	90	3000	0	101	75-125	0				
Surr: 1,2-Dichloroethane-d4	1016	0	1000	0	102	70-130	0				
Surr: 4-Bromofluorobenzene	1002	0	1000	0	100	70-130	0				
Surr: Dibromofluoromethane	1022	0	1000	0	102	70-130	0				
Surr: Toluene-d8	1013	0	1000	0	101	70-130	0				

MS				Sample ID: 16061154-01A MS				Units: µg/Kg-dry			Analysis Date: 6/29/2016 04:40 AM		
Client ID: EM22-SS1			Run ID: VMS10_160628B			SeqNo: 3897949		Prep Date: 6/21/2016		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Benzene	1507	36	1210	0	125	75-125	0						
Ethylbenzene	1223	36	1210	0	101	75-125	0						
m,p-Xylene	2566	73	2420	0	106	80-125	0						
o-Xylene	1203	36	1210	0	99.4	75-125	0						
Toluene	1200	36	1210	0	99.2	70-125	0						
Xylenes, Total	3770	110	3630	0	104	75-125	0						
Surr: 1,2-Dichloroethane-d4	1500	0	1210	0	124	70-130	0						
Surr: 4-Bromofluorobenzene	1250	0	1210	0	103	70-130	0						
Surr: Dibromofluoromethane	1695	0	1210	0	140	70-130	0			S			
Surr: Toluene-d8	1160	0	1210	0	95.8	70-130	0						

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
 Work Order: 16061154
 Project: Emerald 22 Spill

QC BATCH REPORT

Batch ID: **87602** Instrument ID **VMS6** Method: **SW8260B**

MSD				Sample ID: 16061154-01A MSD			Units: µg/Kg-dry		Analysis Date: 6/29/2016 05:05 AM		
Client ID: EM22-SS1				Run ID: VMS10_160628B			SeqNo: 3897950		Prep Date: 6/21/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	1300	36	1210	0	107	75-125	1507	14.7	30		
Ethylbenzene	1233	36	1210	0	102	75-125	1223	0.788	30		
m,p-Xylene	2545	73	2420	0	105	80-125	2566	0.829	30		
o-Xylene	1206	36	1210	0	99.6	75-125	1203	0.201	30		
Toluene	1198	36	1210	0	99	70-125	1200	0.151	30		
Xylenes, Total	3751	110	3630	0	103	75-125	3770	0.499	30		
Surr: 1,2-Dichloroethane-d4	1344	0	1210	0	111	70-130	1500	11	30		
Surr: 4-Bromofluorobenzene	1247	0	1210	0	103	70-130	1250	0.242	30		
Surr: Dibromofluoromethane	1468	0	1210	0	121	70-130	1695	14.3	30		
Surr: Toluene-d8	1148	0	1210	0	94.9	70-130	1160	0.996	30		

The following samples were analyzed in this batch:

16061154-01A	16061154-02A	16061154-03A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
Work Order: 16061154
Project: Emerald 22 Spill

QC BATCH REPORT

Batch ID: **87580** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK		Sample ID: MBLK-87580-87580				Units: mg/Kg		Analysis Date: 6/22/2016 10:00 AM		
Client ID:		Run ID: WETCHEM_160622C		SeqNo: 3887794		Prep Date: 6/20/2016		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent ND 1.0

LCS		Sample ID: LCS-87580-87580				Units: mg/Kg		Analysis Date: 6/22/2016 10:00 AM		
Client ID:		Run ID: WETCHEM_160622C		SeqNo: 3887795		Prep Date: 6/20/2016		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.667 0.98 4.902 0 95.2 80-120 0

MS		Sample ID: 1606977-04B MS				Units: mg/Kg		Analysis Date: 6/22/2016 10:00 AM		
Client ID:		Run ID: WETCHEM_160622C		SeqNo: 3887805		Prep Date: 6/20/2016		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 3.235 0.98 4.902 0.1275 63.4 75-125 0 S

MS		Sample ID: 1606977-04B MSI				Units: mg/Kg		Analysis Date: 6/22/2016 10:00 AM		
Client ID:		Run ID: WETCHEM_160622C		SeqNo: 3887807		Prep Date: 6/20/2016		DF: 100		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 2450 97 2640 0.1275 92.8 75-125 0

MSD		Sample ID: 1606977-04B MSD				Units: mg/Kg		Analysis Date: 6/22/2016 10:00 AM		
Client ID:		Run ID: WETCHEM_160622C		SeqNo: 3887806		Prep Date: 6/20/2016		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 3.386 0.99 4.95 0.1275 65.8 75-125 3.235 4.56 20 S

The following samples were analyzed in this batch:

16061154-01A	16061154-02A	16061154-03A
16061154-04A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
Work Order: 16061154
Project: Emerald 22 Spill

QC BATCH REPORT

Batch ID: **87658** Instrument ID **WETCHEM** Method: **SW9045D**

LCS		Sample ID: LCS-87658-87658				Units: s.u.		Analysis Date: 6/22/2016 08:59 AM		
Client ID:		Run ID: WETCHEM_160622J			SeqNo: 3888239		Prep Date: 6/22/2016		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	3.98	0	4	0	99.5	90-110	0			

DUP		Sample ID: 16061109-01A DUP				Units: s.u.		Analysis Date: 6/22/2016 08:59 AM		
Client ID:		Run ID: WETCHEM_160622J				SeqNo: 3888242		Prep Date: 6/22/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.14	0	0	0	0	0-0	7.3	2.22	20	

The following samples were analyzed in this batch:

16061154-01A	16061154-02A	16061154-03A
16061154-04A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
Work Order: 16061154
Project: Emerald 22 Spill

QC BATCH REPORT

Batch ID: **87776** Instrument ID **WETCHEM** Method: **USDA H60 Metho**

DUP		Sample ID: 16061154-02B DUP				Units: mmhos/cm @25°		Analysis Date: 6/28/2016 11:15 AM		
Client ID: EM22-SS2		Run ID: WETCHEM_160628F		SeqNo: 3896678		Prep Date: 6/27/2016		DF: 10		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	23.3	0.050	0	0	0		21.2	9.44	50	

The following samples were analyzed in this batch:

16061154-01B	16061154-02B	16061154-03B
16061154-04B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
 Work Order: 16061154
 Project: Emerald 22 Spill

QC BATCH REPORT

Batch ID: **R190146** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R190146				Units: % of sample		Analysis Date: 6/22/2016 03:20 PM		
Client ID:		Run ID: MOIST_160622D				SeqNo: 3889573		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture ND 0.050

LCS		Sample ID: LCS-R190146				Units: % of sample		Analysis Date: 6/22/2016 03:20 PM		
Client ID:		Run ID: MOIST_160622D				SeqNo: 3889572		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 99.99 0.050 100 0 100 99.5-100.5 0

DUP				Sample ID: 16061109-03A DUP				Units: % of sample			Analysis Date: 6/22/2016 03:20 PM			
Client ID:				Run ID: MOIST_160622D				SeqNo: 3889553			Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				

Moisture 30.34 0.050 0 0 0 31.58 4.01 20

DUP				Sample ID: 16061257-33A DUP				Units: % of sample		Analysis Date: 6/22/2016 03:20 PM			
Client ID:				Run ID: MOIST_160622D				SeqNo: 3889563		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			

Moisture 20.17 0.050 0 0 0 20.15 0.0992 20

The following samples were analyzed in this batch:

16061154-01A	16061154-02A	16061154-03A
16061154-04A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



Chain of Custody Form

Page 1 of 1

COC ID: 123456

- | | | |
|--------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------------|
| <input type="checkbox"/> Cincinnati, OH
+1 513 733 5336 | <input type="checkbox"/> Holland, MI
+1 616 399 6070 | <input type="checkbox"/> Salt Lake City, UT
+1 801 266 7700 |
| <input type="checkbox"/> Everett, WA
+1 425 356 2600 | <input type="checkbox"/> Houston, TX
+1 281 530 5656 | <input type="checkbox"/> Spring City, PA
+1 610 948 4903 |
| <input type="checkbox"/> Fort Collins, CO
+1 970 490 1511 | <input type="checkbox"/> Middletown, PA
+1 717 944 5541 | <input type="checkbox"/> York, PA
+1 717 505 5280 |

1154

Customer Information		ALS Project Manager:		Work Order #:	
Purchase Order		Project Name		Parameter/Method Request for Analysis	
Work Order		Project Number		A TPH (GRO & DRO)	
Company Name		Bill To Company		B BTEX	
Send Report To		Invoice Att.		C PAH (See Attached List) CO Table 910	
Address		Address		D Electrical Conductivity	
City/State/Zip		City/State/Zip		E Sodium Adsorption Ratio	
Phone		Phone		F pH	
Fax		Fax		G Metals (See Attached List) CO Table 910	
e-Mail Address		e-Mail Address		H Arsenic Only	
				I	
				J	

No.	Sample Description	Date	Time	Matrix	Pres.	#Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	EM22-SS1	06/16/16	1500	Soil	8	2	X	X	X	X	X	X	X				
2	EM22-SS2	06/16/16	1510	Soil	8	2	X	X	X	X	X	X	X				
3	EM22-SS3	06/16/16	1520	Soil	8	2	X	X	X	X	X	X	X				
4	EM22-BG1	06/16/16	1530	Soil	8	2				X	X	X	X				
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	

Sampler(s): Please Print & Sign		Shipment Method:		Required Turnaround Time:		Results Due Date:	
Jason McLarty		FedEx		<input type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour			
Relinquished by:		Date:	Time:	Received by:		Notes:	
Jason McLarty		6/17/16	4:00	[Signature]		Chevron Pricing Applies - Per Bruce Schlatter	
Relinquished by:		Date:	Time:	Received by (Laboratory):		Cooler Temp.	
[Signature]		6-17-16	4:00	[Signature]		5.6°C	
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):		QC Package: (Check Box Below)	
DES		6/20/16	1100	[Signature]		<input checked="" type="checkbox"/> Level II: Standard QC <input type="checkbox"/> Level III: Std QC + Raw Data <input type="checkbox"/> Level IV: SW846 CLP-Like Other:	
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035							

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

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ORIGIN ID: RILA (816) 298-1033
 NICK MARTINEZ
 ALS ENVIRONMENTAL PARACHUTE
 PARACHUTE SERVICE CENTER
 127 EAST 1ST ST
 PARACHUTE, CO 81635
 UNITED STATES US

SHIP DATE: 17 JUN 16
 ACTWGT: 40.00 LB
 CAD: 22544401 NET 13730
 DIMS: 13x16x10 IN
 BILL SENDER

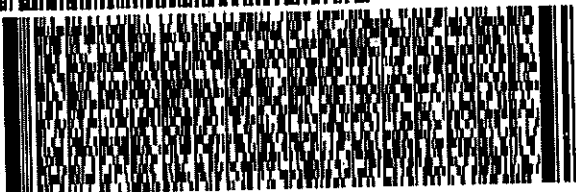
TO **SAMPLE RECEIVING**
ALS ENVIRONMENTAL HOLLAND LAB
3352 128TH AVE

HOLLAND MI 49424

(816) 399-6070
 INV
 PO: PARACHUTE

REF: 061716-1

DEPT:



REL#
 3765346

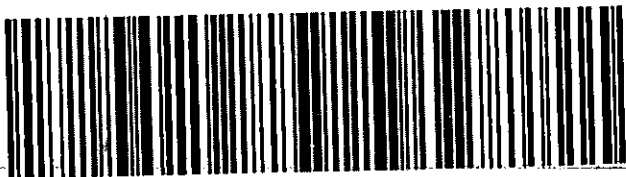
SATURDAY 12:00P
PRIORITY OVERNIGHT

2 of 2
 MP68# 7765 5311 3840
 0263
 Mstr# 7765 5311 3942

0201

X0 HLMA

49424
GRR
 MI-US



540,0200607277

After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery or non-delivery unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations from FedEx for any loss, including intrinsic value of the package, loss of damage whether direct, incidental, consequential, or special, cannot exceed actual documented loss. Maximum for items of instruments and other items listed in our Service Guide. Written



ALS Environmental

3352 128th Avenue
 Holland, Michigan 49424
 Tel. +1 616 399 6070
 Fax. +1 616 399 6185

CUSTODY SEAL

Date:
 Name:
 Company:

Time:

Seal Broken By:

Date:

6/17/2016

Sample Receipt Checklist

Client Name: OLSSON

Date/Time Received: 20-Jun-16 09:00

Work Order: 16061154

Received by: DS

Checklist completed by Diane Shaw 20-Jun-16
eSignature Date

Reviewed by: Chad Whelton 20-Jun-16
eSignature Date

Matrices: Soil

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>5.6/5.6 c</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>6/20/2016 11:30:00 AM</u>		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted by:	<u>-</u>		

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:



20-Oct-2020

Tim Dobransky
Entrada Consulting Group
240 Mesa Ave.
Grand Junction, CO 81501

Re: **Emerald 39 Spill**

Work Order: **20100817**

Dear Tim,

ALS Environmental received 4 samples on 08-Oct-2020 10:30 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 32.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

A handwritten signature in black ink, appearing to read "Chad Whelton".

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Report of Laboratory Analysis

Certificate No: MN 026-999-449

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental 

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Entrada Consulting Group
Project: Emerald 39 Spill
Work Order: 20100817

Work Order Sample Summary

<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
20100817-01	EM 39-SS1	Soil		10/5/2020 11:30	10/8/2020 10:30	<input type="checkbox"/>
20100817-02	EM 39-SS2	Soil		10/5/2020 11:45	10/8/2020 10:30	<input type="checkbox"/>
20100817-03	EM 39-SS3	Soil		10/5/2020 12:00	10/8/2020 10:30	<input type="checkbox"/>
20100817-04	EM 39-BG1	Soil		10/5/2020 12:15	10/8/2020 10:30	<input type="checkbox"/>

Client: Entrada Consulting Group
Project: Emerald 39 Spill
Work Order: 20100817

Case Narrative

Batch 165797, Method SW8270E, Sample EM 39-SS2 (20100817-02A): The PAH reporting limits are elevated due to dilution needed to eliminate matrix-related interference.

Batch 165797, Method SW8270E, Sample EM 39-SS2 (20100817-02A): One or more surrogate recoveries were below the lower control limits. The sample results may be biased low.

Batch 165859, Method SW8270E, Sample EM 39-SS3 (20100817-03A): One or more surrogate recoveries were below the lower control limits. The sample results may be biased low.

Batch 165927, Method SW7196A, Sample 20100817-01A MS/MSD: The MS/MSD recovery was below the lower control limit for hexavalent chromium. The corresponding result in the parent sample may be biased low.

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
% of sample	Percent of Sample
°C	Degrees Celcius
mg/Kg	Milligrams per Kilogram
mg/Kg-dry	Milligrams per Kilogram Dry Weight
mg/L	Milligrams per Liter
mmhos/cm @25°C	Millimhos-Centimeter at 25 Degrees Celcius
none	

s.u. Standard Units

ALS Group, USA

Date: 20-Oct-20

Client: Entrada Consulting Group
Project: Emerald 39 Spill
Sample ID: EM 39-SS1
Collection Date: 10/5/2020 11:30 AM

Work Order: 20100817
Lab ID: 20100817-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015D			Prep: SW3550 / 10/12/20	Analyst: JZB
DRO (C10-C28)	46		3.3	12	mg/Kg-dry	1	10/13/2020 06:22
Surr: 4-Terphenyl-d14	56.7			33-111	%REC	1	10/13/2020 06:22
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D			Prep: SW5035 / 10/14/20	Analyst: JZB
GRO (C6-C10)	U		2.8	6.8	mg/Kg	1	10/14/2020 21:00
Surr: Toluene-d8	90.5			71-123	%REC	1	10/14/2020 21:00
MERCURY BY CVAA							
			Method: SW7471B			Prep: SW7471 / 10/12/20	Analyst: MAC
Mercury	0.021		0.012	0.018	mg/Kg-dry	1	10/12/2020 15:13
METALS BY ICP-MS							
			Method: SW6020B			Prep: SW3050B / 10/13/20	Analyst: STP
Arsenic	5.4		0.053	0.44	mg/Kg-dry	1	10/13/2020 23:59
Barium	150		0.40	0.44	mg/Kg-dry	1	10/13/2020 23:59
Cadmium	0.18		0.026	0.18	mg/Kg-dry	1	10/13/2020 23:59
Chromium	8.6		0.19	0.44	mg/Kg-dry	1	10/13/2020 23:59
Copper	11		0.44	0.44	mg/Kg-dry	1	10/13/2020 23:59
Lead	16		0.21	0.44	mg/Kg-dry	1	10/13/2020 23:59
Nickel	12		0.23	0.44	mg/Kg-dry	1	10/13/2020 23:59
Selenium	0.77		0.40	0.44	mg/Kg-dry	1	10/14/2020 15:55
Silver	0.066	J	0.058	0.44	mg/Kg-dry	1	10/13/2020 23:59
Zinc	52		0.86	0.88	mg/Kg-dry	1	10/13/2020 23:59
SOLUBLE CATIONS FOR SAR							
			Method: SW6020B			Prep: USDA Method 20B / 10/14/20	Analyst: STP
Calcium	1,400		2.5	5.0	mg/L	10	10/14/2020 19:48
Magnesium	450		0.50	2.0	mg/L	10	10/14/2020 19:48
Sodium	1,700		18	20	mg/L	100	10/15/2020 14:40
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2			Prep: USDA Method 20B / 10/14/20	Analyst: STP
Sodium Adsorption Ratio	10		0.010	0.010	none	1	10/14/2020
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW8270E			Prep: SW3546 / 10/12/20	Analyst: JZB
Acenaphthene	U		0.00093	0.0048	mg/Kg-dry	1	10/13/2020 03:04
Anthracene	U		0.0016	0.0048	mg/Kg-dry	1	10/13/2020 03:04
Benzo(a)anthracene	0.0037	J	0.0020	0.0048	mg/Kg-dry	1	10/13/2020 03:04
Benzo(a)pyrene	0.0028	J	0.0013	0.0048	mg/Kg-dry	1	10/13/2020 03:04
Benzo(b)fluoranthene	0.0047	J	0.0011	0.0048	mg/Kg-dry	1	10/13/2020 03:04
Benzo(k)fluoranthene	U		0.0014	0.0048	mg/Kg-dry	1	10/13/2020 03:04
Chrysene	U		0.00099	0.0048	mg/Kg-dry	1	10/13/2020 03:04
Dibenzo(a,h)anthracene	U		0.0011	0.0048	mg/Kg-dry	1	10/13/2020 03:04
Fluoranthene	U		0.00088	0.0048	mg/Kg-dry	1	10/13/2020 03:04

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 20-Oct-20

Client: Entrada Consulting Group
Project: Emerald 39 Spill
Sample ID: EM 39-SS1
Collection Date: 10/5/2020 11:30 AM

Work Order: 20100817
Lab ID: 20100817-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	U		0.0016	0.0048	mg/Kg-dry	1	10/13/2020 03:04
Indeno(1,2,3-cd)pyrene	U		0.0017	0.0048	mg/Kg-dry	1	10/13/2020 03:04
Naphthalene	U		0.0021	0.0048	mg/Kg-dry	1	10/13/2020 03:04
Pyrene	U		0.00079	0.0048	mg/Kg-dry	1	10/13/2020 03:04
Surr: 2-Fluorobiphenyl	87.7			20-140	%REC	1	10/13/2020 03:04
Surr: 4-Terphenyl-d14	56.8			22-172	%REC	1	10/13/2020 03:04
Surr: Nitrobenzene-d5	63.9			28-140	%REC	1	10/13/2020 03:04
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 10/14/20		Analyst: JNS
Benzene	0.0073	J	0.0068	0.040	mg/Kg-dry	1	10/15/2020 03:48
Ethylbenzene	U		0.0084	0.040	mg/Kg-dry	1	10/15/2020 03:48
m,p-Xylene	U		0.053	0.080	mg/Kg-dry	1	10/15/2020 03:48
o-Xylene	U		0.015	0.040	mg/Kg-dry	1	10/15/2020 03:48
Toluene	U		0.011	0.040	mg/Kg-dry	1	10/15/2020 03:48
Xylenes, Total	U		0.053	0.12	mg/Kg-dry	1	10/15/2020 03:48
Surr: 1,2-Dichloroethane-d4	103			70-130	%REC	1	10/15/2020 03:48
Surr: 4-Bromofluorobenzene	104			70-130	%REC	1	10/15/2020 03:48
Surr: Dibromofluoromethane	101			70-130	%REC	1	10/15/2020 03:48
Surr: Toluene-d8	98.5			70-130	%REC	1	10/15/2020 03:48
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/14/20		Analyst: QTN
Electrical Conductivity @ Saturation	15		0.011	0.10	mmhos/cm @25°	20	10/15/2020 11:07
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	8.6		0.99	1.2	mg/Kg-dry	1	10/14/2020 19:00
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 10/14/20		Analyst: RZM
Chromium, Hexavalent	U		0.99	1.2	mg/Kg-dry	1	10/14/2020 16:34
MOISTURE			Method: SW3550C				Analyst: ERW
Moisture	14		0.10	0.10	% of sample	1	10/16/2020 14:41
SOIL PH MEASURED IN WATER AT NOTED TEMP.			Method: SW9045D		Prep: SW9045D / 10/9/20		Analyst: QTN
pH	7.82		0.10	0.100	s.u.	1	10/12/2020 10:52
Temperature	20.7		0.10	0.100	°C	1	10/12/2020 10:52

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 20-Oct-20

Client: Entrada Consulting Group
Project: Emerald 39 Spill
Sample ID: EM 39-SS2
Collection Date: 10/5/2020 11:45 AM

Work Order: 20100817
Lab ID: 20100817-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW3550 / 10/12/20		Analyst: JZB
DRO (C10-C28)	790		3.2	11	mg/Kg-dry	1	10/13/2020 07:40
Surr: 4-Terphenyl-d14	71.7			33-111	%REC	1	10/13/2020 07:40
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/14/20		Analyst: JZB
GRO (C6-C10)	U		2.1	5.1	mg/Kg	1	10/14/2020 20:14
Surr: Toluene-d8	95.8			71-123	%REC	1	10/14/2020 20:14
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 10/12/20		Analyst: MAC
Mercury	0.028		0.013	0.019	mg/Kg-dry	1	10/12/2020 15:15
METALS BY ICP-MS							
			Method: SW6020B		Prep: SW3050B / 10/13/20		Analyst: STP
Arsenic	4.5		0.051	0.43	mg/Kg-dry	1	10/14/2020 00:01
Barium	380		3.9	4.3	mg/Kg-dry	10	10/14/2020 15:56
Cadmium	0.21		0.026	0.17	mg/Kg-dry	1	10/14/2020 00:01
Chromium	6.9		0.19	0.43	mg/Kg-dry	1	10/14/2020 00:01
Copper	8.6		0.43	0.43	mg/Kg-dry	1	10/14/2020 00:01
Lead	29		0.20	0.43	mg/Kg-dry	1	10/14/2020 00:01
Nickel	9.6		0.22	0.43	mg/Kg-dry	1	10/14/2020 00:01
Selenium	0.90		0.39	0.43	mg/Kg-dry	1	10/14/2020 16:03
Silver	U		0.056	0.43	mg/Kg-dry	1	10/14/2020 00:01
Zinc	58		0.83	0.85	mg/Kg-dry	1	10/14/2020 00:01
SOLUBLE CATIONS FOR SAR							
			Method: SW6020B		Prep: USDA Method 20B / 10/14/20		Analyst: STP
Calcium	280		2.5	5.0	mg/L	10	10/14/2020 19:51
Magnesium	52		0.50	2.0	mg/L	10	10/14/2020 19:51
Sodium	1,500		1.8	2.0	mg/L	10	10/14/2020 19:51
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/14/20		Analyst: STP
Sodium Adsorption Ratio	22		0.010	0.010	none	1	10/14/2020
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW8270E		Prep: SW3546 / 10/12/20		Analyst: JZB
Acenaphthene	U		0.0018	0.0092	mg/Kg-dry	2	10/13/2020 12:48
Anthracene	U		0.0031	0.0092	mg/Kg-dry	2	10/13/2020 12:48
Benzo(a)anthracene	U		0.0038	0.0092	mg/Kg-dry	2	10/13/2020 12:48
Benzo(a)pyrene	U		0.0025	0.0092	mg/Kg-dry	2	10/13/2020 12:48
Benzo(b)fluoranthene	U		0.0022	0.0092	mg/Kg-dry	2	10/13/2020 12:48
Benzo(k)fluoranthene	U		0.0027	0.0092	mg/Kg-dry	2	10/13/2020 12:48
Chrysene	U		0.0019	0.0092	mg/Kg-dry	2	10/13/2020 12:48
Dibenzo(a,h)anthracene	U		0.0022	0.0092	mg/Kg-dry	2	10/13/2020 12:48
Fluoranthene	U		0.0017	0.0092	mg/Kg-dry	2	10/13/2020 12:48

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 20-Oct-20

Client: Entrada Consulting Group
Project: Emerald 39 Spill
Sample ID: EM 39-SS2
Collection Date: 10/5/2020 11:45 AM

Work Order: 20100817
Lab ID: 20100817-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	0.0054	J	0.0030	0.0092	mg/Kg-dry	2	10/13/2020 12:48
Indeno(1,2,3-cd)pyrene	U		0.0033	0.0092	mg/Kg-dry	2	10/13/2020 12:48
Naphthalene	U		0.0040	0.0092	mg/Kg-dry	2	10/13/2020 12:48
Pyrene	U		0.0015	0.0092	mg/Kg-dry	2	10/13/2020 12:48
Surr: 2-Fluorobiphenyl	32.5			20-140	%REC	2	10/13/2020 12:48
Surr: 4-Terphenyl-d14	18.6	S		22-172	%REC	2	10/13/2020 12:48
Surr: Nitrobenzene-d5	36.2			28-140	%REC	2	10/13/2020 12:48
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 10/14/20		Analyst: JNS
Benzene	U		0.0066	0.039	mg/Kg-dry	1	10/15/2020 08:41
Ethylbenzene	U		0.0081	0.039	mg/Kg-dry	1	10/15/2020 08:41
m,p-Xylene	0.064	J	0.051	0.077	mg/Kg-dry	1	10/15/2020 08:41
o-Xylene	U		0.015	0.039	mg/Kg-dry	1	10/15/2020 08:41
Toluene	U		0.011	0.039	mg/Kg-dry	1	10/15/2020 08:41
Xylenes, Total	0.064	J	0.051	0.12	mg/Kg-dry	1	10/15/2020 08:41
Surr: 1,2-Dichloroethane-d4	99.8			70-130	%REC	1	10/15/2020 08:41
Surr: 4-Bromofluorobenzene	105			70-130	%REC	1	10/15/2020 08:41
Surr: Dibromofluoromethane	101			70-130	%REC	1	10/15/2020 08:41
Surr: Toluene-d8	98.6			70-130	%REC	1	10/15/2020 08:41
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/14/20		Analyst: QTN
Electrical Conductivity @ Saturation	9.4		0.011	0.10	mmhos/cm @25°	20	10/15/2020 11:07
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	4.6		0.97	1.1	mg/Kg-dry	1	10/14/2020 19:00
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 10/14/20		Analyst: RZM
Chromium, Hexavalent	2.3		0.97	1.1	mg/Kg-dry	1	10/14/2020 16:34
MOISTURE			Method: SW3550C				Analyst: ERW
Moisture	13		0.10	0.10	% of sample	1	10/16/2020 14:41
SOIL PH MEASURED IN WATER AT NOTED TEMP.			Method: SW9045D		Prep: SW9045D / 10/9/20		Analyst: QTN
pH	7.54		0.10	0.100	s.u.	1	10/12/2020 10:52
Temperature	20.6		0.10	0.100	°C	1	10/12/2020 10:52

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 20-Oct-20

Client: Entrada Consulting Group
Project: Emerald 39 Spill
Sample ID: EM 39-SS3
Collection Date: 10/5/2020 12:00 PM

Work Order: 20100817
Lab ID: 20100817-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW3550 / 10/12/20		Analyst: JZB
DRO (C10-C28)	71		3.1	11	mg/Kg-dry	1	10/13/2020 08:55
Surr: 4-Terphenyl-d14	59.9			33-111	%REC	1	10/13/2020 08:55
GASOLINE RANGE ORGANICS BY GC-FID							
			Method: SW8015D		Prep: SW5035 / 10/14/20		Analyst: JZB
GRO (C6-C10)	U		2.7	6.4	mg/Kg	1	10/14/2020 20:36
Surr: Toluene-d8	111			71-123	%REC	1	10/14/2020 20:36
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 10/12/20		Analyst: MAC
Mercury	0.054		0.013	0.020	mg/Kg-dry	1	10/12/2020 15:16
METALS BY ICP-MS							
			Method: SW6020B		Prep: SW3050B / 10/13/20		Analyst: STP
Arsenic	4.8		0.052	0.43	mg/Kg-dry	1	10/14/2020 00:06
Barium	190		4.0	4.3	mg/Kg-dry	10	10/14/2020 15:58
Cadmium	0.21		0.026	0.17	mg/Kg-dry	1	10/14/2020 00:06
Chromium	8.0		0.19	0.43	mg/Kg-dry	1	10/14/2020 00:06
Copper	10		0.43	0.43	mg/Kg-dry	1	10/14/2020 00:06
Lead	15		0.21	0.43	mg/Kg-dry	1	10/14/2020 00:06
Nickel	12		0.23	0.43	mg/Kg-dry	1	10/14/2020 00:06
Selenium	0.86		0.40	0.43	mg/Kg-dry	1	10/14/2020 16:05
Silver	U		0.057	0.43	mg/Kg-dry	1	10/14/2020 00:06
Zinc	53		0.85	0.87	mg/Kg-dry	1	10/14/2020 00:06
SOLUBLE CATIONS FOR SAR							
			Method: SW6020B		Prep: USDA Method 20B / 10/14/20		Analyst: STP
Calcium	1,500		2.5	5.0	mg/L	10	10/14/2020 19:53
Magnesium	140		0.50	2.0	mg/L	10	10/14/2020 19:53
Sodium	4,500		18	20	mg/L	100	10/15/2020 14:43
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/14/20		Analyst: STP
Sodium Adsorption Ratio	30		0.010	0.010	none	1	10/14/2020
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)							
			Method: SW8270E		Prep: SW3546 / 10/13/20		Analyst: JZB
Acenaphthene	0.0046		0.00088	0.0045	mg/Kg-dry	1	10/13/2020 15:35
Anthracene	0.0073		0.0015	0.0045	mg/Kg-dry	1	10/13/2020 15:35
Benzo(a)anthracene	0.0027	J	0.0019	0.0045	mg/Kg-dry	1	10/13/2020 15:35
Benzo(a)pyrene	0.0028	J	0.0012	0.0045	mg/Kg-dry	1	10/13/2020 15:35
Benzo(b)fluoranthene	0.0033	J	0.0011	0.0045	mg/Kg-dry	1	10/13/2020 15:35
Benzo(k)fluoranthene	U		0.0013	0.0045	mg/Kg-dry	1	10/13/2020 15:35
Chrysene	U		0.00094	0.0045	mg/Kg-dry	1	10/13/2020 15:35
Dibenzo(a,h)anthracene	U		0.0011	0.0045	mg/Kg-dry	1	10/13/2020 15:35
Fluoranthene	0.0047		0.00084	0.0045	mg/Kg-dry	1	10/13/2020 15:35

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 20-Oct-20

Client: Entrada Consulting Group
Project: Emerald 39 Spill
Sample ID: EM 39-SS3
Collection Date: 10/5/2020 12:00 PM

Work Order: 20100817
Lab ID: 20100817-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	0.0080		0.0015	0.0045	mg/Kg-dry	1	10/13/2020 15:35
Indeno(1,2,3-cd)pyrene	0.0032	J	0.0016	0.0045	mg/Kg-dry	1	10/13/2020 15:35
Naphthalene	U		0.0020	0.0045	mg/Kg-dry	1	10/13/2020 15:35
Pyrene	0.0046		0.00075	0.0045	mg/Kg-dry	1	10/13/2020 15:35
Surr: 2-Fluorobiphenyl	14.4	S		20-140	%REC	1	10/13/2020 15:35
Surr: 4-Terphenyl-d14	12.4	S		22-172	%REC	1	10/13/2020 15:35
Surr: Nitrobenzene-d5	13.2	S		28-140	%REC	1	10/13/2020 15:35
VOLATILE ORGANIC COMPOUNDS			Method: SW8260C		Prep: SW5035 / 10/14/20		Analyst: JNS
Benzene	U		0.0070	0.041	mg/Kg-dry	1	10/15/2020 08:58
Ethylbenzene	U		0.0086	0.041	mg/Kg-dry	1	10/15/2020 08:58
m,p-Xylene	0.089		0.054	0.082	mg/Kg-dry	1	10/15/2020 08:58
o-Xylene	0.025	J	0.016	0.041	mg/Kg-dry	1	10/15/2020 08:58
Toluene	U		0.011	0.041	mg/Kg-dry	1	10/15/2020 08:58
Xylenes, Total	0.11	J	0.054	0.12	mg/Kg-dry	1	10/15/2020 08:58
Surr: 1,2-Dichloroethane-d4	102			70-130	%REC	1	10/15/2020 08:58
Surr: 4-Bromofluorobenzene	106			70-130	%REC	1	10/15/2020 08:58
Surr: Dibromofluoromethane	101			70-130	%REC	1	10/15/2020 08:58
Surr: Toluene-d8	99.5			70-130	%REC	1	10/15/2020 08:58
ELECTRICAL CONDUCTIVITY (SAR)			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/14/20		Analyst: QTN
Electrical Conductivity @ Saturation	25		0.011	0.10	mmhos/cm @25°	20	10/15/2020 11:07
CHROMIUM, TRIVALENT			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	8.0		0.98	1.2	mg/Kg-dry	1	10/14/2020 19:00
CHROMIUM, HEXAVALENT			Method: SW7196A		Prep: SW3060A / 10/14/20		Analyst: RZM
Chromium, Hexavalent	U		0.98	1.2	mg/Kg-dry	1	10/14/2020 16:34
MOISTURE			Method: SW3550C				Analyst: ERW
Moisture	14		0.10	0.10	% of sample	1	10/16/2020 14:41
SOIL PH MEASURED IN WATER AT NOTED TEMP.			Method: SW9045D		Prep: SW9045D / 10/9/20		Analyst: QTN
pH	7.38		0.10	0.100	s.u.	1	10/12/2020 10:52
Temperature	20.3		0.10	0.100	°C	1	10/12/2020 10:52

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group, USA

Date: 20-Oct-20

Client: Entrada Consulting Group
Project: Emerald 39 Spill
Sample ID: EM 39-BG1
Collection Date: 10/5/2020 12:15 PM

Work Order: 20100817
Lab ID: 20100817-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA							
			Method: SW7471B		Prep: SW7471 / 10/12/20		Analyst: MAC
Mercury	0.017	J	0.015	0.023	mg/Kg-dry	1	10/12/2020 15:18
METALS ANALYSIS BY ICP							
			Method: SW6010D		Prep: SW3050B / 10/14/20		Analyst: DSC
Arsenic	3.9		0.12	0.47	mg/Kg-dry	1	10/16/2020 19:48
Barium	110		0.58	0.93	mg/Kg-dry	1	10/16/2020 19:48
Cadmium	0.18	J	0.15	0.93	mg/Kg-dry	1	10/16/2020 19:48
Chromium	12		0.28	0.47	mg/Kg-dry	1	10/16/2020 19:48
Copper	16		0.69	0.93	mg/Kg-dry	1	10/16/2020 19:48
Lead	16		0.37	0.47	mg/Kg-dry	1	10/16/2020 19:48
Nickel	14		0.19	0.47	mg/Kg-dry	1	10/16/2020 19:48
Selenium	1.2		0.26	0.93	mg/Kg-dry	1	10/16/2020 19:48
Silver	U		0.22	0.47	mg/Kg-dry	1	10/16/2020 19:48
Zinc	63		0.89	0.93	mg/Kg-dry	1	10/16/2020 19:48
SOLUBLE CATIONS FOR SAR							
			Method: SW6020B		Prep: USDA Method 20B / 10/14/20		Analyst: STP
Calcium	67		2.5	5.0	mg/L	10	10/14/2020 19:55
Magnesium	16		0.50	2.0	mg/L	10	10/14/2020 19:55
Sodium	50		1.8	2.0	mg/L	10	10/14/2020 19:55
SODIUM ADSORPTION RATIO							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/14/20		Analyst: STP
Sodium Adsorption Ratio	1.4		0.010	0.010	none	1	10/14/2020
ELECTRICAL CONDUCTIVITY (SAR)							
			Method: USDA H60 METHOD 2		Prep: USDA Method 20B / 10/14/20		Analyst: QTN
Electrical Conductivity @ Saturation	0.54		0.011	0.10	mmhos/cm @25°	20	10/15/2020 11:07
CHROMIUM, TRIVALENT							
			Method: CALCULATION				Analyst: JB
Chromium, Trivalent	11		0.96	1.1	mg/Kg-dry	1	10/19/2020 10:15
CHROMIUM, HEXAVALENT							
			Method: SW7196A		Prep: SW3060A / 10/14/20		Analyst: RZM
Chromium, Hexavalent	1.3		0.96	1.1	mg/Kg-dry	1	10/14/2020 16:34
MOISTURE							
			Method: SW3550C				Analyst: ERW
Moisture	12		0.10	0.10	% of sample	1	10/16/2020 15:37
SOIL PH MEASURED IN WATER AT NOTED TEMP.							
			Method: SW9045D		Prep: SW9045D / 10/9/20		Analyst: QTN
pH	8.12		0.10	0.100	s.u.	1	10/12/2020 10:52
Temperature	20.4		0.10	0.100	°C	1	10/12/2020 10:52

Note: See Qualifiers page for a list of qualifiers and their definitions.

Client: Entrada Consulting Group
Work Order: 20100817
Project: Emerald 39 Spill

QC BATCH REPORT

Batch ID: **165766** Instrument ID **GC8** Method: **SW8015D**

MBLK				Sample ID: DBLKS1-165766-165766		Units: mg/Kg		Analysis Date: 10/13/2020 01:11 AM		
Client ID:		Run ID: GC8_201012A		SeqNo: 6786234		Prep Date: 10/12/2020		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	U	10								
Surr: 4-Terphenyl-d14	2.277	0	3.33	0	68.4	33-111	0			

LCS				Sample ID: DLCSS1-165766-165766		Units: mg/Kg		Analysis Date: 10/13/2020 01:50 AM		
Client ID:		Run ID: GC8_201012A		SeqNo: 6786235		Prep Date: 10/12/2020		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	325.2	10	333	0	97.7	80-121	0			
Surr: 4-Terphenyl-d14	2.02	0	3.33	0	60.7	33-111	0			

MS				Sample ID: 20100515-01A MS		Units: mg/Kg		Analysis Date: 10/13/2020 02:29 AM		
Client ID:		Run ID: GC8_201012A		SeqNo: 6786236		Prep Date: 10/12/2020		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	299.7	9.4	314.3	16.49	90.1	80-121	0			
Surr: 4-Terphenyl-d14	1.908	0	3.143	0	60.7	33-111	0			

MSD				Sample ID: 20100515-01A MSD		Units: mg/Kg		Analysis Date: 10/13/2020 03:08 AM		
Client ID:		Run ID: GC8_201012A		SeqNo: 6786237		Prep Date: 10/12/2020		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	292.3	9.5	317.3	16.49	86.9	80-121	299.7	2.49	30	
Surr: 4-Terphenyl-d14	1.948	0	3.173	0	61.4	33-111	1.908	2.08	30	

The following samples were analyzed in this batch:

20100817-01A	20100817-02A	20100817-03A
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Client: Entrada Consulting Group
 Work Order: 20100817
 Project: Emerald 39 Spill

QC BATCH REPORT

Batch ID: **165963** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: MBLK-165963-165963				Units: µg/Kg-dry		Analysis Date: 10/14/2020 07:51 PM		
Client ID:		Run ID: GC9_201014A				SeqNo: 6793060		Prep Date: 10/14/2020		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	U	5,000								
Surr: Toluene-d8	4732	0	5000	0	94.6	71-123	0			

LCS		Sample ID: LCS-165963-165963				Units: µg/Kg-dry		Analysis Date: 10/14/2020 07:04 PM		
Client ID:		Run ID: GC9_201014A				SeqNo: 6793071		Prep Date: 10/14/2020		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	238600	5,000	250000	0	95.5	71-123	0			
Surr: Toluene-d8	4116	0	5000	0	82.3	71-123	0			

MS		Sample ID: 20100817-01A MS				Units: µg/Kg-dry		Analysis Date: 10/14/2020 09:23 PM		
Client ID: EM 39-SS1		Run ID: GC9_201014A				SeqNo: 6793064		Prep Date: 10/14/2020		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	287100	6,800	339200	1227	84.3	71-123	0			
Surr: Toluene-d8	5747	0	6785	0	84.7	71-123	0			

MSD		Sample ID: 20100817-01A MSD				Units: µg/Kg-dry		Analysis Date: 10/14/2020 09:46 PM		
Client ID: EM 39-SS1		Run ID: GC9_201014A				SeqNo: 6793065		Prep Date: 10/14/2020		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	271100	6,300	316000	1227	85.4	71-123	287100	5.75	30	
Surr: Toluene-d8	5266	0	6321	0	83.3	71-123	5747	8.74	30	

The following samples were analyzed in this batch:

20100817-01A	20100817-02A	20100817-03A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Entrada Consulting Group
 Work Order: 20100817
 Project: Emerald 39 Spill

QC BATCH REPORT

Batch ID: **165789** Instrument ID **HG4** Method: **SW7471B**

MBLK		Sample ID: MBLK-165789-165789				Units: mg/Kg		Analysis Date: 10/12/2020 03:00 PM		
Client ID:		Run ID: HG4_201012A				SeqNo: 6784357		Prep Date: 10/12/2020		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury U 0.020

LCS		Sample ID: LCS-165789-165789				Units: mg/Kg		Analysis Date: 10/12/2020 03:07 PM		
Client ID:		Run ID: HG4_201012A				SeqNo: 6784361		Prep Date: 10/12/2020		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1625 0.020 0.1665 0 97.6 80-120 0

MS		Sample ID: 20100925-01BMS				Units: mg/Kg		Analysis Date: 10/12/2020 03:43 PM		
Client ID:		Run ID: HG4_201012A				SeqNo: 6784381		Prep Date: 10/12/2020		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1453 0.017 0.1376 0.005086 102 75-125 0

MSD		Sample ID: 20100925-01BMSD				Units: mg/Kg		Analysis Date: 10/12/2020 03:45 PM		
Client ID:		Run ID: HG4_201012A				SeqNo: 6784382		Prep Date: 10/12/2020		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1445 0.017 0.1401 0.005086 99.5 75-125 0.1453 0.591 35

The following samples were analyzed in this batch:

20100817-01A	20100817-02A	20100817-03A
20100817-04A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Entrada Consulting Group
Work Order: 20100817
Project: Emerald 39 Spill

QC BATCH REPORT

Batch ID: **165936** Instrument ID **ICP2** Method: **SW6010D**

Sample ID: MBLK-165936-165936				Units: mg/Kg		Analysis Date: 10/16/2020 05:48 PM				
Client ID:		Run ID: ICP2_201016A			SeqNo: 6803817		Prep Date: 10/14/2020		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.25								
Barium	U	0.50								
Cadmium	U	0.50								
Chromium	U	0.25								
Copper	U	0.50								
Lead	U	0.25								
Nickel	U	0.25								
Selenium	U	0.50								
Silver	U	0.25								
Zinc	U	0.50								

LCS					Sample ID: LCS-165936-165936			Units: mg/Kg		Analysis Date: 10/16/2020 05:53 PM		
Client ID:			Run ID: ICP2_201016A			SeqNo: 6803818		Prep Date: 10/14/2020		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual		
Arsenic	4.825	0.25	5	0	96.5	80-120	0					
Barium	5.236	0.50	5	0	105	80-120	0					
Cadmium	4.95	0.50	5	0	99	80-120	0					
Chromium	5.392	0.25	5	0	108	80-120	0					
Copper	5.085	0.50	5	0	102	80-120	0					
Lead	5.22	0.25	5	0	104	80-120	0					
Nickel	5.019	0.25	5	0	100	80-120	0					
Selenium	4.75	0.50	5	0	95	80-120	0					
Silver	5.107	0.25	5	0	102	80-120	0					
Zinc	4.665	0.50	5	0	93.3	80-120	0					

MS					Sample ID: 20100800-09AMS		Units: mg/Kg		Analysis Date: 10/16/2020 07:03 PM		
Client ID:			Run ID: ICP2_201016A			SeqNo: 6803832		Prep Date: 10/14/2020		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	7.654	0.37	7.321	0.8294	93.2	75-125	0				
Barium	22.25	0.73	7.321	13.15	124	75-125	0				
Cadmium	7.138	0.73	7.321	0.03466	97	75-125	0				
Chromium	12.94	0.37	7.321	5.164	106	75-125	0				
Copper	11.01	0.73	7.321	4.171	93.5	75-125	0				
Lead	10.46	0.37	7.321	2.911	103	75-125	0				
Nickel	10.46	0.37	7.321	3.513	94.9	75-125	0				
Selenium	6.969	0.73	7.321	-0.2347	98.4	75-125	0				
Silver	7.377	0.37	7.321	-0.1228	102	75-125	0				
Zinc	13.55	0.73	7.321	6.972	89.8	75-125	0				

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Entrada Consulting Group
Work Order: 20100817
Project: Emerald 39 Spill

QC BATCH REPORT

Batch ID: **165936** Instrument ID **ICP2** Method: **SW6010D**

MSD		Sample ID: 20100800-09AMSD				Units: mg/Kg		Analysis Date: 10/16/2020 07:08 PM		
Client ID:		Run ID: ICP2_201016A				SeqNo: 6803833		Prep Date: 10/14/2020		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	7.575	0.37	7.375	0.8294	91.5	75-125	7.654	1.04	20	
Barium	18.19	0.74	7.375	13.15	68.4	75-125	22.25	20.1	20	SR
Cadmium	7.168	0.74	7.375	0.03466	96.7	75-125	7.138	0.427	20	
Chromium	12.38	0.37	7.375	5.164	97.8	75-125	12.94	4.44	20	
Copper	10.61	0.74	7.375	4.171	87.3	75-125	11.01	3.74	20	
Lead	10.01	0.37	7.375	2.911	96.3	75-125	10.46	4.32	20	
Nickel	10.66	0.37	7.375	3.513	97	75-125	10.46	1.94	20	
Selenium	6.976	0.74	7.375	-0.2347	97.8	75-125	6.969	0.103	20	
Silver	7.345	0.37	7.375	-0.1228	101	75-125	7.377	0.427	20	
Zinc	13.05	0.74	7.375	6.972	82.4	75-125	13.55	3.77	20	

The following samples were analyzed in this batch:

20100817-04A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Entrada Consulting Group

Work Order: 20100817

Project: Emerald 39 Spill

QC BATCH REPORT

Batch ID: **165847**

Instrument ID **ICPMS3**

Method: **SW6020B**

Sample ID: MBLK-165847-165847				Units: mg/Kg		Analysis Date: 10/13/2020 11:33 PM				
Client ID:		Run ID: ICPMS3_201013B			SeqNo: 6787999		Prep Date: 10/13/2020		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.25								
Barium	U	0.25								
Cadmium	U	0.10								
Chromium	U	0.25								
Copper	U	0.25								
Lead	U	0.25								
Nickel	U	0.25								
Selenium	U	0.25								
Silver	U	0.25								
Zinc	U	0.50								

LCS				Sample ID: LCS-165847-165847			Units: mg/Kg		Analysis Date: 10/13/2020 11:34 PM		
Client ID:			Run ID: ICPMS3_201013B			SeqNo: 6788000		Prep Date: 10/13/2020		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Arsenic	5.056	0.25	5	0	101	80-120	0				
Barium	5.821	0.25	5	0	116	80-120	0				
Cadmium	5.749	0.10	5	0	115	80-120	0				
Chromium	5.18	0.25	5	0	104	80-120	0				
Copper	5.211	0.25	5	0	104	80-120	0				
Lead	5.776	0.25	5	0	116	80-120	0				
Nickel	4.997	0.25	5	0	99.9	80-120	0				
Silver	5.028	0.25	5	0	101	80-120	0				
Zinc	5.086	0.50	5	0	102	80-120	0				

LCS				Sample ID: LCS-165847-165847				Units: mg/Kg		Analysis Date: 10/14/2020 03:15 PM		
Client ID:			Run ID: ICPMS3_201014B				SeqNo: 6791643		Prep Date: 10/13/2020		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Selenium		5.001	0.25	5	0	100	80-120	0				

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Entrada Consulting Group
 Work Order: 20100817
 Project: Emerald 39 Spill

QC BATCH REPORT

Batch ID: **165847** Instrument ID **ICPMS3** Method: **SW6020B**

MS				Sample ID: 20100682-01BMS			Units: mg/Kg		Analysis Date: 10/13/2020 11:38 PM	
Client ID:		Run ID: ICPMS3_201013B			SeqNo: 6788002		Prep Date: 10/13/2020		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	9.909	0.37	7.364	3.385	88.6	75-125	0			
Barium	90.75	0.37	7.364	45.94	608	75-125	0			SO
Cadmium	5.865	0.15	7.364	-0.04709	80.3	75-125	0			
Chromium	25.49	0.37	7.364	12.67	174	75-125	0			S
Copper	18.43	0.37	7.364	9.621	120	75-125	0			
Lead	14.71	0.37	7.364	6.011	118	75-125	0			
Nickel	25.76	0.37	7.364	14.59	152	75-125	0			S
Selenium	6.619	0.37	7.364	0.863	78.2	75-125	0			
Silver	5.891	0.37	7.364	0.02006	79.7	75-125	0			
Zinc	39.29	0.74	7.364	26.93	168	75-125	0			S

MSD				Sample ID: 20100682-01BMSD			Units: mg/Kg		Analysis Date: 10/13/2020 11:40 PM	
Client ID:		Run ID: ICPMS3_201013B			SeqNo: 6788003		Prep Date: 10/13/2020		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	9.571	0.36	7.174	3.385	86.2	75-125	9.909	3.46	20	
Barium	79.41	0.36	7.174	45.94	467	75-125	90.75	13.3	20	SO
Cadmium	5.944	0.14	7.174	-0.04709	83.5	75-125	5.865	1.33	20	
Chromium	24.04	0.36	7.174	12.67	158	75-125	25.49	5.87	20	S
Copper	18.79	0.36	7.174	9.621	128	75-125	18.43	1.9	20	S
Lead	15.41	0.36	7.174	6.011	131	75-125	14.71	4.63	20	S
Nickel	24.21	0.36	7.174	14.59	134	75-125	25.76	6.22	20	S
Selenium	6.599	0.36	7.174	0.863	80	75-125	6.619	0.297	20	
Silver	5.754	0.36	7.174	0.02006	79.9	75-125	5.891	2.34	20	
Zinc	38.02	0.72	7.174	26.93	155	75-125	39.29	3.3	20	S

The following samples were analyzed in this batch:

20100817-01A 20100817-02A 20100817-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Entrada Consulting Group
Work Order: 20100817
Project: Emerald 39 Spill

QC BATCH REPORT

Batch ID: **165950** Instrument ID **ICPMS4** Method: **SW6020B**

DUP				Sample ID: 20100817-01BDUP			Units: mg/L		Analysis Date: 10/14/2020 07:50 PM		
Client ID: EM 39-SS1			Run ID: ICPMS4_201014A			SeqNo: 6793473		Prep Date: 10/14/2020		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Calcium	1572	5.0	0	0	0	0-0	1429	9.54			
Magnesium	786	2.0	0	0	0	0-0	454.1	53.5			

DUP					Sample ID: 20100817-01BDUP		Units: mg/L		Analysis Date: 10/15/2020 02:41 PM		
Client ID: EM 39-SS1			Run ID: ICPMS3_201015A			SeqNo: 6795867		Prep Date: 10/14/2020		DF: 100	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Sodium	2468	20	0	0	0	0-0	1703	36.7			

The following samples were analyzed in this batch:

20100817-01B	20100817-02B	20100817-03B
20100817-04B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Entrada Consulting Group
 Work Order: 20100817
 Project: Emerald 39 Spill

QC BATCH REPORT

Batch ID: **165797** Instrument ID **SVMS6** Method: **SW8270E**

MBLK				Sample ID: SBLKS1-165797-165797				Units: µg/Kg			Analysis Date: 10/12/2020 11:09 PM		
Client ID:			Run ID: SVMS6_201012A				SeqNo: 6785585		Prep Date: 10/12/2020		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Acenaphthene	U	4.2											
Anthracene	U	4.2											
Benzo(a)anthracene	U	4.2											
Benzo(a)pyrene	U	4.2											
Benzo(b)fluoranthene	U	4.2											
Benzo(k)fluoranthene	U	4.2											
Chrysene	U	4.2											
Dibenzo(a,h)anthracene	U	4.2											
Fluoranthene	U	4.2											
Fluorene	U	4.2											
Indeno(1,2,3-cd)pyrene	U	4.2											
Naphthalene	U	4.2											
Pyrene	U	4.2											
Surr: 2-Fluorobiphenyl	2999	0	3333	0	90	20-140		0					
Surr: 4-Terphenyl-d14	2527	0	3333	0	75.8	22-172		0					
Surr: Nitrobenzene-d5	2651	0	3333	0	79.5	28-140		0					

LCS				Sample ID: SLCSS1-165797-165797		Units: µg/Kg		Analysis Date: 10/12/2020 11:25 PM		
Client ID:		Run ID: SVMS6_201012A			SeqNo: 6785586		Prep Date: 10/12/2020		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1108	4.2	1333		0	83.1	40-140	0		
Anthracene	1125	4.2	1333		0	84.4	40-140	0		
Benzo(a)anthracene	1133	4.2	1333		0	85	40-140	0		
Benzo(a)pyrene	1114	4.2	1333		0	83.6	40-140	0		
Benzo(b)fluoranthene	1196	4.2	1333		0	89.7	40-140	0		
Benzo(k)fluoranthene	1115	4.2	1333		0	83.7	40-140	0		
Chrysene	1119	4.2	1333		0	84	40-140	0		
Dibenzo(a,h)anthracene	1141	4.2	1333		0	85.6	40-140	0		
Fluoranthene	1159	4.2	1333		0	87	40-140	0		
Fluorene	1075	4.2	1333		0	80.6	40-140	0		
Indeno(1,2,3-cd)pyrene	1101	4.2	1333		0	82.6	40-140	0		
Naphthalene	1155	4.2	1333		0	86.6	40-140	0		
Pyrene	839.4	4.2	1333		0	63	40-140	0		
Surr: 2-Fluorobiphenyl	3125	0	3333		0	93.7	20-140	0		
Surr: 4-Terphenyl-d14	2469	0	3333		0	74.1	22-172	0		
Surr: Nitrobenzene-d5	2282	0	3333		0	68.5	28-140	0		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Entrada Consulting Group
 Work Order: 20100817
 Project: Emerald 39 Spill

QC BATCH REPORT

Batch ID: **165797** Instrument ID **SVMS6** Method: **SW8270E**

MS				Sample ID: 20100682-02A MS			Units: µg/Kg		Analysis Date: 10/12/2020 11:41 PM	
Client ID:		Run ID: SVMS6_201012A			SeqNo: 6785587		Prep Date: 10/12/2020		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1076	4.1	1314	0	81.8	40-140	0			
Anthracene	1069	4.1	1314	0	81.3	40-140	0			
Benzo(a)anthracene	1103	4.1	1314	2.222	83.7	40-140	0			
Benzo(a)pyrene	1030	4.1	1314	5.025	78	40-140	0			
Benzo(b)fluoranthene	1141	4.1	1314	6.932	86.2	40-140	0			
Benzo(k)fluoranthene	1141	4.1	1314	1.758	86.7	40-140	0			
Chrysene	1072	4.1	1314	0	81.6	40-140	0			
Dibenzo(a,h)anthracene	1037	4.1	1314	0	78.9	40-140	0			
Fluoranthene	1113	4.1	1314	3.98	84.4	40-140	0			
Fluorene	1003	4.1	1314	0	76.3	40-140	0			
Indeno(1,2,3-cd)pyrene	984.2	4.1	1314	5.241	74.5	40-140	0			
Naphthalene	1125	4.1	1314	0	85.6	40-140	0			
Pyrene	882.3	4.1	1314	2.819	66.9	40-140	0			
Surr: 2-Fluorobiphenyl	3120	0	3287	0	94.9	20-140	0			
Surr: 4-Terphenyl-d14	2579	0	3287	0	78.5	22-172	0			
Surr: Nitrobenzene-d5	2671	0	3287	0	81.3	28-140	0			

MSD				Sample ID: 20100682-02A MSD			Units: µg/Kg		Analysis Date: 10/12/2020 11:56 PM	
Client ID:		Run ID: SVMS6_201012A			SeqNo: 6785588		Prep Date: 10/12/2020		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1126	4.0	1287	0	87.5	40-140	1076	4.58	30	
Anthracene	1128	4.0	1287	0	87.6	40-140	1069	5.39	30	
Benzo(a)anthracene	1161	4.0	1287	2.222	90.1	40-140	1103	5.16	30	
Benzo(a)pyrene	1069	4.0	1287	5.025	82.6	40-140	1030	3.71	30	
Benzo(b)fluoranthene	1179	4.0	1287	6.932	91	40-140	1141	3.29	30	
Benzo(k)fluoranthene	1173	4.0	1287	1.758	91	40-140	1141	2.78	30	
Chrysene	1127	4.0	1287	0	87.5	40-140	1072	4.94	30	
Dibenzo(a,h)anthracene	1070	4.0	1287	0	83.1	40-140	1037	3.1	30	
Fluoranthene	1194	4.0	1287	3.98	92.5	40-140	1113	7.01	30	
Fluorene	1060	4.0	1287	0	82.4	40-140	1003	5.52	30	
Indeno(1,2,3-cd)pyrene	1016	4.0	1287	5.241	78.5	40-140	984.2	3.18	30	
Naphthalene	1205	4.0	1287	0	93.6	40-140	1125	6.86	30	
Pyrene	934.5	4.0	1287	2.819	72.4	40-140	882.3	5.75	30	
Surr: 2-Fluorobiphenyl	3275	0	3218	0	102	20-140	3120	4.82	30	
Surr: 4-Terphenyl-d14	2745	0	3218	0	85.3	22-172	2579	6.23	30	
Surr: Nitrobenzene-d5	2737	0	3218	0	85	28-140	2671	2.41	30	

The following samples were analyzed in this batch:

20100817-01A 20100817-02A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Entrada Consulting Group
 Work Order: 20100817
 Project: Emerald 39 Spill

QC BATCH REPORT

Batch ID: **165859** Instrument ID **SVMS6** Method: **SW8270E**

MBLK				Sample ID: SBLKS1-165859-165859		Units: µg/Kg		Analysis Date: 10/14/2020 12:53 PM		
Client ID:		Run ID: SVMS6_201014A		SeqNo: 6791275		Prep Date: 10/13/2020		DF: 2		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	U	4.2								
Anthracene	U	4.2								
Benzo(a)anthracene	U	4.2								
Benzo(a)pyrene	U	4.2								
Benzo(b)fluoranthene	U	4.2								
Benzo(k)fluoranthene	U	4.2								
Chrysene	U	4.2								
Dibenzo(a,h)anthracene	U	4.2								
Fluoranthene	U	4.2								
Fluorene	U	4.2								
Indeno(1,2,3-cd)pyrene	U	4.2								
Naphthalene	U	4.2								
Pyrene	U	4.2								
Surr: 2-Fluorobiphenyl	3324	0	3333	0	99.7	20-140	0			
Surr: 4-Terphenyl-d14	3527	0	3333	0	106	22-172	0			
Surr: Nitrobenzene-d5	3251	0	3333	0	97.5	28-140	0			

LCS				Sample ID: SLCSS1-165859-165859		Units: µg/Kg		Analysis Date: 10/14/2020 01:08 PM		
Client ID:		Run ID: SVMS6_201014A		SeqNo: 6791276		Prep Date: 10/13/2020		DF: 2		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1176	8.3	1333	0	88.2	40-140	0			
Anthracene	1181	8.3	1333	0	88.6	40-140	0			
Benzo(a)anthracene	1211	8.3	1333	0	90.8	40-140	0			
Benzo(a)pyrene	1175	8.3	1333	0	88.2	40-140	0			
Benzo(b)fluoranthene	1208	8.3	1333	0	90.6	40-140	0			
Benzo(k)fluoranthene	1148	8.3	1333	0	86.1	40-140	0			
Chrysene	1232	8.3	1333	0	92.4	40-140	0			
Dibenzo(a,h)anthracene	1283	8.3	1333	0	96.2	40-140	0			
Fluoranthene	1112	8.3	1333	0	83.4	40-140	0			
Fluorene	1159	8.3	1333	0	87	40-140	0			
Indeno(1,2,3-cd)pyrene	1360	8.3	1333	0	102	40-140	0			
Naphthalene	1222	8.3	1333	0	91.6	40-140	0			
Pyrene	1280	8.3	1333	0	96	40-140	0			
Surr: 2-Fluorobiphenyl	3259	0	3333	0	97.8	20-140	0			
Surr: 4-Terphenyl-d14	3438	0	3333	0	103	22-172	0			
Surr: Nitrobenzene-d5	2831	0	3333	0	84.9	28-140	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Entrada Consulting Group
 Work Order: 20100817
 Project: Emerald 39 Spill

QC BATCH REPORT

Batch ID: **165859** Instrument ID **SVMS6** Method: **SW8270E**

MS				Sample ID: 20100832-07B MS			Units: µg/Kg		Analysis Date: 10/14/2020 01:24 PM	
Client ID:		Run ID: SVMS6_201014A			SeqNo: 6791277		Prep Date: 10/13/2020		DF: 2	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1150	8.3	1320	2.441	87	40-140	0			
Anthracene	1176	8.3	1320	5.641	88.7	40-140	0			
Benzo(a)anthracene	1244	8.3	1320	20.86	92.7	40-140	0			
Benzo(a)pyrene	1135	8.3	1320	21.59	84.4	40-140	0			
Benzo(b)fluoranthene	1195	8.3	1320	30.99	88.2	40-140	0			
Benzo(k)fluoranthene	1174	8.3	1320	10.01	88.2	40-140	0			
Chrysene	1266	8.3	1320	22.96	94.2	40-140	0			
Dibenzo(a,h)anthracene	1242	8.3	1320	2.886	93.9	40-140	0			
Fluoranthene	1212	8.3	1320	44.61	88.5	40-140	0			
Fluorene	1134	8.3	1320	0	85.9	40-140	0			
Indeno(1,2,3-cd)pyrene	1301	8.3	1320	18.75	97.2	40-140	0			
Naphthalene	1200	8.3	1320	0	90.9	40-140	0			
Pyrene	1378	8.3	1320	38.71	102	40-140	0			
Surr: 2-Fluorobiphenyl	3220	0	3300	0	97.6	20-140	0			
Surr: 4-Terphenyl-d14	3266	0	3300	0	99	22-172	0			
Surr: Nitrobenzene-d5	2803	0	3300	0	84.9	28-140	0			

MSD				Sample ID: 20100832-07B MSD			Units: µg/Kg		Analysis Date: 10/14/2020 01:40 PM	
Client ID:		Run ID: SVMS6_201014A			SeqNo: 6791278		Prep Date: 10/13/2020		DF: 2	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1146	8.2	1317	2.441	86.9	40-140	1150	0.341	30	
Anthracene	1171	8.2	1317	5.641	88.5	40-140	1176	0.469	30	
Benzo(a)anthracene	1207	8.2	1317	20.86	90.1	40-140	1244	3.04	30	
Benzo(a)pyrene	1125	8.2	1317	21.59	83.8	40-140	1135	0.885	30	
Benzo(b)fluoranthene	1181	8.2	1317	30.99	87.4	40-140	1195	1.1	30	
Benzo(k)fluoranthene	1144	8.2	1317	10.01	86.1	40-140	1174	2.6	30	
Chrysene	1234	8.2	1317	22.96	92	40-140	1266	2.57	30	
Dibenzo(a,h)anthracene	1263	8.2	1317	2.886	95.7	40-140	1242	1.69	30	
Fluoranthene	1104	8.2	1317	44.61	80.5	40-140	1212	9.32	30	
Fluorene	1122	8.2	1317	0	85.2	40-140	1134	1.01	30	
Indeno(1,2,3-cd)pyrene	1353	8.2	1317	18.75	101	40-140	1301	3.89	30	
Naphthalene	1186	8.2	1317	0	90.1	40-140	1200	1.14	30	
Pyrene	1303	8.2	1317	38.71	96	40-140	1378	5.61	30	
Surr: 2-Fluorobiphenyl	3197	0	3292	0	97.1	20-140	3220	0.695	30	
Surr: 4-Terphenyl-d14	3300	0	3292	0	100	22-172	3266	1.06	30	
Surr: Nitrobenzene-d5	2811	0	3292	0	85.4	28-140	2803	0.268	30	

The following samples were analyzed in this batch:

20100817-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Entrada Consulting Group
 Work Order: 20100817
 Project: Emerald 39 Spill

QC BATCH REPORT

Batch ID: **165964** Instrument ID **VMS8** Method: **SW8260C**

MS				Sample ID: 20100817-01A MS			Units: µg/Kg-dry		Analysis Date: 10/15/2020 09:14 AM	
Client ID: EM 39-SS1				Run ID: VMS8_201014B			SeqNo: 6795807		Prep Date: 10/14/2020	
									DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1426	39	1315	7.31	108	75-125	0			
Ethylbenzene	1592	39	1315	0	121	75-125	0			
m,p-Xylene	2827	79	2630	0	107	80-125	0			
o-Xylene	1573	39	1315	0	120	75-125	0			
Toluene	1477	39	1315	0	112	70-125	0			
Xylenes, Total	4400	120	3946	0	112	75-125	0			
Surr: 1,2-Dichloroethane-d4	1318	0	1315	0	100	70-130	0			
Surr: 4-Bromofluorobenzene	1340	0	1315	0	102	70-130	0			
Surr: Dibromofluoromethane	1329	0	1315	0	101	70-130	0			
Surr: Toluene-d8	1299	0	1315	0	98.8	70-130	0			

MSD				Sample ID: 20100817-01A MSD			Units: µg/Kg-dry		Analysis Date: 10/15/2020 09:30 AM	
Client ID: EM 39-SS1				Run ID: VMS8_201014B			SeqNo: 6795808		Prep Date: 10/14/2020	
									DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1447	39	1315	7.31	109	75-125	1426	1.46	30	
Ethylbenzene	1598	39	1315	0	121	75-125	1592	0.371	30	
m,p-Xylene	2790	79	2630	0	106	80-125	2827	1.33	30	
o-Xylene	1566	39	1315	0	119	75-125	1573	0.419	30	
Toluene	1488	39	1315	0	113	70-125	1477	0.71	30	
Xylenes, Total	4356	120	3946	0	110	75-125	4400	1.01	30	
Surr: 1,2-Dichloroethane-d4	1310	0	1315	0	99.6	70-130	1318	0.601	30	
Surr: 4-Bromofluorobenzene	1318	0	1315	0	100	70-130	1340	1.63	30	
Surr: Dibromofluoromethane	1303	0	1315	0	99.1	70-130	1329	2	30	
Surr: Toluene-d8	1269	0	1315	0	96.5	70-130	1299	2.3	30	

The following samples were analyzed in this batch:

20100817-01A 20100817-02A 20100817-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Entrada Consulting Group
Work Order: 20100817
Project: Emerald 39 Spill

QC BATCH REPORT

Batch ID: **165725** Instrument ID **WETCHEM** Method: **SW9045D**

LCS		Sample ID: LCS-165725-165725				Units: s.u.		Analysis Date: 10/12/2020 10:52 AM		
Client ID:		Run ID: WETCHEM_201012I				SeqNo: 6783211		Prep Date: 10/9/2020		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	3.96	0.10	4	0	99	90-110	0			

DUP		Sample ID: 20100730-07A DUP				Units: s.u.		Analysis Date: 10/12/2020 10:52 AM		
Client ID:		Run ID: WETCHEM_201012I				SeqNo: 6783213		Prep Date: 10/9/2020		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.86	0.10	0	0	0	0-0	7.83	0.382	20	
Temperature	20.7	0.10	0	0	0		20.7	0		

DUP		Sample ID: 20100819-01A DUP				Units: s.u.		Analysis Date: 10/12/2020 10:52 AM		
Client ID:		Run ID: WETCHEM_201012I				SeqNo: 6783228		Prep Date: 10/9/2020		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.51	0.10	0	0	0	0-0	7.56	0.664	20	
Temperature	20.4	0.10	0	0	0		20.5	0.489		

The following samples were analyzed in this batch:

20100817-01A	20100817-02A	20100817-03A
20100817-04A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Entrada Consulting Group
 Work Order: 20100817
 Project: Emerald 39 Spill

QC BATCH REPORT

Batch ID: **165927** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK		Sample ID: MBLK-165927-165927				Units: mg/Kg		Analysis Date: 10/14/2020 04:34 PM		
Client ID:		Run ID: WETCHEM_201014M				SeqNo: 6791980		Prep Date: 10/14/2020		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent U 1.0

LCS		Sample ID: LCS-165927-165927				Units: mg/Kg		Analysis Date: 10/14/2020 04:34 PM		
Client ID:		Run ID: WETCHEM_201014M				SeqNo: 6791981		Prep Date: 10/14/2020		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.87 1.0 5 0 97.4 80-120 0

MS		Sample ID: 20100817-01A MS				Units: mg/Kg		Analysis Date: 10/14/2020 04:34 PM		
Client ID: EM 39-SS1		Run ID: WETCHEM_201014M				SeqNo: 6791983		Prep Date: 10/14/2020		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 3.55 1.0 5 0.67 57.6 75-125 0 S

MS		Sample ID: 20100817-01A MSI				Units: mg/Kg		Analysis Date: 10/14/2020 04:34 PM		
Client ID: EM 39-SS1		Run ID: WETCHEM_201014M				SeqNo: 6791985		Prep Date: 10/14/2020		DF: 200
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4044 200 4586 0.67 88.2 75-125 0

MSD		Sample ID: 20100817-01A MSD				Units: mg/Kg		Analysis Date: 10/14/2020 04:34 PM		
Client ID: EM 39-SS1		Run ID: WETCHEM_201014M				SeqNo: 6791984		Prep Date: 10/14/2020		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 3.55 1.0 5 0.67 57.6 75-125 3.55 0 20 S

The following samples were analyzed in this batch:

20100817-01A	20100817-02A	20100817-03A
20100817-04A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Entrada Consulting Group
Work Order: 20100817
Project: Emerald 39 Spill

QC BATCH REPORT

Batch ID: **165950** Instrument ID **WETCHEM** Method: **USDA H60 Method**

DUP		Sample ID: 20100817-01B DUP				Units: mmhos/cm @25°		Analysis Date: 10/15/2020 11:07 AM		
Client ID: EM 39-SS1		Run ID: WETCHEM_201015D		SeqNo: 6795093		Prep Date: 10/14/2020		DF: 20		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	15.46	0.10	0	0	0		15.04	2.75	50	

The following samples were analyzed in this batch:

20100817-01B	20100817-02B	20100817-03B
20100817-04B		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Entrada Consulting Group
 Work Order: 20100817
 Project: Emerald 39 Spill

QC BATCH REPORT

Batch ID: **R300632** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R300632				Units: % of sample		Analysis Date: 10/16/2020 02:41 PM		
Client ID:		Run ID: MOIST_201016B				SeqNo: 6805363		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture U 0.10

LCS		Sample ID: LCS-R300632				Units: % of sample		Analysis Date: 10/16/2020 02:41 PM		
Client ID:		Run ID: MOIST_201016B				SeqNo: 6805362		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 99.99 0.10 100 0 100 98-102 0

DUP		Sample ID: 20100800-01A DUP				Units: % of sample		Analysis Date: 10/16/2020 02:41 PM		
Client ID:		Run ID: MOIST_201016B				SeqNo: 6805347		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 5.72 0.10 0 0 0 0-0 5.68 0.702 10

DUP		Sample ID: 20100800-11B DUP				Units: % of sample		Analysis Date: 10/16/2020 02:41 PM		
Client ID:		Run ID: MOIST_201016B				SeqNo: 6805358		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 2.1 0.10 0 0 0 0-0 2.11 0.475 10

The following samples were analyzed in this batch:

20100817-01A 20100817-02A 20100817-03A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Entrada Consulting Group
 Work Order: 20100817
 Project: Emerald 39 Spill

QC BATCH REPORT

Batch ID: **R300634** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R300634				Units: % of sample		Analysis Date: 10/16/2020 03:37 PM		
Client ID:		Run ID: MOIST_201016C				SeqNo: 6805395		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	U	0.10								

LCS		Sample ID: LCS-R300634				Units: % of sample		Analysis Date: 10/16/2020 03:37 PM		
Client ID:		Run ID: MOIST_201016C				SeqNo: 6805394		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	99.99	0.10	100	0	100	98-102	0			

DUP		Sample ID: 20100817-04A DUP				Units: % of sample		Analysis Date: 10/16/2020 03:37 PM		
Client ID: EM 39-BG1		Run ID: MOIST_201016C				SeqNo: 6805379		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	11.98	0.10	0	0	0	0-0	12.02	0.333	10	

DUP		Sample ID: 20100819-02A DUP				Units: % of sample		Analysis Date: 10/16/2020 03:37 PM		
Client ID:		Run ID: MOIST_201016C				SeqNo: 6805382		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	14.14	0.10	0	0	0	0-0	13.99	1.07	10	

The following samples were analyzed in this batch:

20100817-04A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.



Chain of Custody Form

Page 1 of 1

COC ID: 123456

☐ Cincinnati, OH
+1 513 733 5336

☐ Everett, WA
+1 425 356 2600

☐ Fort Collins, CO
+1 970 490 1511

☒ Holland, MI
+1 616 399 6070

☐ Houston, TX
+1 281 530 5656

☐ Middletown, PA
+1 717 944 5541

☐ Salt Lake City, UT
+1 801 266 7700

☐ Spring City, PA
+1 610 948 4903

☐ York, PA
+1 717 505 5280

Customer Information		Project Information					Parameter/Method Request for Analysis													
Purchase Order		Project Name	Emerald 39 Spill					A TPH (GRO & DRO)												
Work Order		Project Number	018-065					B BTEX												
Company Name	Entrada Consulting Group	Bill To Company	Entrada Consulting Group					C PAH (See Attached List) CO Table 910												
Send Report To	Tim Dobransky	Invoice Attn.	Tim Dobransky					D Electrical Conductivity												
Address	330 Grand Ave, STE C	Address						E Sodium Adsorption Ratio												
City/State/Zip	Grand Junction, CO 81501	City/State/Zip						F pH												
Phone	970.270.2986	Phone						G Metals (See Attached List) CO Table 910												
Fax		Fax						H Arsenic Only												
e-Mail Address	tdobransky@entradainc.com	e-Mail Address						I												
								J												
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold			
1	EM 39-SS1	10/05/20	1130	Soil	8	2	X	X	X	X	X	X	X							
2	EM 39-SS2	10/05/20	1145	Soil	8	2	X	X	X	X	X	X	X							
3	EM 39-SS3	10/05/20	1200	Soil	8	2	X	X	X	X	X	X	X							
4	EM 39-BG1	10/05/20	1215	Soil	8	2				X	X	X	X							
5																				
6																				
7																				
8																				
9																				
10																				
Sampler(s): Please Print & Sign		Shipment Method:		Required Turnaround Time:				Other				Results Due Date:								
<i>[Signature]</i>		FedEx		<input type="checkbox"/> STD 10 Wk Days <input checked="" type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour																
Relinquished by:	Date:	Time:	Received by:				Notes:													
<i>[Signature]</i>	10/6/20	1200	<i>[Signature]</i>				Chevron Pricing Applies - Per Bruce Schlatter													
Relinquished by:	Date:	Time:	Received by (Laboratory):				Cooler Temp.													
<i>[Signature]</i>	10-6-20	1830	<i>[Signature]</i>				<input checked="" type="checkbox"/> Level II: Standard QC <input type="checkbox"/> Level III: Std QC + Raw Data <input type="checkbox"/> Level IV: SW846 CLP-Like													
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):				Other:													
<i>[Signature]</i>	10/9/20	0835	<i>[Signature]</i>				Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NAHSO4 7-Other 8-4 degree C 9-5035 1R3													

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

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Sample Receipt Checklist

Client Name: **ENTRADA**

Date/Time Received: **08-Oct-20 10:30**

Work Order: **20100817**

Received by: **KRW**

Checklist completed by **Keith Wierenga**

09-Oct-20

Reviewed by: **Chad Whelton**

09-Oct-20

eSignature

Date

eSignature

Date

Matrices: **Soil**

Carrier name: **FedEx**

Shipping container/cooler in good condition? Yes ☒ No ☐ Not Present ☐

Custody seals intact on shipping container/cooler? Yes ☐ No ☐ Not Present ☒

Custody seals intact on sample bottles? Yes ☐ No ☐ Not Present ☒

Chain of custody present? Yes ☒ No ☐

Chain of custody signed when relinquished and received? Yes ☒ No ☐

Chain of custody agrees with sample labels? Yes ☒ No ☐

Samples in proper container/bottle? Yes ☒ No ☐

Sample containers intact? Yes ☒ No ☐

Sufficient sample volume for indicated test? Yes ☒ No ☐

All samples received within holding time? Yes ☒ No ☐

Container/Temp Blank temperature in compliance? Yes ☒ No ☐

Sample(s) received on ice? Yes ☒ No ☐

Temperature(s)/Thermometer(s): **4.2/5.2 C** **IR3**

Cooler(s)/Kit(s):

Date/Time sample(s) sent to storage: **10/9/2020 8:40:44 AM**

Water - VOA vials have zero headspace? Yes ☐ No ☐ No VOA vials submitted ☒

Water - pH acceptable upon receipt? Yes ☐ No ☐ N/A ☒

pH adjusted? Yes ☐ No ☐ N/A ☒

pH adjusted by: **-**

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction: