



**Legend**

- Spill Origin
- Other Soil Sample Location
- Spill Area

DISCLAIMER : This Geographic Information System (GIS) and its components are designed as a source of reference for answering inquiries, for planning and for modeling. GIS is not intended, nor does it replace legal description information in the chain of title and other information contained in official government records such as the County Clerk and Records office or the courts. In addition, the representations of locations in this GIS cannot be substituted for actual legal surveys.



Project Number: 018-065	<b>Emerald 9 Spill Response</b> Chevron USA, Inc Rio Blanco County, Colorado SWNE S26 T2N R103W	 330 Grand Avenue, Suite C Grand Junction, CO 81501 P: 970.549.1015	Figure
Drawn By: TPD			1
Revision Date: 8/25/2020			

F:\Projects\013-3287(Chevron - Rangely Environmental)\2016\Spills\GIS\Spill Response Maps.mxd

**Table 1  
Emerald 9  
Soil Data Summary**

SAMPLE SUMMARY	
Location Description	Chevron Emerald 9 Spill
Sample Type	Soil

LABORATORY DATA SUMMARY						
Sample ID	EM 9-SS1	EM 9-SS1	EM 9-SS2	EM 9-BG1	COGCC TABLE 910-1 CONCENTRATION LEVELS	UNITS
Depth	0"-6"	0"-6"	0"-6"	0"-6"		
Sample Date	11/3/2016	8/13/2020	11/3/2016	11/3/2016		
Analytical Parameters						
TPH						
TPH Gasoline Range Organics	<3.1	NT	<3.7	NT	500	mg/kg
TPH Diesel Range Organics	38	NT	30	NT		
BTEX						
Benzene	<0.037	NT	<0.044	NT	0.17	mg/kg
Toluene	<0.037	NT	<0.044	NT	85	mg/kg
Ethylbenzene	<0.037	NT	<0.044	NT	100	mg/kg
Total Xylene	<0.11	NT	<0.13	NT	175	mg/kg
Metals						
Arsenic	8.7	NT	11	10	0.39	mg/kg
Barium	230	NT	370	31	15,000	mg/kg
Cadmium	<0.45	NT	<0.41	<0.45	70	mg/kg
Chromium	12	NT	15	6.0	NA	mg/kg
Copper	19	NT	18	7.1	3,100	mg/kg
Lead	15	NT	25	7.9	400	mg/kg
Mercury	0.021	NT	0.025	0.030	23	mg/kg
Nickel	19	NT	22	15	1,600	mg/kg
Selenium	<0.91	NT	<0.82	<0.91	390	mg/kg
Silver	<0.45	NT	<0.41	<0.45	390	mg/kg
Zinc	79	NT	110	47	23,000	mg/kg
SAR Metals Analysis						
Calcium	470	NT	120	500	NA	mg/L
Magnesium	130	NT	11	9.6	NA	mg/L
Sodium	840	NT	280	3.0	NA	mg/L
Sodium Adsorption Ratio	8.9	NT	6.6	0.036	<12	ratio
Polynuclear Aromatic Hyrdrocarbons						
Acenaphthene	<0.0072	NT	<0.0081	NT	1,000	mg/kg
Anthracene	<0.0072	NT	<0.0081	NT	1,000	mg/kg
Benzo(a)anthracene	<0.0072	NT	<0.0081	NT	0.22	mg/kg
Benzo(a)pyrene	<0.0072	NT	<0.0081	NT	0.022	mg/kg
Benzo(b)fluoranthene	<0.0072	NT	<0.0081	NT	0.22	mg/kg
Benzo(k)fluoranthene	<0.0072	NT	<0.0081	NT	2.2	mg/kg
Chrysene	<0.0072	NT	<0.0081	NT	22	mg/kg
Dibenzo(a,h)anthracene	<0.0072	NT	<0.0081	NT	0.022	mg/kg
Fluoranthene	0.010	NT	<0.0081	NT	1,000	mg/kg
Fluorene	<0.0072	NT	<0.0081	NT	1,000	mg/kg
Indeno(1,2,3-cd)pyrene	<0.0072	NT	<0.0081	NT	0.22	mg/kg
Napthalene	<0.0072	NT	<0.0081	NT	23	mg/kg
Pyrene	<0.0072	NT	<0.0081	NT	1,000	mg/kg
General Chemistry						
Chromium, Hexavalent	<1.1	NT	<1.2	<1.1	23	mg/kg
Chromium, Trivalent	12	NT	15	6.0	120,000	mg/kg
Specific Conductivity	12	1.7	3.6	4.6	<4 or 2 x the background	mmhos/cm
pH	7.7	NT	8.4	7.2	6-9	su

mg/kg - milligrams per kilogram  
mg/L - milligrams per liter  
J - indicates an estimated value  
mmhos/cm - millimhos per centimeter  
mv - millivolts  
su - standard units  
NA - not applicable  
NT - parameter was not tested

Over COGCC Table 910-1 concentration levels but under BACKGROUND level.

Over COGCC Table 910-1 concentration levels and not within BACKGROUND level.

Over COGCC Table 910-1 concentration levels



18-Nov-2016

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

Re: **Emerald 9**

Work Order: **1611420**

Dear Tim,

ALS Environmental received 3 samples on 05-Nov-2016 09:30 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 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 26.

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 Ave Holland, Michigan 49424 | PHONE (616) 399-6070 | FAX (616) 399-6185

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Environmental 

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RIGHT SOLUTIONS RIGHT PARTNER

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**Client:** Olsson Associates  
**Project:** Emerald 9  
**Work Order:** 1611420

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**Work Order Sample Summary**

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<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>
1611420-01	EM9-SS1	Soil		11/3/2016 10:30	11/5/2016 09:30	<input type="checkbox"/>
1611420-02	EM9-SS2	Soil		11/3/2016 10:40	11/5/2016 09:30	<input type="checkbox"/>
1611420-03	EM9-BG1	Soil		11/3/2016 10:55	11/5/2016 09:30	<input type="checkbox"/>

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**Client:** Olsson Associates  
**Project:** Emerald 9  
**Work Order:** 1611420

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**Case Narrative**

Batch 94498, Method ICP\_6010\_S, Sample 1611420-03A MS/MSD: The MS and MSD recovery was below the lower control limit for Arsenic. The corresponding result in the parent sample may be biased low.

Batch 94498, Method ICP\_6010\_S, Sample 1611420-03A MS/MSD: The MS and MSD recovery was above the upper control limit for Barium. The corresponding result in the parent sample may be biased high.

Batch 94498, Method ICP\_6010\_S, Sample 1611420-03A MS/MSD: The MS and MSD recovery was outside of the control limit for Zinc; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required.

Batch 94498, Method ICP\_6010\_S, Sample 1611420-03AMS: The MS recovery was above the upper control limit for Chromium. However, the MSD recovery and the RPD between the MS and MSD were within control limits. No qualification is required.

Batch 94498, Method ICP\_6010\_S, Sample 1611420-03A MSD: The MSD recovery was below the lower control limit for Nickel. However, the MS recovery and the RPD between the MS and MSD were within control limits. No qualification is required.

Client: Olsson Associates

Project: Emerald 9

WorkOrder: 1611420

**QUALIFIERS,  
ACRONYMS, UNITS**

<b><u>Qualifier</u></b>	<b><u>Description</u></b>
*	Value exceeds Regulatory Limit
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
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.

<b><u>Acronym</u></b>	<b><u>Description</u></b>
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

<b><u>Units Reported</u></b>	<b><u>Description</u></b>
% 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

Date: 18-Nov-16

**Client:** Olsson Associates  
**Project:** Emerald 9  
**Sample ID:** EM9-SS1  
**Collection Date:** 11/3/2016 10:30 AM

**Work Order:** 1611420  
**Lab ID:** 1611420-01  
**Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>						
			<b>SW8015M</b>		Prep: SW3546 / 11/16/16	Analyst: <b>IT</b>
<b>DRO (C10-C28)</b>	<b>38</b>		<b>5.4</b>	<b>mg/Kg-dry</b>	<b>1</b>	11/16/2016 09:54 PM
<i>Surr: 4-Terphenyl-d14</i>	<i>49.1</i>		<i>39-133</i>	<i>%REC</i>	<i>1</i>	11/16/2016 09:54 PM
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>						
			<b>SW8015D</b>		Prep: SW5035 / 11/14/16	Analyst: <b>IT</b>
<b>GRO (C6-C10)</b>	<b>ND</b>		<b>3.1</b>	<b>mg/Kg-dry</b>	<b>1</b>	11/14/2016 06:16 PM
<i>Surr: Toluene-d8</i>	<i>98.4</i>		<i>50-150</i>	<i>%REC</i>	<i>1</i>	11/14/2016 06:16 PM
<b>MERCURY BY CVAA</b>						
			<b>SW7471B</b>		Prep: SW7471 / 11/16/16	Analyst: <b>LR</b>
<b>Mercury</b>	<b>0.021</b>		<b>0.016</b>	<b>mg/Kg-dry</b>	<b>1</b>	11/16/2016 11:30 PM
<b>METALS ANALYSIS BY ICP</b>						
			<b>SW846 6010C</b>		Prep: SW3050B / 11/14/16	Analyst: <b>RH</b>
<b>Arsenic</b>	<b>8.7</b>		<b>0.45</b>	<b>mg/Kg-dry</b>	<b>1</b>	11/15/2016 12:15 PM
<b>Barium</b>	<b>230</b>		<b>0.45</b>	<b>mg/Kg-dry</b>	<b>1</b>	11/15/2016 12:15 PM
<b>Cadmium</b>	<b>ND</b>		<b>0.45</b>	<b>mg/Kg-dry</b>	<b>1</b>	11/15/2016 12:15 PM
<b>Chromium</b>	<b>12</b>		<b>0.45</b>	<b>mg/Kg-dry</b>	<b>1</b>	11/15/2016 12:15 PM
<b>Copper</b>	<b>19</b>		<b>0.45</b>	<b>mg/Kg-dry</b>	<b>1</b>	11/15/2016 12:15 PM
<b>Lead</b>	<b>15</b>		<b>0.45</b>	<b>mg/Kg-dry</b>	<b>1</b>	11/15/2016 12:15 PM
<b>Nickel</b>	<b>19</b>		<b>0.45</b>	<b>mg/Kg-dry</b>	<b>1</b>	11/15/2016 12:15 PM
<b>Selenium</b>	<b>ND</b>		<b>0.91</b>	<b>mg/Kg-dry</b>	<b>1</b>	11/15/2016 12:15 PM
<b>Silver</b>	<b>ND</b>		<b>0.45</b>	<b>mg/Kg-dry</b>	<b>1</b>	11/15/2016 12:15 PM
<b>Zinc</b>	<b>79</b>		<b>0.91</b>	<b>mg/Kg-dry</b>	<b>1</b>	11/15/2016 12:15 PM
<b>SOLUBLE CATIONS FOR SAR</b>						
			<b>SW846 6010C</b>		Prep: USDA Method 20B / 11/11/16	Analyst: <b>RH</b>
<b>Calcium</b>	<b>470</b>		<b>5.0</b>	<b>mg/L</b>	<b>10</b>	11/14/2016 10:30 PM
<b>Magnesium</b>	<b>130</b>		<b>2.0</b>	<b>mg/L</b>	<b>10</b>	11/14/2016 10:30 PM
<b>Sodium</b>	<b>840</b>		<b>2.0</b>	<b>mg/L</b>	<b>10</b>	11/14/2016 10:30 PM
<b>SODIUM ADSORPTION RATIO</b>						
			<b>USDA H60 METHO</b>		Prep: USDA Method 20B / 11/11/16	Analyst: <b>RH</b>
<b>Exchangeable Sodium Percentage</b>	<b>11</b>		<b>0.010</b>	<b>none</b>	<b>1</b>	11/14/2016
<b>Sodium Adsorption Ratio</b>	<b>8.9</b>		<b>0.010</b>	<b>none</b>	<b>1</b>	11/14/2016
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>						
			<b>SW846 8270D</b>		Prep: SW3546 / 11/16/16	Analyst: <b>JF</b>
<b>Acenaphthene</b>	<b>ND</b>		<b>0.0072</b>	<b>mg/Kg-dry</b>	<b>1</b>	11/17/2016 03:59 AM
<b>Anthracene</b>	<b>ND</b>		<b>0.0072</b>	<b>mg/Kg-dry</b>	<b>1</b>	11/17/2016 03:59 AM
<b>Benzo(a)anthracene</b>	<b>ND</b>		<b>0.0072</b>	<b>mg/Kg-dry</b>	<b>1</b>	11/17/2016 03:59 AM
<b>Benzo(a)pyrene</b>	<b>ND</b>		<b>0.0072</b>	<b>mg/Kg-dry</b>	<b>1</b>	11/17/2016 03:59 AM
<b>Benzo(b)fluoranthene</b>	<b>ND</b>		<b>0.0072</b>	<b>mg/Kg-dry</b>	<b>1</b>	11/17/2016 03:59 AM
<b>Benzo(k)fluoranthene</b>	<b>ND</b>		<b>0.0072</b>	<b>mg/Kg-dry</b>	<b>1</b>	11/17/2016 03:59 AM
<b>Chrysene</b>	<b>ND</b>		<b>0.0072</b>	<b>mg/Kg-dry</b>	<b>1</b>	11/17/2016 03:59 AM
<b>Dibenzo(a,h)anthracene</b>	<b>ND</b>		<b>0.0072</b>	<b>mg/Kg-dry</b>	<b>1</b>	11/17/2016 03:59 AM

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



# ALS Group, USA

Date: 18-Nov-16

**Client:** Olsson Associates  
**Project:** Emerald 9  
**Sample ID:** EM9-SS1  
**Collection Date:** 11/3/2016 10:30 AM

**Work Order:** 1611420  
**Lab ID:** 1611420-01  
**Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>Fluoranthene</b>	<b>0.010</b>		<b>0.0072</b>	<b>mg/Kg-dry</b>	<b>1</b>	11/17/2016 03:59 AM
Fluorene	ND		0.0072	mg/Kg-dry	1	11/17/2016 03:59 AM
Indeno(1,2,3-cd)pyrene	ND		0.0072	mg/Kg-dry	1	11/17/2016 03:59 AM
Naphthalene	ND		0.0072	mg/Kg-dry	1	11/17/2016 03:59 AM
Pyrene	ND		0.0072	mg/Kg-dry	1	11/17/2016 03:59 AM
Surr: 2-Fluorobiphenyl	79.8		12-100	%REC	1	11/17/2016 03:59 AM
Surr: 4-Terphenyl-d14	80.0		25-137	%REC	1	11/17/2016 03:59 AM
Surr: Nitrobenzene-d5	62.5		37-107	%REC	1	11/17/2016 03:59 AM
<b>VOLATILE ORGANIC COMPOUNDS</b>			<b>SW8260B</b>	Prep: SW5035 / 11/13/16		Analyst: <b>AK</b>
Benzene	ND		0.037	mg/Kg-dry	1	11/16/2016 08:30 AM
Ethylbenzene	ND		0.037	mg/Kg-dry	1	11/16/2016 08:30 AM
m,p-Xylene	ND		0.075	mg/Kg-dry	1	11/16/2016 08:30 AM
o-Xylene	ND		0.037	mg/Kg-dry	1	11/16/2016 08:30 AM
Toluene	ND		0.037	mg/Kg-dry	1	11/16/2016 08:30 AM
Xylenes, Total	ND		0.11	mg/Kg-dry	1	11/16/2016 08:30 AM
Surr: 1,2-Dichloroethane-d4	82.2		70-130	%REC	1	11/16/2016 08:30 AM
Surr: 4-Bromofluorobenzene	95.8		70-130	%REC	1	11/16/2016 08:30 AM
Surr: Dibromofluoromethane	89.0		70-130	%REC	1	11/16/2016 08:30 AM
Surr: Toluene-d8	90.3		70-130	%REC	1	11/16/2016 08:30 AM
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>			<b>USDA H60 METHO</b>	Prep: USDA Method 20B / 11/11/16		Analyst: <b>JB</b>
Electrical Conductivity @ Saturation	12		0.25	mmhos/cm @2	50	11/17/2016 04:45 PM
<b>CHROMIUM, TRIVALENT</b>			<b>CALCULATION</b>			Analyst: <b>JB</b>
Chromium, Trivalent	12		0.56	mg/Kg-dry	1	11/16/2016 08:20 AM
<b>CHROMIUM, HEXAVALENT</b>			<b>SW7196A</b>	Prep: SW3060A / 11/14/16		Analyst: <b>MB</b>
Chromium, Hexavalent	ND		1.1	mg/Kg-dry	1	11/15/2016 05:00 PM
<b>MOISTURE</b>			<b>SW3550C</b>			Analyst: <b>EDL</b>
Moisture	11		0.050	% of sample	1	11/11/2016 05:14 PM
<b>PH</b>			<b>SW9045D</b>	Prep: EXTRACT / 11/7/16		Analyst: <b>RZM</b>
pH	7.7			s.u.	1	11/8/2016 09:40 AM

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



# ALS Group, USA

Date: 18-Nov-16

**Client:** Olsson Associates  
**Project:** Emerald 9  
**Sample ID:** EM9-SS2  
**Collection Date:** 11/3/2016 10:40 AM

**Work Order:** 1611420  
**Lab ID:** 1611420-02  
**Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>						
			<b>SW8015M</b>		Prep: SW3546 / 11/16/16	Analyst: <b>IT</b>
<b>DRO (C10-C28)</b>	<b>30</b>		<b>6.1</b>	<b>mg/Kg-dry</b>	1	11/16/2016 10:24 PM
Surr: 4-Terphenyl-d14	50.7		39-133	%REC	1	11/16/2016 10:24 PM
<b>GASOLINE RANGE ORGANICS BY GC-FID</b>						
			<b>SW8015D</b>		Prep: SW5035 / 11/14/16	Analyst: <b>IT</b>
GRO (C6-C10)	ND		3.7	mg/Kg-dry	1	11/14/2016 06:41 PM
Surr: Toluene-d8	98.3		50-150	%REC	1	11/14/2016 06:41 PM
<b>MERCURY BY CVAA</b>						
			<b>SW7471B</b>		Prep: SW7471 / 11/16/16	Analyst: <b>LR</b>
<b>Mercury</b>	<b>0.025</b>		<b>0.016</b>	<b>mg/Kg-dry</b>	1	11/16/2016 11:32 PM
<b>METALS ANALYSIS BY ICP</b>						
			<b>SW846 6010C</b>		Prep: SW3050B / 11/14/16	Analyst: <b>RH</b>
<b>Arsenic</b>	<b>11</b>		<b>0.41</b>	<b>mg/Kg-dry</b>	1	11/15/2016 12:20 PM
<b>Barium</b>	<b>370</b>		<b>0.41</b>	<b>mg/Kg-dry</b>	1	11/15/2016 12:20 PM
Cadmium	ND		0.41	mg/Kg-dry	1	11/15/2016 12:20 PM
<b>Chromium</b>	<b>15</b>		<b>0.41</b>	<b>mg/Kg-dry</b>	1	11/15/2016 12:20 PM
<b>Copper</b>	<b>18</b>		<b>0.41</b>	<b>mg/Kg-dry</b>	1	11/15/2016 12:20 PM
<b>Lead</b>	<b>25</b>		<b>0.41</b>	<b>mg/Kg-dry</b>	1	11/15/2016 12:20 PM
<b>Nickel</b>	<b>22</b>		<b>0.41</b>	<b>mg/Kg-dry</b>	1	11/15/2016 12:20 PM
Selenium	ND		0.82	mg/Kg-dry	1	11/15/2016 12:20 PM
Silver	ND		0.41	mg/Kg-dry	1	11/15/2016 12:20 PM
<b>Zinc</b>	<b>110</b>		<b>0.82</b>	<b>mg/Kg-dry</b>	1	11/15/2016 12:20 PM
<b>SOLUBLE CATIONS FOR SAR</b>						
			<b>SW846 6010C</b>		Prep: USDA Method 20B / 11/11/16	Analyst: <b>RH</b>
<b>Calcium</b>	<b>120</b>		<b>5.0</b>	<b>mg/L</b>	10	11/14/2016 10:36 PM
<b>Magnesium</b>	<b>11</b>		<b>2.0</b>	<b>mg/L</b>	10	11/14/2016 10:36 PM
<b>Sodium</b>	<b>280</b>		<b>2.0</b>	<b>mg/L</b>	10	11/14/2016 10:36 PM
<b>SODIUM ADSORPTION RATIO</b>						
			<b>USDA H60 METHO</b>		Prep: USDA Method 20B / 11/11/16	Analyst: <b>RH</b>
<b>Exchangeable Sodium Percentage</b>	<b>7.8</b>		<b>0.010</b>	<b>none</b>	1	11/14/2016
<b>Sodium Adsorption Ratio</b>	<b>6.6</b>		<b>0.010</b>	<b>none</b>	1	11/14/2016
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>						
			<b>SW846 8270D</b>		Prep: SW3546 / 11/16/16	Analyst: <b>JF</b>
Acenaphthene	ND		0.0081	mg/Kg-dry	1	11/17/2016 04:22 AM
Anthracene	ND		0.0081	mg/Kg-dry	1	11/17/2016 04:22 AM
Benzo(a)anthracene	ND		0.0081	mg/Kg-dry	1	11/17/2016 04:22 AM
Benzo(a)pyrene	ND		0.0081	mg/Kg-dry	1	11/17/2016 04:22 AM
Benzo(b)fluoranthene	ND		0.0081	mg/Kg-dry	1	11/17/2016 04:22 AM
Benzo(k)fluoranthene	ND		0.0081	mg/Kg-dry	1	11/17/2016 04:22 AM
Chrysene	ND		0.0081	mg/Kg-dry	1	11/17/2016 04:22 AM
Dibenzo(a,h)anthracene	ND		0.0081	mg/Kg-dry	1	11/17/2016 04:22 AM

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

# ALS Group, USA

Date: 18-Nov-16

**Client:** Olsson Associates  
**Project:** Emerald 9  
**Sample ID:** EM9-SS2  
**Collection Date:** 11/3/2016 10:40 AM

**Work Order:** 1611420  
**Lab ID:** 1611420-02  
**Matrix:** SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluoranthene	ND		0.0081	mg/Kg-dry	1	11/17/2016 04:22 AM
Fluorene	ND		0.0081	mg/Kg-dry	1	11/17/2016 04:22 AM
Indeno(1,2,3-cd)pyrene	ND		0.0081	mg/Kg-dry	1	11/17/2016 04:22 AM
Naphthalene	ND		0.0081	mg/Kg-dry	1	11/17/2016 04:22 AM
Pyrene	ND		0.0081	mg/Kg-dry	1	11/17/2016 04:22 AM
Surr: 2-Fluorobiphenyl	67.6		12-100	%REC	1	11/17/2016 04:22 AM
Surr: 4-Terphenyl-d14	70.5		25-137	%REC	1	11/17/2016 04:22 AM
Surr: Nitrobenzene-d5	55.7		37-107	%REC	1	11/17/2016 04:22 AM
<b>VOLATILE ORGANIC COMPOUNDS</b>			<b>SW8260B</b>	Prep: SW5035 / 11/13/16		Analyst: <b>AK</b>
Benzene	ND		0.044	mg/Kg-dry	1	11/16/2016 08:56 AM
Ethylbenzene	ND		0.044	mg/Kg-dry	1	11/16/2016 08:56 AM
m,p-Xylene	ND		0.088	mg/Kg-dry	1	11/16/2016 08:56 AM
o-Xylene	ND		0.044	mg/Kg-dry	1	11/16/2016 08:56 AM
Toluene	ND		0.044	mg/Kg-dry	1	11/16/2016 08:56 AM
Xylenes, Total	ND		0.13	mg/Kg-dry	1	11/16/2016 08:56 AM
Surr: 1,2-Dichloroethane-d4	83.8		70-130	%REC	1	11/16/2016 08:56 AM
Surr: 4-Bromofluorobenzene	94.8		70-130	%REC	1	11/16/2016 08:56 AM
Surr: Dibromofluoromethane	92.2		70-130	%REC	1	11/16/2016 08:56 AM
Surr: Toluene-d8	88.4		70-130	%REC	1	11/16/2016 08:56 AM
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>			<b>USDA H60 METHO</b>	Prep: USDA Method 20B / 11/11/16		Analyst: <b>JB</b>
Electrical Conductivity @ Saturation	3.6		0.25	mmhos/cm @2	50	11/17/2016 04:45 PM
<b>CHROMIUM, TRIVALENT</b>			<b>CALCULATION</b>			Analyst: <b>JB</b>
Chromium, Trivalent	15		0.62	mg/Kg-dry	1	11/16/2016 08:20 AM
<b>CHROMIUM, HEXAVALENT</b>			<b>SW7196A</b>	Prep: SW3060A / 11/14/16		Analyst: <b>MB</b>
Chromium, Hexavalent	ND		1.2	mg/Kg-dry	1	11/15/2016 05:00 PM
<b>MOISTURE</b>			<b>SW3550C</b>			Analyst: <b>EDL</b>
Moisture	19		0.050	% of sample	1	11/11/2016 05:14 PM
<b>PH</b>			<b>SW9045D</b>	Prep: EXTRACT / 11/7/16		Analyst: <b>RZM</b>
pH	8.4			s.u.	1	11/8/2016 09:40 AM

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

# ALS Group, USA

Date: 18-Nov-16

Client: Olsson Associates  
Project: Emerald 9  
Sample ID: EM9-BG1  
Collection Date: 11/3/2016 10:55 AM

Work Order: 1611420  
Lab ID: 1611420-03  
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>MERCURY BY CVAA</b>						
Mercury	0.030		SW7471B 0.016	mg/Kg-dry	Prep: SW7471 / 11/16/16 1	Analyst: LR 11/16/2016 11:35 PM
<b>METALS ANALYSIS BY ICP</b>						
Arsenic	10		SW846 6010C 0.45	mg/Kg-dry	Prep: SW3050B / 11/14/16 1	Analyst: RH 11/15/2016 12:26 PM
Barium	31		0.45	mg/Kg-dry	1	11/15/2016 12:26 PM
Cadmium	ND		0.45	mg/Kg-dry	1	11/15/2016 12:26 PM
Chromium	6.0		0.45	mg/Kg-dry	1	11/15/2016 12:26 PM
Copper	7.1		0.45	mg/Kg-dry	1	11/15/2016 12:26 PM
Lead	7.9		0.45	mg/Kg-dry	1	11/15/2016 12:26 PM
Nickel	15		0.45	mg/Kg-dry	1	11/15/2016 12:26 PM
Selenium	ND		0.91	mg/Kg-dry	1	11/15/2016 12:26 PM
Silver	ND		0.45	mg/Kg-dry	1	11/15/2016 12:26 PM
Zinc	47		0.91	mg/Kg-dry	1	11/15/2016 12:26 PM
<b>SOLUBLE CATIONS FOR SAR</b>						
Calcium	500		SW846 6010C 5.0	mg/L	Prep: USDA Method 20B / 11/11/16 10	Analyst: RH 11/14/2016 10:41 PM
Magnesium	9.6		2.0	mg/L	10	11/14/2016 10:41 PM
Sodium	3.0		2.0	mg/L	10	11/14/2016 10:41 PM
<b>SODIUM ADSORPTION RATIO</b>						
Exchangeable Sodium Percentage	ND		USDA H60 METHO 0.010	none	Prep: USDA Method 20B / 11/11/16 1	Analyst: RH 11/14/2016
Sodium Adsorption Ratio	0.036		0.010	none	1	11/14/2016
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>						
Electrical Conductivity @ Saturation	4.6		USDA H60 METHO 0.25	mmhos/cm @2	Prep: USDA Method 20B / 11/11/16 50	Analyst: JB 11/17/2016 04:45 PM
<b>CHROMIUM, TRIVALENT</b>						
Chromium, Trivalent	6.0		CALCULATION 0.57	mg/Kg-dry	1	Analyst: JB 11/16/2016 08:20 AM
<b>CHROMIUM, HEXAVALENT</b>						
Chromium, Hexavalent	ND		SW7196A 1.1	mg/Kg-dry	Prep: SW3060A / 11/14/16 1	Analyst: MB 11/15/2016 05:00 PM
<b>MOISTURE</b>						
Moisture	13		SW3550C 0.050	% of sample	1	Analyst: EDL 11/11/2016 05:14 PM
<b>PH</b>						
pH	7.2		SW9045D	s.u.	Prep: EXTRACT / 11/7/16 1	Analyst: RZM 11/8/2016 09:40 AM

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

**Client:** Olsson Associates  
**Work Order:** 1611420  
**Project:** Emerald 9

**QC BATCH REPORT**

Batch ID: **94631** Instrument ID **GC8** Method: **SW8015M**

<b>MBLK</b>		Sample ID: <b>DBLKS1-94631-94631</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>11/16/2016 06:57 PM</b>		
Client ID:		Run ID: <b>GC8_161116A</b>				SeqNo: <b>4158687</b>		Prep Date: <b>11/16/2016</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	ND	5.0								
<i>Surr: 4-Terphenyl-d14</i>	2.058	0	3.33	0	61.8	39-133	0			

<b>LCS</b>		Sample ID: <b>DLCSS1-94631-94631</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>11/16/2016 07:27 PM</b>		
Client ID:		Run ID: <b>GC8_161116A</b>				SeqNo: <b>4158688</b>		Prep Date: <b>11/16/2016</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	240.6	5.0	333	0	72.2	61-109	0			
<i>Surr: 4-Terphenyl-d14</i>	1.794	0	3.33	0	53.9	39-133	0			

<b>MS</b>		Sample ID: <b>1611418-01A MS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>11/16/2016 07:56 PM</b>		
Client ID:		Run ID: <b>GC8_161116A</b>				SeqNo: <b>4158689</b>		Prep Date: <b>11/16/2016</b>		DF: <b>10</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	4061	98	326.4	6578	-771	48-110	0			SO
<i>Surr: 4-Terphenyl-d14</i>	3.986	0	3.264	0	122	39-133	0			

<b>MSD</b>		Sample ID: <b>1611418-01A MSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>11/16/2016 08:26 PM</b>		
Client ID:		Run ID: <b>GC8_161116A</b>				SeqNo: <b>4158691</b>		Prep Date: <b>11/16/2016</b>		DF: <b>10</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	5699	96	321.3	6578	-274	48-110	4061	33.6	30	SRO
<i>Surr: 4-Terphenyl-d14</i>	3.937	0	3.213	0	123	39-133	3.986	1.25	30	

The following samples were analyzed in this batch:

1611420-01A	1611420-02A
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Client: Olsson Associates  
 Work Order: 1611420  
 Project: Emerald 9

## QC BATCH REPORT

Batch ID: **94465** Instrument ID **GC9** Method: **SW8015D**

<b>MBLK</b>		Sample ID: <b>MBLK-94465-94465</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>11/14/2016 02:06 PM</b>		
Client ID:		Run ID: <b>GC9_161114A</b>				SeqNo: <b>4153485</b>		Prep Date: <b>11/14/2016</b>		DF: <b>1</b>
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	4265	0	5000	0	85.3	50-150	0			

<b>MBLK</b>		Sample ID: <b>MBLK-94465-94465</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>11/15/2016 01:11 A</b>		
Client ID:		Run ID: <b>GC9_161114B</b>				SeqNo: <b>4153536</b>		Prep Date: <b>11/14/2016</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	ND	2,500								
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<b>LCS</b>		Sample ID: <b>LCS-94465-94465</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>11/14/2016 01:42 PM</b>		
Client ID:		Run ID: <b>GC9_161114A</b>				SeqNo: <b>4153481</b>		Prep Date: <b>11/14/2016</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	473500	2,500	500000	0	94.7	70-130	0			
Surr: Toluene-d8	5004	0	5000	0	100	50-150	0			

<b>LCS</b>		Sample ID: <b>LCS-94465-94465</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>11/15/2016 12:44 PM</b>		
Client ID:		Run ID: <b>GC9_161114B</b>				SeqNo: <b>4153542</b>		Prep Date: <b>11/14/2016</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	10090	2,500	10000	0	101	80-120	0			
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<b>LCSD</b>		Sample ID: <b>LCSD-94465-94465</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>11/15/2016 03:22 A</b>		
Client ID:		Run ID: <b>GC9_161114B</b>				SeqNo: <b>4153541</b>		Prep Date: <b>11/14/2016</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	11560	2,500	10000	0	116	80-120	10090	13.6	20	
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<b>MS</b>		Sample ID: <b>1611395-02A MS</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>11/14/2016 05:01 PM</b>		
Client ID:		Run ID: <b>GC9_161114A</b>				SeqNo: <b>4153497</b>		Prep Date: <b>11/14/2016</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	707000	3,500	690500	0	102	70-130	0			
Surr: Toluene-d8	7761	0	6905	0	112	50-150	0			

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

**Client:** Olsson Associates  
**Work Order:** 1611420  
**Project:** Emerald 9

## QC BATCH REPORT

Batch ID: **94465** Instrument ID **GC9** Method: **SW8015D**

<b>MSD</b>		Sample ID: <b>1611395-02A MSD</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>11/14/2016 05:26 PM</b>		
Client ID:		Run ID: <b>GC9_161114A</b>				SeqNo: <b>4153499</b>		Prep Date: <b>11/14/2016</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	757900	3,500	690500	0	110	70-130	707000	6.95	30	
<i>Surr: Toluene-d8</i>	<i>7439</i>	<i>0</i>	<i>6905</i>	<i>0</i>	<i>108</i>	<i>50-150</i>	<i>7761</i>	<i>4.23</i>	<i>30</i>	

The following samples were analyzed in this batch:

1611420-01A 1611420-02A

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

Client: Olsson Associates  
 Work Order: 1611420  
 Project: Emerald 9

## QC BATCH REPORT

Batch ID: **94677** Instrument ID **HG1** Method: **SW7471B**

MBLK				Sample ID: MBLK-94677-94677				Units: mg/Kg			Analysis Date: 11/16/2016 11:25 PM			
Client ID:				Run ID: HG1_161116A				SeqNo: 4158001			Prep Date: 11/16/2016		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				
Mercury	0.0095	0.020								J				

LCS				Sample ID: LCS-94677-94677				Units: mg/Kg			Analysis Date: 11/16/2016 11:27 PM			
Client ID:				Run ID: HG1_161116A				SeqNo: 4158002			Prep Date: 11/16/2016		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Mercury		0.1692	0.020	0.1665	0	102	80-120	0						

MS				Sample ID: 1611420-03AMS				Units: mg/Kg			Analysis Date: 11/16/2016 11:38 PM			
Client ID: EM9-BG1				Run ID: HG1_161116A				SeqNo: 4158006			Prep Date: 11/16/2016		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				
Mercury	0.1335	0.014	0.115	0.02647	93.1	75-125	0							

MSD				Sample ID: 1611420-03AMSD				Units: mg/Kg			Analysis Date: 11/16/2016 11:40 PM		
Client ID: EM9-BG1				Run ID: HG1_161116A				SeqNo: 4158007		Prep Date: 11/16/2016		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Mercury	0.1404	0.014	0.1159	0.02647	98.3	75-125	0.1335	5.03	35				

The following samples were analyzed in this batch:

1611420-01A	1611420-02A	1611420-03A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.



**Client:** Olsson Associates  
**Work Order:** 1611420  
**Project:** Emerald 9

## QC BATCH REPORT

Batch ID: **94437** Instrument ID **SAR** Method: **USDA H60 Metho**

<b>DUP</b>		Sample ID: <b>1611399-03ADUP</b>				Units: <b>none</b>		Analysis Date: <b>11/14/2016</b>		
Client ID:		Run ID: <b>SAR_161114A</b>				SeqNo: <b>4156666</b>		Prep Date: <b>11/11/2016</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Exchangeable Sodium Percentage	ND	0.010	0	0	0		-0.7294	0	50	
Sodium Adsorption Ratio	0.4389	0.010	0	0	0		0.3633	18.8	50	

The following samples were analyzed in this batch:

1611420-01A	1611420-02A	1611420-03A
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**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates  
 Work Order: 1611420  
 Project: Emerald 9

## QC BATCH REPORT

Batch ID: **94498** Instrument ID **ICP2** Method: **SW846 6010C**

<b>MBLK</b>		Sample ID: <b>MBLK-94498-94498</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>11/15/2016 12:04 PM</b>		
Client ID:		Run ID: <b>ICP2_161115A</b>				SeqNo: <b>4154287</b>		Prep Date: <b>11/14/2016</b>		DF: <b>1</b>
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	0.02936	0.50								J
Chromium	0.03967	0.25								J
Copper	ND	0.50								
Lead	ND	0.25								
Selenium	ND	0.50								
Silver	ND	0.25								
Zinc	0.06949	0.50								J

<b>MBLK</b>		Sample ID: <b>MBLK-94498-94498</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>11/15/2016 03:30 PM</b>		
Client ID:		Run ID: <b>ICP2_161115A</b>				SeqNo: <b>4155466</b>		Prep Date: <b>11/14/2016</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nickel	ND	0.25								

<b>LCS</b>		Sample ID: <b>LCS-94498-94498</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>11/15/2016 12:09 PM</b>		
Client ID:		Run ID: <b>ICP2_161115A</b>				SeqNo: <b>4154288</b>		Prep Date: <b>11/14/2016</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.654	0.25	5	0	93.1	80-120	0			
Barium	4.605	0.25	5	0	92.1	80-120	0			
Cadmium	4.714	0.50	5	0	94.3	80-120	0			
Chromium	4.684	0.25	5	0	93.7	80-120	0			
Copper	4.92	0.50	5	0	98.4	80-120	0			
Lead	4.544	0.25	5	0	90.9	80-120	0			
Selenium	4.406	0.50	5	0	88.1	80-120	0			
Silver	4.609	0.25	5	0	92.2	80-120	0			
Zinc	4.657	0.50	5	0	93.1	80-120	0			

<b>LCS</b>		Sample ID: <b>LCS-94498-94498</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>11/15/2016 03:35 PM</b>		
Client ID:		Run ID: <b>ICP2_161115A</b>				SeqNo: <b>4155467</b>		Prep Date: <b>11/14/2016</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Nickel	4.697	0.25	5	0	93.9	80-120	0			

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

Client: Olsson Associates  
 Work Order: 1611420  
 Project: Emerald 9

# QC BATCH REPORT

Batch ID: 94498 Instrument ID ICP2 Method: SW846 6010C

MS					Sample ID: 1611420-03AMS			Units: mg/Kg		Analysis Date: 11/15/2016 12:31 PM	
Client ID: EM9-BG1			Run ID: ICP2_161115A			SeqNo: 4154292		Prep Date: 11/14/2016		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Barium	39.55	0.40	7.949	27.06	157	75-125	0			S	
Chromium	15.26	0.40	7.949	5.228	126	75-125	0			S	
Copper	13.4	0.79	7.949	6.177	90.9	75-125	0				
Silver	7.604	0.40	7.949	-0.3095	99.6	75-125	0				

MS					Sample ID: 1611420-03AMS		Units: mg/Kg		Analysis Date: 11/15/2016 03:46 PM	
Client ID: EM9-BG1			Run ID: ICP2_161115A			SeqNo: 4155469		Prep Date: 11/14/2016		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	14.55	4.0	7.949	8.87	71.4	75-125	0			S
Cadmium	9.161	7.9	7.949	0.2087	113	75-125	0			
Lead	15.38	4.0	7.949	7.058	105	75-125	0			
Nickel	20.87	4.0	7.949	13.32	95	75-125	0			
Selenium	9.099	7.9	7.949	0.1652	112	75-125	0			
Zinc	46.91	7.9	7.949	42.42	56.5	75-125	0			SO

MSD				Sample ID: 1611420-03AMSD			Units: mg/Kg		Analysis Date: 11/15/2016 12:37 PM		
Client ID: EM9-BG1			Run ID: ICP2_161115A			SeqNo: 4154293		Prep Date: 11/14/2016		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Barium	39.87	0.39	7.862	27.06	163	75-125	39.55	0.803	20	S	
Chromium	14.6	0.39	7.862	5.228	119	75-125	15.26	4.42	20		
Copper	13.06	0.79	7.862	6.177	87.6	75-125	13.4	2.57	20		
Silver	7.164	0.39	7.862	-0.3095	95.1	75-125	7.604	5.96	20		

MSD				Sample ID: 1611420-03AMSD				Units: mg/Kg			Analysis Date: 11/15/2016 03:52 PM		
Client ID: EM9-BG1				Run ID: ICP2_161115A				SeqNo: 4155470		Prep Date: 11/14/2016		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Arsenic	13.43	3.9	7.862	8.87	58	75-125	14.55	8.01	20	S			
Cadmium	7.831	7.9	7.862	0.2087	97	75-125	9.161	0	20	J			
Lead	13.67	3.9	7.862	7.058	84	75-125	15.38	11.8	20				
Nickel	17.53	3.9	7.862	13.32	53.6	75-125	20.87	17.4	20	S			
Selenium	8.598	7.9	7.862	0.1652	107	75-125	9.099	5.66	20				
Zinc	42.94	7.9	7.862	42.42	6.59	75-125	46.91	8.85	20	SO			

The following samples were analyzed in this batch: 1611420-01A 1611420-02A 1611420-03A

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

Client: Olsson Associates  
 Work Order: 1611420  
 Project: Emerald 9

## QC BATCH REPORT

Batch ID: 94629 Instrument ID SVMS5 Method: SW846 8270D

MBLK		Sample ID: SBLKS1-94629-94629				Units: µg/Kg		Analysis Date: 11/16/2016 03:24 PM		
Client ID:		Run ID: SVMS5_161116A				SeqNo: 4158586		Prep Date: 11/16/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	ND	6.7								
Anthracene	ND	6.7								
Benzo(a)anthracene	ND	6.7								
Benzo(a)pyrene	ND	6.7								
Benzo(b)fluoranthene	ND	6.7								
Benzo(k)fluoranthene	ND	6.7								
Chrysene	ND	6.7								
Dibenzo(a,h)anthracene	ND	6.7								
Fluoranthene	ND	6.7								
Fluorene	ND	6.7								
Indeno(1,2,3-cd)pyrene	ND	6.7								
Naphthalene	ND	6.7								
Pyrene	ND	6.7								
Surr: 2-Fluorobiphenyl	2859	0	3333	0	85.8	12-100	0			
Surr: 4-Terphenyl-d14	2887	0	3333	0	86.6	25-137	0			
Surr: Nitrobenzene-d5	2121	0	3333	0	63.6	37-107	0			

LCS		Sample ID: SLCSS1-94629-94629				Units: µg/Kg		Analysis Date: 11/16/2016 03:47 PM		
Client ID:		Run ID: SVMS5_161116A				SeqNo: 4158587		Prep Date: 11/16/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1217	6.7	1333	0	91.3	45-110	0			
Anthracene	1248	6.7	1333	0	93.6	55-105	0			
Benzo(a)anthracene	1295	6.7	1333	0	97.1	50-110	0			
Benzo(a)pyrene	1232	6.7	1333	0	92.4	50-110	0			
Benzo(b)fluoranthene	1169	6.7	1333	0	87.7	45-115	0			
Benzo(k)fluoranthene	1299	6.7	1333	0	97.4	45-115	0			
Chrysene	1281	6.7	1333	0	96.1	55-110	0			
Dibenzo(a,h)anthracene	1313	6.7	1333	0	98.5	40-125	0			
Fluoranthene	1258	6.7	1333	0	94.4	55-115	0			
Fluorene	1286	6.7	1333	0	96.5	50-110	0			
Indeno(1,2,3-cd)pyrene	1070	6.7	1333	0	80.3	40-120	0			
Naphthalene	993.3	6.7	1333	0	74.5	40-105	0			
Pyrene	1357	6.7	1333	0	102	45-125	0			
Surr: 2-Fluorobiphenyl	3026	0	3333	0	90.8	12-100	0			
Surr: 4-Terphenyl-d14	2941	0	3333	0	88.2	25-137	0			
Surr: Nitrobenzene-d5	2261	0	3333	0	67.8	37-107	0			

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

Client: Olsson Associates  
 Work Order: 1611420  
 Project: Emerald 9

## QC BATCH REPORT

Batch ID: 94629 Instrument ID SVMS5 Method: SW846 8270D

MS				Sample ID: 1611421-02A MS			Units: µg/Kg		Analysis Date: 11/16/2016 09:29 PM		
Client ID:			Run ID: SVMS5_161116A			SeqNo: 4158590		Prep Date: 11/16/2016		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1062	6.5	1304	0	81.4	45-110	0				
Anthracene	1164	6.5	1304	0	89.2	55-105	0				
Benzo(a)anthracene	1179	6.5	1304	0	90.4	50-110	0				
Benzo(a)pyrene	1138	6.5	1304	0	87.2	50-110	0				
Benzo(b)fluoranthene	1036	6.5	1304	0	79.4	45-115	0				
Benzo(k)fluoranthene	1204	6.5	1304	0	92.3	45-115	0				
Chrysene	1179	6.5	1304	0	90.4	55-110	0				
Dibenzo(a,h)anthracene	1205	6.5	1304	0	92.4	40-125	0				
Fluoranthene	1162	6.5	1304	0	89.1	55-115	0				
Fluorene	1180	6.5	1304	0	90.5	50-110	0				
Indeno(1,2,3-cd)pyrene	989.6	6.5	1304	0	75.9	40-120	0				
Naphthalene	878	6.5	1304	0	67.3	40-105	0				
Pyrene	1232	6.5	1304	0	94.5	45-125	0				
Surr: 2-Fluorobiphenyl	2747	0	3261	0	84.2	12-100	0				
Surr: 4-Terphenyl-d14	2673	0	3261	0	81.9	25-137	0				
Surr: Nitrobenzene-d5	2089	0	3261	0	64.1	37-107	0				

MSD				Sample ID: 1611421-02A MSD			Units: µg/Kg		Analysis Date: 11/16/2016 09:51 PM	
Client ID:			Run ID: SVMS5_161116A		SeqNo: 4158591		Prep Date: 11/16/2016		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1020	6.5	1297	0	78.7	45-110	1062	4.01	30	
Anthracene	1116	6.5	1297	0	86	55-105	1164	4.23	30	
Benzo(a)anthracene	1145	6.5	1297	0	88.3	50-110	1179	2.92	30	
Benzo(a)pyrene	1094	6.5	1297	0	84.3	50-110	1138	3.95	30	
Benzo(b)fluoranthene	1034	6.5	1297	0	79.7	45-115	1036	0.195	30	
Benzo(k)fluoranthene	1138	6.5	1297	0	87.7	45-115	1204	5.68	30	
Chrysene	1132	6.5	1297	0	87.3	55-110	1179	4.12	30	
Dibenzo(a,h)anthracene	1162	6.5	1297	0	89.6	40-125	1205	3.7	30	
Fluoranthene	1132	6.5	1297	0	87.3	55-115	1162	2.67	30	
Fluorene	1114	6.5	1297	0	85.9	50-110	1180	5.79	30	
Indeno(1,2,3-cd)pyrene	959.9	6.5	1297	0	74	40-120	989.6	3.04	30	
Naphthalene	862	6.5	1297	0	66.5	40-105	878	1.84	30	
Pyrene	1186	6.5	1297	0	91.5	45-125	1232	3.8	30	
Surr: 2-Fluorobiphenyl	2703	0	3243	0	83.3	12-100	2747	1.62	40	
Surr: 4-Terphenyl-d14	2683	0	3243	0	82.7	25-137	2673	0.375	40	
Surr: Nitrobenzene-d5	2041	0	3243	0	62.9	37-107	2089	2.34	40	

The following samples were analyzed in this batch:

1611420-01A 1611420-02A

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

Client: Olsson Associates  
 Work Order: 1611420  
 Project: Emerald 9

# QC BATCH REPORT

Batch ID: **94464** Instrument ID **VMS7** Method: **SW8260B**

MBLK				Sample ID: MBLK-94464-94464				Units: µg/Kg-dry			Analysis Date: 11/13/2016 11:15 A			
Client ID:				Run ID: VMS7_161113A				SeqNo: 4150461			Prep Date: 11/13/2016		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	980	0	1000	0	98	70-130	0							
Surr: 4-Bromofluorobenzene	963	0	1000	0	96.3	70-130	0							
Surr: Dibromofluoromethane	922	0	1000	0	92.2	70-130	0							
Surr: Toluene-d8	1008	0	1000	0	101	70-130	0							

LCS				Sample ID: LCS-94464-94464				Units: µg/Kg-dry			Analysis Date: 11/13/2016 10:12 A		
Client ID:			Run ID: VMS7_161113A				SeqNo: 4150460			Prep Date: 11/13/2016		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Benzene	1070	30	1000	0	107	75-125	0						
Ethylbenzene	1048	30	1000	0	105	75-125	0						
m,p-Xylene	2118	60	2000	0	106	80-125	0						
o-Xylene	1055	30	1000	0	106	75-125	0						
Toluene	1046	30	1000	0	105	70-125	0						
Xylenes, Total	3174	90	3000	0	106	75-125	0						
Surr: 1,2-Dichloroethane-d4	979	0	1000	0	97.9	70-130	0						
Surr: 4-Bromofluorobenzene	1006	0	1000	0	101	70-130	0						
Surr: Dibromofluoromethane	991	0	1000	0	99.1	70-130	0						
Surr: Toluene-d8	988	0	1000	0	98.8	70-130	0						

MS				Sample ID: 1611395-02A MS				Units: µg/Kg-dry		Analysis Date: 11/13/2016 07:48 PM	
Client ID:			Run ID: VMS9_161113A			SeqNo: 4149968		Prep Date: 11/13/2016		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	1441	41	1381	0	104	75-125	0				
Ethylbenzene	1464	41	1381	0	106	75-125	0				
m,p-Xylene	2975	83	2762	0	108	80-125	0				
o-Xylene	1470	41	1381	0	106	75-125	0				
Toluene	1442	41	1381	0	104	70-125	0				
Xylenes, Total	4445	120	4143	0	107	75-125	0				
Surr: 1,2-Dichloroethane-d4	1445	0	1381	0	105	70-130	0				
Surr: 4-Bromofluorobenzene	1414	0	1381	0	102	70-130	0				
Surr: Dibromofluoromethane	1284	0	1381	0	93	70-130	0				
Surr: Toluene-d8	1366	0	1381	0	98.9	70-130	0				

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

Client: Olsson Associates  
 Work Order: 1611420  
 Project: Emerald 9

## QC BATCH REPORT

Batch ID: **94464** Instrument ID **VMS7** Method: **SW8260B**

MSD				Sample ID: 1611395-02A MSD			Units: µg/Kg-dry		Analysis Date: 11/13/2016 08:12 PM	
Client ID:			Run ID: VMS9_161113A			SeqNo: 4149969		Prep Date: 11/13/2016		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1473	41	1381	0	107	75-125	1441	2.18	30	
Ethylbenzene	1474	41	1381	0	107	75-125	1464	0.705	30	
m,p-Xylene	2939	83	2762	0	106	80-125	2975	1.24	30	
o-Xylene	1483	41	1381	0	107	75-125	1470	0.888	30	
Toluene	1392	41	1381	0	101	70-125	1442	3.56	30	
Xylenes, Total	4422	120	4143	0	107	75-125	4445	0.53	30	
Surr: 1,2-Dichloroethane-d4	1481	0	1381	0	107	70-130	1445	2.45	30	
Surr: 4-Bromofluorobenzene	1456	0	1381	0	105	70-130	1414	2.93	30	
Surr: Dibromofluoromethane	1351	0	1381	0	97.8	70-130	1284	5.14	30	
Surr: Toluene-d8	1380	0	1381	0	99.9	70-130	1366	1.01	30	

The following samples were analyzed in this batch:

1611420-01A 1611420-02A 1611420-03A

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



**Client:** Olsson Associates  
**Work Order:** 1611420  
**Project:** Emerald 9

## QC BATCH REPORT

Batch ID: **94179** Instrument ID **WETCHEM** Method: **SW9045D**

LCS		Sample ID: LCS-94179-94179					Units: s.u.		Analysis Date: 11/8/2016 09:40 AM		
Client ID:		Run ID: WETCHEM_161108J			SeqNo: 4140785		Prep Date: 11/7/2016		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

pH	3.95	0	4	0	98.8	90-110	0			
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DUP		Sample ID: 1611393-01B DUP					Units: s.u.		Analysis Date: 11/8/2016 09:40 AM		
Client ID:			Run ID: WETCHEM_161108J			SeqNo: 4140792		Prep Date: 11/7/2016		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

pH	7.56	0	0	0	0	0-0	7.09	6.42	20	
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DUP		Sample ID: 1611395-01B DUP					Units: s.u.		Analysis Date: 11/8/2016 09:40 AM		
Client ID:			Run ID: WETCHEM_161108J			SeqNo: 4140797		Prep Date: 11/7/2016		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

pH	8.19	0	0	0	0	0-0	8.35	1.93	20	
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The following samples were analyzed in this batch:

1611420-01A	1611420-02A	1611420-03A
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**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Olsson Associates  
**Work Order:** 1611420  
**Project:** Emerald 9

## QC BATCH REPORT

Batch ID: **94437** Instrument ID **WETCHEM** Method: **USDA H60 Metho**

<b>DUP</b>		Sample ID: <b>1611399-03A DUP</b>				Units: <b>mmhos/cm @25°</b>		Analysis Date: <b>11/17/2016 04:45 PM</b>		
Client ID:		Run ID: <b>WETCHEM_1611170</b>			SeqNo: <b>4159977</b>		Prep Date: <b>11/11/2016</b>		DF: <b>50</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	1.515	0.25	0	0	0		1.58	4.2	50	

**The following samples were analyzed in this batch:**

1611420-01A	1611420-02A	1611420-03A
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**Note:** See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates  
 Work Order: 1611420  
 Project: Emerald 9

## QC BATCH REPORT

Batch ID: **94571** Instrument ID **WETCHEM** Method: **SW7196A**

<b>MBLK</b>		Sample ID: <b>MBLK-94571-94571</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>11/15/2016 05:00 PM</b>		
Client ID:		Run ID: <b>WETCHEM_161115Q</b>				SeqNo: <b>4155113</b>		Prep Date: <b>11/14/2016</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent ND 1.0

<b>LCS</b>		Sample ID: <b>LCS-94571-94571</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>11/15/2016 05:00 PM</b>		
Client ID:		Run ID: <b>WETCHEM_161115Q</b>				SeqNo: <b>4155112</b>		Prep Date: <b>11/14/2016</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.43 1.0 5 0 88.6 80-120 0

<b>MS</b>		Sample ID: <b>1611420-03A MS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>11/15/2016 05:00 PM</b>		
Client ID: <b>EM9-BG1</b>		Run ID: <b>WETCHEM_161115Q</b>				SeqNo: <b>4155101</b>		Prep Date: <b>11/14/2016</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.222 1.0 5.051 0.02 83.2 75-125 0

<b>MS</b>		Sample ID: <b>1611420-03A MSI</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>11/15/2016 05:00 PM</b>		
Client ID: <b>EM9-BG1</b>		Run ID: <b>WETCHEM_161115Q</b>				SeqNo: <b>4155103</b>		Prep Date: <b>11/14/2016</b>		DF: <b>100</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1554 97 1562 0.02 99.5 75-125 0

<b>MSD</b>		Sample ID: <b>1611420-03A MSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>11/15/2016 05:00 PM</b>		
Client ID: <b>EM9-BG1</b>		Run ID: <b>WETCHEM_161115Q</b>				SeqNo: <b>4155102</b>		Prep Date: <b>11/14/2016</b>		DF: <b>1</b>
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 3.92 1.0 5 0.02 78 75-125 4.222 7.42 20

The following samples were analyzed in this batch:

1611420-01A	1611420-02A	1611420-03A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Olsson Associates  
**Work Order:** 1611420  
**Project:** Emerald 9

## QC BATCH REPORT

Batch ID: **R200511** Instrument ID **MOIST** Method: **SW3550C**

MBLK		Sample ID: WBLKS-R200511				Units: % of sample		Analysis Date: 11/11/2016 05:14 PM		
Client ID:		Run ID: MOIST_161111C				SeqNo: 4150267		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-R200511				Units: % of sample			Analysis Date: 11/11/2016 05:14 PM		
Client ID:				Run ID: MOIST_161111C				SeqNo: 4150266		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			

Moisture 100 0.050 100 0 100 99.5-100.5 0

DUP				Sample ID: 1611420-02A DUP				Units: % of sample			Analysis Date: 11/11/2016 05:14 PM			
Client ID: EM9-SS2				Run ID: MOIST_161111C				SeqNo: 4150247			Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				

Moisture 18.05 0.050 0 0 0 19.46 7.52 20

<b>DUP</b>				Sample ID: <b>1611421-02A DUP</b>				Units: <b>% of sample</b>			Analysis Date: <b>11/11/2016 05:14 PM</b>			
Client ID:				Run ID: <b>MOIST_161111C</b>				SeqNo: <b>4150251</b>			Prep Date:		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				

Moisture 12.23 0.050 0 0 0 12.24 0.0817 20

The following samples were analyzed in this batch:

1611420-01A 1611420-02A 1611420-03A

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



Environmental

# Chain of Custody Form

Page 1 of 1

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☐ Spring City, PA  
+1 610 948 4903

☐ York, PA  
+1 717 505 5280

ALS Project Manager:

Work Order #:

1611420

Customer Information				Project Information				Parameter/Method Request for Analysis											
Purchase Order		Project Name	Emerald 9					A. TPH (GRO & DRO)											
Work Order		Project Number	013.3287.100.100004					B. BTEX											
Company Name	Olsson Associates	Bill To Company	Olsson Associates					C. PAH (See Attached List) CO Table 910											
Send Report To	Tim Dobransky	Invoice Attn	Tim Dobransky					D. Electrical Conductivity											
Address	760 Horizon Drive, Ste. 102	Address	760 Horizon Drive, Ste. 102					E. Sodium Adsorption Ratio											
City/State/Zip	Grand Junction, CO 81506	City/State/Zip	Grand Junction, CO 81506					F. pH											
Phone	970.263.7800	Phone	970.263.7800					G. Metals (See Attached List) CO Table 910											
Fax	970.263.7456	Fax	970.263.7456					H. Arsenic Only											
e-Mail Address	tdobransky@olssonassoc.com	e-Mail Address						I.											
								J.											
No.	Sample Description	Date	Time	Matrix	Pres.	# Batches	A	B	C	D	E	F	G	H	I	J	Hold		
1	EM9-SS1	11/03/16	1030	Soil	8	2	X	X	X	X	X	X	X						
2	EM9-SS2	11/03/16	1040	Soil	8	2	X	X	X	X	X	X	X						
3	EM9-BG1	11/03/16	1055	Soil	8	2	X	X	X	X	X	X	X						
4																			
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 checked="" 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:	
[Signature]		11/4/16	1100	[Signature]		Chevron Pricing Applies - Per Bruce Schlatter	
Relinquished by:		Date:	Time:	Received by (Laboratory):		QC Package: (Check Box Below)	
[Signature]		11/4/16	1730	[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	
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):		Cooler Temp.	
MB		11/5/16	1245	[Signature]		32	
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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Sample Receipt Checklist

Client Name: **OLSSON**

Date/Time Received: **05-Nov-16 09:30**

Work Order: **1611420**

Received by: **MBB**

Checklist completed by Meghan Broadbent  
eSignature

05-Nov-16  
Date

Reviewed by: Chad Whelton  
eSignature

06-Nov-16  
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 type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" 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>3.2/3.2</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>11/5/2016 12:50:11 PM</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:

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Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:



25-Aug-2020

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

Re: **Emerald 9 Resampling**

Work Order: **20081265**

Dear Tim,

ALS Environmental received 1 sample on 15-Aug-2020 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 7.

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: Alex J. Cszaszar

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](http://www.alsglobal.com)

RIGHT SOLUTIONS RIGHT PARTNER



**Client:** Entrada Consulting Group  
**Project:** Emerald 9 Resampling  
**Work Order:** 20081265

## 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>
20081265-01	EM9-SS2	Soil		8/13/2020 11:00	8/15/2020 10:00	<input type="checkbox"/>

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**Client:** Entrada Consulting Group  
**Project:** Emerald 9 Resampling  
**Work Order:** 20081265

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**Case Narrative**

Samples for the above noted Work Order were received on 08/15/2020. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting. A copy of the laboratory's scope of accreditation is available upon request.

All sample analyses achieved analytical criteria.

**Client:** Entrada Consulting Group  
**Project:** Emerald 9 Resampling  
**WorkOrder:** 20081265

**QUALIFIERS,  
ACRONYMS, UNITS**

<b><u>Qualifier</u></b>	<b><u>Description</u></b>
*	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.

<b><u>Acronym</u></b>	<b><u>Description</u></b>
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

<b><u>Units Reported</u></b>	<b><u>Description</u></b>
mmhos/cm @25°C	Millimhos-Centimeter at 25 Degrees Celcius

## ALS Group, USA

Date: 25-Aug-20

**Client:** Entrada Consulting Group  
**Project:** Emerald 9 Resampling  
**Sample ID:** EM9-SS2  
**Collection Date:** 8/13/2020 11:00 AM

**Work Order:** 20081265  
**Lab ID:** 20081265-01  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>							
				Method: <b>USDA H60 METHOD 2</b>		Prep: USDA Method 20B / 8/25/20	
						Analyst: <b>QTN</b>	
Electrical Conductivity @ Saturation	1.7		0.011	0.10	mmhos/cm @25°	20	8/25/2020 14:00

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



**Environmental**

# 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

ALS Project Manager:

Work Order #:

20081265

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Emerald 9 Resampling	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, Unit C	Address	330 Grand Ave, Unit C	E	Sodium Adsorption Ratio
				F	pH
City/State/Zip	Grand Junction, CO 81501	City/State/Zip	Grand Junction, CO 81501	G	Metals (See Attached List) CO Table 910
Phone	970-549-1015	Phone	970-549-1015	H	Arsenic Only
Fax		Fax		I	
e-Mail Address	tdobransky@entradainc.com	e-Mail Address	tdobransky@entradainc.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	EM9-SS2	8/13/20	1100	Soil	8	1				X							
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s): Please Print & Sign Tim Dobransky		Shipment Method: FedEx		Required Turnaround Time: <input type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour <input type="checkbox"/> Other _____		Results Due Date:	
Relinquished by: 	Date: 8/14/20	Time: 1200	Received by: 		Notes: Chevron Pricing Applies - Per Bruce Schlatter		
Relinquished by: 	Date: 8-14-20	Time: 1830	Received by (Laboratory): 		Cooler Temp.:	QC Package: (Check Box Below)	
Logged by (Laboratory): Ker	Date: 8/17/20	Time: 1005	Checked by (Laboratory): 		2.5°	<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	
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035					183	Other: _____	

Sample Receipt Checklist

Client Name: **ENTRADA**

Date/Time Received: **15-Aug-20 10:00**

Work Order: **20081265**

Received by: **KRW**

Checklist completed by Keith Wurenga 17-Aug-20  
eSignature Date

Reviewed by: Chad Whelton 17-Aug-20  
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 type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" 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>2.5/3.5 C</u>		<u>IR3</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>8/17/2020 10:04:24 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: