Legend

- Soil Sample Location
- Spill Origin
- Spill Path
- Spill Area

0 25 50 100 Feet

1 inch = 65 feet

N W E S

PROJECT NO:	018-065
DRAWN BY:	TPD
DATE:	1/13/2018

EMERALD 35
SPILL RESPONSE
CHEVRON USA, INC
RIO BLANCO COUNTY, COLORADO
SESW S25 T2N R103W

ENTRADA CONSULTING GROUP

330 GRAND AVE., SUITE C
GRAND JUNCTION, CO 81501
TEL 970.549.1015

FIGURE

1

Table 1
Emerald 35
Soil Data Summary

SAMPLE SUMMARY	
Location Description	Emerald 35 Spill
Sample Type	Grab Soil

LABORATORY DATA SUMMARY											
Sample ID	EMD 35-SS1	EMD 35-SS1	EMD 35-SS1	EMD 35-SS2	EMD 35-SS2	EMD 35-SS3	EMD 35-SS3	EMD 35-BG1	EMD 35-BG2		
Depth	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-6"	0-4"		
Sample Date	10/15/2015	7/12/2018	8/7/2020	10/15/2015	4/1/2021	10/15/2015	7/12/2018	10/15/2015	10/15/2015	**COGCC TABLE 910-1 CONCENTRATION LEVELS**	**UNITS**
Analytical Parameters											
TPH											
TPH Gasoline Range Organics	<2.8	NT	NT	<2.6	NT	<2.8	NT	NT	NT	500	mg/kg
TPH Diesel Range Organics	38	NT	NT	360	NT	120	NT	NT	NT		
BTEX											
Benzene	<0.033	NT	NT	<0.032	NT	<0.034	NT	NT	NT	0.17	mg/kg
Toluene	<0.033	NT	NT	<0.032	NT	<0.034	NT	NT	NT	85	mg/kg
Ethylbenzene	<0.033	NT	NT	<0.032	NT	<0.034	NT	NT	NT	100	mg/kg
Total Xylene	<0.10	NT	NT	<0.095	NT	<0.10	NT	NT	NT	175	mg/kg
Metals											
Arsenic	5.6	NT	NT	4.7	NT	7.4	NT	7.3	5.8	0.39	mg/kg
Barium	110	NT	NT	580	NT	330	NT	190	340	15,000	mg/kg
Cadmium	<0.35	NT	NT	<0.41	NT	<0.43	NT	<0.35	<0.40	70	mg/kg
Chromium	9.9	NT	NT	10	NT	14	NT	14	10	NA	mg/kg
Copper	14	NT	NT	8.9	NT	18	NT	17	12	3,100	mg/kg
Lead	15	NT	NT	22	NT	23	NT	58	15	400	mg/kg
Mercury	0.038	NT	NT	0.017	NT	0.035	NT	0.025	0.029	23	mg/kg
Nickel	21	NT	NT	13	NT	27	NT	25	19	1,600	mg/kg
Selenium	1.2	NT	NT	<0.81	NT	1.7	NT	1.4	0.92	390	mg/kg
Silver	<0.35	NT	NT	<0.41	NT	<0.43	NT	<0.35	<0.40	390	mg/kg
Zinc	76	NT	NT	49	NT	86	NT	170	65	23,000	mg/kg
SAR Metals Analysis											
Calcium	450	2000	NT	1100	1200	2100	170	870	660	NA	mg/L
Magnesium	440	97	NT	220	110	260	10	46	190	NA	mg/L
Sodium	5800	81	NT	2500	1200	8500	13	23	2200	NA	mg/L
Sodium Adsorption Ratio	32	0.48	NT	18	8.6	47	0.27	0.20	20	<12	ratio
Polynuclear Aromatic Hyrdrocarbons											
Acenaphthene	<0.0073	NT	NT	<0.0069	NT	<0.0074	NT	NT	NT	1,000	mg/kg
Anthracene	<0.0073	NT	NT	<0.0069	NT	<0.0074	NT	NT	NT	1,000	mg/kg
Benzo(a)anthracene	<0.0073	NT	NT	<0.0069	NT	<0.0074	NT	NT	NT	0.22	mg/kg
Benzo(a)pyrene	<0.0073	NT	NT	0.0073	NT	<0.0074	NT	NT	NT	0.022	mg/kg
Benzo(b)fluoranthene	<0.0073	NT	NT	0.0083	NT	<0.0074	NT	NT	NT	0.22	mg/kg
Benzo(k)fluoranthene	<0.0073	NT	NT	<0.0069	NT	<0.0074	NT	NT	NT	2.2	mg/kg
Chrysene	<0.0073	NT	NT	<0.0069	NT	<0.0074	NT	NT	NT	22	mg/kg
Dibenzo(a,h)anthracene	<0.0073	NT	NT	<0.0069	NT	<0.0074	NT	NT	NT	0.022	mg/kg
Fluoranthene	<0.0073	NT	NT	0.011	NT	<0.0074	NT	NT	NT	1,000	mg/kg
Fluorene	<0.0073	NT	NT	<0.0069	NT	<0.0074	NT	NT	NT	1,000	mg/kg
Indeno(1,2,3-cd)pyrene	<0.0073	NT	NT	<0.0069	NT	<0.0074	NT	NT	NT	0.22	mg/kg
Napthalene	<0.0073	NT	NT	<0.0069	NT	<0.0074	NT	NT	NT	23	mg/kg
Pyrene	<0.0073	NT	NT	0.0097	NT	<0.0074	NT	NT	NT	1,000	mg/kg
General Chemistry											
Chromium, Hexavalent	<1.1	NT	NT	<0.99	NT	<1.0	NT	<0.97	<0.97	23	mg/kg
Chromium, Trivalent	9.9	NT	NT	9.6	NT	14	NT	14	9.9	120,000	mg/kg
Specific Conductivity	32	12	0.89	21	13	55	1.0	5.1	17	<4 or 2 x the background	mmhos/cm
pH	8.5	NT	NT	8.1	NT	7.6	NT	8.1	8.2	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

31-Oct-2015

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

Re: **Emerald 35 Spill** Work Order: **15101138**

Dear Tim,

ALS Environmental received 5 samples on 17-Oct-2015 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 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 32.

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

Sincerely,

Electronically approved by: Les Arnold

Les Arnold
Senior Project Manager

Certificate No: MN 532786

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

ALS Group USA, Corp

Date: 31-Oct-15

Client: Olsson Associates
Project: Emerald 35 Spill
Work Order: **15101138**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
15101138-01	EMD 35-SS1	Soil		10/15/2015 13:55	10/17/2015 09:30	☐
15101138-02	EMD 35-BG1	Soil		10/15/2015 14:05	10/17/2015 09:30	☐
15101138-03	EMD 35-BG2	Soil		10/15/2015 14:15	10/17/2015 09:30	☐
15101138-04	EMD-35-SS2	Soil		10/15/2015 14:20	10/17/2015 09:30	☐
15101138-05	EMD 35-SS3	Soil		10/15/2015 14:30	10/17/2015 09:30	☐

ALS Group USA, Corp

Date: 31-Oct-15

Client: Olsson Associates
Project: Emerald 35 Spill
Work Order: 15101138

Case Narrative

The attached "Sample Receipt Checklist" documents the date of receipt, 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.

With the following exceptions, all sample analyses achieved analytical criteria.

NO DEVIATIONS OR ANOMALIES WERE NOTED.

ALS Group USA, Corp

Date: *31-Oct-15*

Client: Olsson Associates
Project: Emerald 35 Spill
Work Order: 15101138
Sample ID: EMD 35-SS1
Lab ID: 15101138-01
Collection Date: 10/15/2015 01:55 PM
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep: SW3541 / 10/23/15	Analyst: **IT**
DRO (C10-C28)	**38**		**4.6**	**mg/Kg-dry**	1	10/26/2015 01:45 PM
Surr: 4-Terphenyl-d14	*62.6*		*39-133*	*%REC*	1	10/26/2015 01:45 PM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**		Prep: SW5035 / 10/19/15	Analyst: **IT**
GRO (C6-C10)	ND		2.8	mg/Kg-dry	1	10/20/2015 04:27 AM
Surr: Toluene-d8	*91.7*		*50-150*	*%REC*	1	10/20/2015 04:27 AM
MERCURY BY CVAA			**SW7471B**		Prep: SW7471 / 10/27/15	Analyst: **LR**
Mercury	**0.038**		**0.014**	**mg/Kg-dry**	1	10/28/2015 11:34 AM
METALS ANALYSIS BY ICP			**SW846 6010C**		Prep: SW3050B / 10/19/15	Analyst: **JEC**
Arsenic	**5.6**		**0.35**	**mg/Kg-dry**	1	10/20/2015 02:24 PM
Barium	**110**		**0.35**	**mg/Kg-dry**	1	10/20/2015 02:24 PM
Cadmium	ND		0.35	mg/Kg-dry	1	10/20/2015 02:24 PM
Chromium	**9.9**		**0.35**	**mg/Kg-dry**	1	10/20/2015 02:24 PM
Copper	**14**		**0.35**	**mg/Kg-dry**	1	10/20/2015 02:24 PM
Lead	**15**		**0.35**	**mg/Kg-dry**	1	10/20/2015 02:24 PM
Nickel	**21**		**0.35**	**mg/Kg-dry**	1	10/20/2015 02:24 PM
Selenium	**1.2**		**0.70**	**mg/Kg-dry**	1	10/20/2015 02:24 PM
Silver	ND		0.35	mg/Kg-dry	1	10/20/2015 02:24 PM
Zinc	**76**		**0.70**	**mg/Kg-dry**	1	10/20/2015 02:24 PM
SOLUBLE CATIONS FOR SAR			**SW846 6010C**		Prep: USDA Method 20B / 10/21/15	Analyst: **JEC**
Calcium	**450**		**5.0**	**mg/L**	10	10/21/2015 12:48 PM
Magnesium	**440**		**2.0**	**mg/L**	10	10/21/2015 12:48 PM
Sodium	**5,800**		**20**	**mg/L**	100	10/21/2015 01:50 PM
SODIUM ADSORPTION RATIO			**USDA H60 METHOD**		Prep: USDA Method 20B / 10/21/15	Analyst: **JEC**
Sodium Adsorption Ratio	**47**		**0.010**	**none**	1	10/21/2015
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3541 / 10/27/15	Analyst: **RM**
Acenaphthene	ND		0.0073	mg/Kg-dry	1	10/29/2015 01:05 AM
Anthracene	ND		0.0073	mg/Kg-dry	1	10/29/2015 01:05 AM
Benzo(a)anthracene	ND		0.0073	mg/Kg-dry	1	10/29/2015 01:05 AM
Benzo(a)pyrene	ND		0.0073	mg/Kg-dry	1	10/29/2015 01:05 AM
Benzo(b)fluoranthene	ND		0.0073	mg/Kg-dry	1	10/29/2015 01:05 AM
Benzo(k)fluoranthene	ND		0.0073	mg/Kg-dry	1	10/29/2015 01:05 AM
Chrysene	ND		0.0073	mg/Kg-dry	1	10/29/2015 01:05 AM
Dibenzo(a,h)anthracene	ND		0.0073	mg/Kg-dry	1	10/29/2015 01:05 AM
Fluoranthene	ND		0.0073	mg/Kg-dry	1	10/29/2015 01:05 AM

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

ALS Group USA, Corp

Date: *31-Oct-15*

Client: Olsson Associates
Project: Emerald 35 Spill
Sample ID: EMD 35-SS1
Collection Date: 10/15/2015 01:55 PM

Work Order: 15101138
Lab ID: 15101138-01
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		0.0073	mg/Kg-dry	1	10/29/2015 01:05 AM
Indeno(1,2,3-cd)pyrene	ND		0.0073	mg/Kg-dry	1	10/29/2015 01:05 AM
Naphthalene	ND		0.0073	mg/Kg-dry	1	10/29/2015 01:05 AM
Pyrene	ND		0.0073	mg/Kg-dry	1	10/29/2015 01:05 AM
Surr: 2-Fluorobiphenyl	*70.4*		*12-100*	*%REC*	1	10/29/2015 01:05 AM
Surr: 4-Terphenyl-d14	*84.5*		*25-137*	*%REC*	1	10/29/2015 01:05 AM
Surr: Nitrobenzene-d5	*70.4*		*37-107*	*%REC*	1	10/29/2015 01:05 AM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 10/19/15	Analyst: **AK**
Benzene	ND		0.033	mg/Kg-dry	1	10/23/2015 03:12 AM
Ethylbenzene	ND		0.033	mg/Kg-dry	1	10/23/2015 03:12 AM
m,p-Xylene	ND		0.066	mg/Kg-dry	1	10/23/2015 03:12 AM
o-Xylene	ND		0.033	mg/Kg-dry	1	10/23/2015 03:12 AM
Toluene	ND		0.033	mg/Kg-dry	1	10/23/2015 03:12 AM
Xylenes, Total	ND		0.10	mg/Kg-dry	1	10/23/2015 03:12 AM
Surr: 1,2-Dichloroethane-d4	*85.5*		*70-130*	*%REC*	1	10/23/2015 03:12 AM
Surr: 4-Bromofluorobenzene	*98.5*		*70-130*	*%REC*	1	10/23/2015 03:12 AM
Surr: Dibromofluoromethane	*88.5*		*70-130*	*%REC*	1	10/23/2015 03:12 AM
Surr: Toluene-d8	*90.3*		*70-130*	*%REC*	1	10/23/2015 03:12 AM
ELECTRICAL CONDUCTIVITY (SAR)			**USDA H60 METHOD**		Prep: USDA Method 20B / 10/21/15	Analyst: **JB**
Electrical Conductivity @ Saturation	**32**		**0.050**	**mmhos/cm @25**	10	10/21/2015 03:30 PM
CHROMIUM, TRIVALENT			**CALCULATION**			Analyst: **JJG**
Chromium, Trivalent	**9.9**		**0.55**	**mg/Kg-dry**	1	10/21/2015 04:36 PM
CHROMIUM, HEXAVALENT			**SW7196A**		Prep: SW3060A / 10/18/15	Analyst: **MB**
Chromium, Hexavalent	ND		1.1	mg/Kg-dry	1	10/19/2015 04:00 PM
MOISTURE			**E160.3M**			Analyst: **TM**
Moisture	**9.6**		**0.050**	**% of sample**	1	10/26/2015 05:11 PM
PH			**SW9045D**		Prep: EXTRACT / 10/19/15	Analyst: **STP**
pH	**8.5**			**s.u.**	1	10/19/2015 04:15 PM

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

ALS Group USA, Corp

Date: *31-Oct-15*

Client: Olsson Associates
Project: Emerald 35 Spill
Sample ID: EMD 35-BG1
Collection Date: 10/15/2015 02:05 PM

Work Order: 15101138
Lab ID: 15101138-02
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**SW7471B**		Prep: SW7471 / 10/27/15	Analyst: **LR**
Mercury	**0.025**		**0.014**	**mg/Kg-dry**	1	10/28/2015 02:12 PM
METALS ANALYSIS BY ICP			**SW846 6010C**		Prep: SW3050B / 10/19/15	Analyst: **JEC**
Arsenic	**7.3**		**0.35**	**mg/Kg-dry**	1	10/20/2015 02:29 PM
Barium	**190**		**0.35**	**mg/Kg-dry**	1	10/20/2015 02:29 PM
Cadmium	ND		0.35	mg/Kg-dry	1	10/20/2015 02:29 PM
Chromium	**14**		**0.35**	**mg/Kg-dry**	1	10/20/2015 02:29 PM
Copper	**17**		**0.35**	**mg/Kg-dry**	1	10/20/2015 02:29 PM
Lead	**58**		**0.35**	**mg/Kg-dry**	1	10/20/2015 02:29 PM
Nickel	**25**		**0.35**	**mg/Kg-dry**	1	10/20/2015 02:29 PM
Selenium	**1.4**		**0.69**	**mg/Kg-dry**	1	10/20/2015 02:29 PM
Silver	ND		0.35	mg/Kg-dry	1	10/20/2015 02:29 PM
Zinc	**170**		**0.69**	**mg/Kg-dry**	1	10/20/2015 02:29 PM
SOLUBLE CATIONS FOR SAR			**SW846 6010C**		Prep: USDA Method 20B / 10/21/15	Analyst: **JEC**
Calcium	**870**		**5.0**	**mg/L**	10	10/21/2015 12:54 PM
Magnesium	**46**		**2.0**	**mg/L**	10	10/21/2015 12:54 PM
Sodium	**23**		**2.0**	**mg/L**	10	10/21/2015 12:54 PM
SODIUM ADSORPTION RATIO			**USDA H60 METHOD**		Prep: USDA Method 20B / 10/21/15	Analyst: **JEC**
Sodium Adsorption Ratio	**0.20**		**0.010**	**none**	1	10/21/2015
ELECTRICAL CONDUCTIVITY (SAR)			**USDA H60 METHOD**		Prep: USDA Method 20B / 10/21/15	Analyst: **JB**
Electrical Conductivity @ Saturation	**5.1**		**0.050**	**mmhos/cm @25**	10	10/21/2015 03:30 PM
CHROMIUM, TRIVALENT			**CALCULATION**			Analyst: **JJG**
Chromium, Trivalent	**14**		**0.52**	**mg/Kg-dry**	1	10/21/2015 04:36 PM
CHROMIUM, HEXAVALENT			**SW7196A**		Prep: SW3060A / 10/18/15	Analyst: **MB**
Chromium, Hexavalent	ND		0.97	mg/Kg-dry	1	10/19/2015 04:00 PM
MOISTURE			**E160.3M**			Analyst: **TM**
Moisture	**3.0**		**0.050**	**% of sample**	1	10/26/2015 05:11 PM
PH			**SW9045D**		Prep: EXTRACT / 10/19/15	Analyst: **STP**
pH	**8.1**			**s.u.**	1	10/19/2015 04:15 PM

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

ALS Group USA, Corp

Date: *31-Oct-15*

Client: Olsson Associates
Project: Emerald 35 Spill
Sample ID: EMD 35-BG2
Collection Date: 10/15/2015 02:15 PM

Work Order: 15101138
Lab ID: 15101138-03
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			**SW7471B**		Prep: SW7471 / 10/27/15	Analyst: **LR**
Mercury	**0.029**		**0.013**	**mg/Kg-dry**	1	10/28/2015 02:14 PM
METALS ANALYSIS BY ICP			**SW846 6010C**		Prep: SW3050B / 10/21/15	Analyst: **JEC**
Arsenic	**5.8**		**0.40**	**mg/Kg-dry**	1	10/21/2015 06:38 PM
Barium	**340**		**0.40**	**mg/Kg-dry**	1	10/21/2015 06:38 PM
Cadmium	ND		0.40	mg/Kg-dry	1	10/21/2015 06:38 PM
Chromium	**10**		**0.40**	**mg/Kg-dry**	1	10/21/2015 06:38 PM
Copper	**12**		**0.40**	**mg/Kg-dry**	1	10/21/2015 06:38 PM
Lead	**15**		**0.40**	**mg/Kg-dry**	1	10/21/2015 06:38 PM
Nickel	**19**		**0.40**	**mg/Kg-dry**	1	10/21/2015 06:38 PM
Selenium	**0.92**		**0.80**	**mg/Kg-dry**	1	10/21/2015 06:38 PM
Silver	ND		0.40	mg/Kg-dry	1	10/21/2015 06:38 PM
Zinc	**65**		**0.80**	**mg/Kg-dry**	1	10/21/2015 06:38 PM
SOLUBLE CATIONS FOR SAR			**SW846 6010C**		Prep: USDA Method 20B / 10/21/15	Analyst: **JEC**
Calcium	**660**		**5.0**	**mg/L**	10	10/21/2015 12:59 PM
Magnesium	**190**		**2.0**	**mg/L**	10	10/21/2015 12:59 PM
Sodium	**2,200**		**2.0**	**mg/L**	10	10/21/2015 12:59 PM
SODIUM ADSORPTION RATIO			**USDA H60 METHOD**		Prep: USDA Method 20B / 10/21/15	Analyst: **JEC**
Sodium Adsorption Ratio	**20**		**0.010**	**none**	1	10/21/2015
ELECTRICAL CONDUCTIVITY (SAR)			**USDA H60 METHOD**		Prep: USDA Method 20B / 10/21/15	Analyst: **JB**
Electrical Conductivity @ Saturation	**17**		**0.050**	**mmhos/cm @25**	10	10/21/2015 03:30 PM
CHROMIUM, TRIVALENT			**CALCULATION**			Analyst: **JJG**
Chromium, Trivalent	**9.9**		**0.53**	**mg/Kg-dry**	1	10/26/2015 03:49 PM
CHROMIUM, HEXAVALENT			**SW7196A**		Prep: SW3060A / 10/18/15	Analyst: **MB**
Chromium, Hexavalent	ND		0.97	mg/Kg-dry	1	10/19/2015 04:00 PM
MOISTURE			**E160.3M**			Analyst: **TM**
Moisture	**5.3**		**0.050**	**% of sample**	1	10/26/2015 05:11 PM
PH			**SW9045D**		Prep: EXTRACT / 10/19/15	Analyst: **STP**
pH	**8.2**			**s.u.**	1	10/19/2015 04:15 PM

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

ALS Group USA, Corp

Date: *31-Oct-15*

Client: Olsson Associates
Project: Emerald 35 Spill
Sample ID: EMD-35-SS2
Collection Date: 10/15/2015 02:20 PM

Work Order: 15101138
Lab ID: 15101138-04
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep: SW3541 / 10/23/15	Analyst: **IT**
DRO (C10-C28)	**360**		**43**	**mg/Kg-dry**	10	10/26/2015 02:15 PM
Surr: 4-Terphenyl-d14	*147*	S	*39-133*	*%REC*	10	10/26/2015 02:15 PM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**		Prep: SW5035 / 10/19/15	Analyst: **IT**
GRO (C6-C10)	ND		2.6	mg/Kg-dry	1	10/20/2015 04:52 AM
Surr: Toluene-d8	*109*		*50-150*	*%REC*	1	10/20/2015 04:52 AM
MERCURY BY CVAA			**SW7471B**		Prep: SW7471 / 10/27/15	Analyst: **LR**
Mercury	**0.017**		**0.013**	**mg/Kg-dry**	1	10/28/2015 02:17 PM
METALS ANALYSIS BY ICP			**SW846 6010C**		Prep: SW3050B / 10/21/15	Analyst: **JEC**
Arsenic	**4.7**		**0.41**	**mg/Kg-dry**	1	10/21/2015 06:44 PM
Barium	**580**		**0.41**	**mg/Kg-dry**	1	10/21/2015 06:44 PM
Cadmium	ND		0.41	mg/Kg-dry	1	10/21/2015 06:44 PM
Chromium	**10**		**0.41**	**mg/Kg-dry**	1	10/21/2015 06:44 PM
Copper	**8.9**		**0.41**	**mg/Kg-dry**	1	10/21/2015 06:44 PM
Lead	**22**		**0.41**	**mg/Kg-dry**	1	10/21/2015 06:44 PM
Nickel	**13**		**0.41**	**mg/Kg-dry**	1	10/21/2015 06:44 PM
Selenium	ND		0.81	mg/Kg-dry	1	10/21/2015 06:44 PM
Silver	ND		0.41	mg/Kg-dry	1	10/21/2015 06:44 PM
Zinc	**49**		**0.81**	**mg/Kg-dry**	1	10/21/2015 06:44 PM
SOLUBLE CATIONS FOR SAR			**SW846 6010C**		Prep: USDA Method 20B / 10/21/15	Analyst: **JEC**
Calcium	**1,100**		**5.0**	**mg/L**	10	10/21/2015 01:05 PM
Magnesium	**220**		**2.0**	**mg/L**	10	10/21/2015 01:05 PM
Sodium	**2,500**		**2.0**	**mg/L**	10	10/21/2015 01:05 PM
SODIUM ADSORPTION RATIO			**USDA H60 METHOD**		Prep: USDA Method 20B / 10/21/15	Analyst: **JEC**
Sodium Adsorption Ratio	**18**		**0.010**	**none**	1	10/21/2015
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3541 / 10/27/15	Analyst: **RM**
Acenaphthene	ND		0.0069	mg/Kg-dry	1	10/29/2015 12:45 AM
Anthracene	ND		0.0069	mg/Kg-dry	1	10/29/2015 12:45 AM
Benzo(a)anthracene	ND		0.0069	mg/Kg-dry	1	10/29/2015 12:45 AM
Benzo(a)pyrene	**0.0073**		**0.0069**	**mg/Kg-dry**	1	10/29/2015 12:45 AM
Benzo(b)fluoranthene	**0.0083**		**0.0069**	**mg/Kg-dry**	1	10/29/2015 12:45 AM
Benzo(k)fluoranthene	ND		0.0069	mg/Kg-dry	1	10/29/2015 12:45 AM
Chrysene	ND		0.0069	mg/Kg-dry	1	10/29/2015 12:45 AM
Dibenzo(a,h)anthracene	ND		0.0069	mg/Kg-dry	1	10/29/2015 12:45 AM
Fluoranthene	**0.011**		**0.0069**	**mg/Kg-dry**	1	10/29/2015 12:45 AM

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

ALS Group USA, Corp

Date: *31-Oct-15*

Client: Olsson Associates
Project: Emerald 35 Spill
Sample ID: EMD-35-SS2
Collection Date: 10/15/2015 02:20 PM

Work Order: 15101138
Lab ID: 15101138-04
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		0.0069	mg/Kg-dry	1	10/29/2015 12:45 AM
Indeno(1,2,3-cd)pyrene	ND		0.0069	mg/Kg-dry	1	10/29/2015 12:45 AM
Naphthalene	ND		0.0069	mg/Kg-dry	1	10/29/2015 12:45 AM
Pyrene	**0.0097**		**0.0069**	**mg/Kg-dry**	1	10/29/2015 12:45 AM
Surr: 2-Fluorobiphenyl	*81.6*		*12-100*	*%REC*	1	10/29/2015 12:45 AM
Surr: 4-Terphenyl-d14	*88.9*		*25-137*	*%REC*	1	10/29/2015 12:45 AM
Surr: Nitrobenzene-d5	*75.0*		*37-107*	*%REC*	1	10/29/2015 12:45 AM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 10/19/15	Analyst: **AK**
Benzene	ND		0.032	mg/Kg-dry	1	10/29/2015 02:49 PM
Ethylbenzene	ND		0.032	mg/Kg-dry	1	10/29/2015 02:49 PM
m,p-Xylene	ND		0.063	mg/Kg-dry	1	10/29/2015 02:49 PM
o-Xylene	ND		0.032	mg/Kg-dry	1	10/29/2015 02:49 PM
Toluene	ND		0.032	mg/Kg-dry	1	10/29/2015 02:49 PM
Xylenes, Total	ND		0.095	mg/Kg-dry	1	10/29/2015 02:49 PM
Surr: 1,2-Dichloroethane-d4	*96.7*		*70-130*	*%REC*	1	10/29/2015 02:49 PM
Surr: 4-Bromofluorobenzene	*95.3*		*70-130*	*%REC*	1	10/29/2015 02:49 PM
Surr: Dibromofluoromethane	*95.8*		*70-130*	*%REC*	1	10/29/2015 02:49 PM
Surr: Toluene-d8	*99.6*		*70-130*	*%REC*	1	10/29/2015 02:49 PM
ELECTRICAL CONDUCTIVITY (SAR)			**USDA H60 METHOD**		Prep: USDA Method 20B / 10/21/15	Analyst: **JB**
Electrical Conductivity @ Saturation	**21**		**0.050**	**mmhos/cm @25**	10	10/21/2015 03:30 PM
CHROMIUM, TRIVALENT			**CALCULATION**			Analyst: **JJG**
Chromium, Trivalent	**9.6**		**0.53**	**mg/Kg-dry**	1	10/26/2015 03:49 PM
CHROMIUM, HEXAVALENT			**SW7196A**		Prep: SW3060A / 10/18/15	Analyst: **MB**
Chromium, Hexavalent	ND		0.99	mg/Kg-dry	1	10/19/2015 04:00 PM
MOISTURE			**E160.3M**			Analyst: **TM**
Moisture	**5.0**		**0.050**	**% of sample**	1	10/26/2015 05:11 PM
PH			**SW9045D**		Prep: EXTRACT / 10/19/15	Analyst: **STP**
pH	**8.1**			**s.u.**	1	10/19/2015 04:15 PM

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

ALS Group USA, Corp

Date: *31-Oct-15*

Client: Olsson Associates
Project: Emerald 35 Spill
Sample ID: EMD 35-SS3
Collection Date: 10/15/2015 02:30 PM

Work Order: 15101138
Lab ID: 15101138-05
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID			**SW8015M**		Prep: SW3541 / 10/26/15	Analyst: **IT**
DRO (C10-C28)	**120**		**23**	**mg/Kg-dry**	5	10/26/2015 06:50 PM
Surr: 4-Terphenyl-d14	*68.4*		*39-133*	*%REC*	5	10/26/2015 06:50 PM
GASOLINE RANGE ORGANICS BY GC-FID			**SW8015D**		Prep: SW5035 / 10/19/15	Analyst: **IT**
GRO (C6-C10)	ND		2.8	mg/Kg-dry	1	10/20/2015 05:17 AM
Surr: Toluene-d8	*90.7*		*50-150*	*%REC*	1	10/20/2015 05:17 AM
MERCURY BY CVAA			**SW7471B**		Prep: SW7471 / 10/27/15	Analyst: **LR**
Mercury	**0.035**		**0.016**	**mg/Kg-dry**	1	10/28/2015 02:50 PM
METALS ANALYSIS BY ICP			**SW846 6010C**		Prep: SW3050B / 10/21/15	Analyst: **JEC**
Arsenic	**7.4**		**0.43**	**mg/Kg-dry**	1	10/21/2015 06:49 PM
Barium	**330**		**0.43**	**mg/Kg-dry**	1	10/21/2015 06:49 PM
Cadmium	ND		0.43	mg/Kg-dry	1	10/21/2015 06:49 PM
Chromium	**14**		**0.43**	**mg/Kg-dry**	1	10/21/2015 06:49 PM
Copper	**18**		**0.43**	**mg/Kg-dry**	1	10/21/2015 06:49 PM
Lead	**23**		**0.43**	**mg/Kg-dry**	1	10/21/2015 06:49 PM
Nickel	**27**		**0.43**	**mg/Kg-dry**	1	10/21/2015 06:49 PM
Selenium	**1.7**		**0.86**	**mg/Kg-dry**	1	10/22/2015 11:06 AM
Silver	ND		0.43	mg/Kg-dry	1	10/21/2015 06:49 PM
Zinc	**96**		**0.86**	**mg/Kg-dry**	1	10/21/2015 06:49 PM
SOLUBLE CATIONS FOR SAR			**SW846 6010C**		Prep: USDA Method 20B / 10/21/15	Analyst: **JEC**
Calcium	**2,100**		**5.0**	**mg/L**	10	10/21/2015 01:11 PM
Magnesium	**260**		**2.0**	**mg/L**	10	10/21/2015 01:11 PM
Sodium	**8,500**		**20**	**mg/L**	100	10/21/2015 01:55 PM
SODIUM ADSORPTION RATIO			**USDA H60 METHOD**		Prep: USDA Method 20B / 10/21/15	Analyst: **JEC**
Sodium Adsorption Ratio	**47**		**0.010**	**none**	1	10/21/2015
SEMI-VOLATILE ORGANIC COMPOUNDS			**SW846 8270D**		Prep: SW3541 / 10/27/15	Analyst: **RM**
Acenaphthene	ND		0.0074	mg/Kg-dry	1	10/29/2015 12:25 AM
Anthracene	ND		0.0074	mg/Kg-dry	1	10/29/2015 12:25 AM
Benzo(a)anthracene	ND		0.0074	mg/Kg-dry	1	10/29/2015 12:25 AM
Benzo(a)pyrene	ND		0.0074	mg/Kg-dry	1	10/29/2015 12:25 AM
Benzo(b)fluoranthene	ND		0.0074	mg/Kg-dry	1	10/29/2015 12:25 AM
Benzo(k)fluoranthene	ND		0.0074	mg/Kg-dry	1	10/29/2015 12:25 AM
Chrysene	ND		0.0074	mg/Kg-dry	1	10/29/2015 12:25 AM
Dibenzo(a,h)anthracene	ND		0.0074	mg/Kg-dry	1	10/29/2015 12:25 AM
Fluoranthene	ND		0.0074	mg/Kg-dry	1	10/29/2015 12:25 AM

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

ALS Group USA, Corp

Date: *31-Oct-15*

Client: Olsson Associates
Project: Emerald 35 Spill
Sample ID: EMD 35-SS3
Collection Date: 10/15/2015 02:30 PM

Work Order: 15101138
Lab ID: 15101138-05
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		0.0074	mg/Kg-dry	1	10/29/2015 12:25 AM
Indeno(1,2,3-cd)pyrene	ND		0.0074	mg/Kg-dry	1	10/29/2015 12:25 AM
Naphthalene	ND		0.0074	mg/Kg-dry	1	10/29/2015 12:25 AM
Pyrene	ND		0.0074	mg/Kg-dry	1	10/29/2015 12:25 AM
Surr: 2-Fluorobiphenyl	*81.2*		*12-100*	*%REC*	1	10/29/2015 12:25 AM
Surr: 4-Terphenyl-d14	*87.8*		*25-137*	*%REC*	1	10/29/2015 12:25 AM
Surr: Nitrobenzene-d5	*73.6*		*37-107*	*%REC*	1	10/29/2015 12:25 AM
VOLATILE ORGANIC COMPOUNDS			**SW8260B**		Prep: SW5035 / 10/19/15	Analyst: **AK**
Benzene	ND		0.034	mg/Kg-dry	1	10/29/2015 03:13 PM
Ethylbenzene	ND		0.034	mg/Kg-dry	1	10/29/2015 03:13 PM
m,p-Xylene	ND		0.067	mg/Kg-dry	1	10/29/2015 03:13 PM
o-Xylene	ND		0.034	mg/Kg-dry	1	10/29/2015 03:13 PM
Toluene	ND		0.034	mg/Kg-dry	1	10/29/2015 03:13 PM
Xylenes, Total	ND		0.10	mg/Kg-dry	1	10/29/2015 03:13 PM
Surr: 1,2-Dichloroethane-d4	*100*		*70-130*	*%REC*	1	10/29/2015 03:13 PM
Surr: 4-Bromofluorobenzene	*96.8*		*70-130*	*%REC*	1	10/29/2015 03:13 PM
Surr: Dibromofluoromethane	*95.5*		*70-130*	*%REC*	1	10/29/2015 03:13 PM
Surr: Toluene-d8	*98.4*		*70-130*	*%REC*	1	10/29/2015 03:13 PM
ELECTRICAL CONDUCTIVITY (SAR)			**USDA H60 METHOD**		Prep: USDA Method 20B / 10/21/15	Analyst: **JB**
Electrical Conductivity @ Saturation	**55**		**0.050**	**mmhos/cm @25**	10	10/21/2015 03:30 PM
CHROMIUM, TRIVALENT			**CALCULATION**			Analyst: **JJG**
Chromium, Trivalent	**14**		**0.56**	**mg/Kg-dry**	1	10/26/2015 03:49 PM
CHROMIUM, HEXAVALENT			**SW7196A**		Prep: SW3060A / 10/18/15	Analyst: **MB**
Chromium, Hexavalent	ND		1.0	mg/Kg-dry	1	10/19/2015 04:00 PM
MOISTURE			**E160.3M**			Analyst: **TM**
Moisture	**11**		**0.050**	**% of sample**	1	10/26/2015 05:11 PM
PH			**SW9045D**		Prep: EXTRACT / 10/19/15	Analyst: **STP**
pH	**7.6**			**s.u.**	1	10/19/2015 04:15 PM

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

Client: Olsson Associates
Project: Emerald 35 Spill
WorkOrder: 15101138

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	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 PQL, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
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

Units Reported	Description
% 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: 31-Oct-15

Client: Olsson Associates

QC BATCH REPORT

Work Order: 15101138

Project: Emerald 35 Spill

Batch ID: **77908** Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: **DBLKS1-77908-77908** Units: **mg/Kg** Analysis Date: **10/26/2015 09:47 AM**

Client ID: Run ID: **GC8_151026A** SeqNo: **3529551** Prep Date: **10/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	ND	5.0								
Surr: 4-Terphenyl-d14	*1.065*	0	*2*	0	*53.3*	*39-133*	0			

LCS Sample ID: **DLCSS1-77908-77908** Units: **mg/Kg** Analysis Date: **10/26/2015 10:17 AM**

Client ID: Run ID: **GC8_151026A** SeqNo: **3529553** Prep Date: **10/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	164.8	5.0	200	0	82.4	61-109	0			
Surr: 4-Terphenyl-d14	*1.091*	0	*2*	0	*54.6*	*39-133*	0			

MS Sample ID: **15101337-01A MS** Units: **mg/Kg** Analysis Date: **10/26/2015 12:16 PM**

Client ID: Run ID: **GC8_151026A** SeqNo: **3529559** Prep Date: **10/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	148.3	4.1	164.5	35.72	68.4	48-110	0			
Surr: 4-Terphenyl-d14	*1.535*	0	*1.645*	0	*93.3*	*39-133*	0			

MSD Sample ID: **15101337-01A MSD** Units: **mg/Kg** Analysis Date: **10/26/2015 12:46 PM**

Client ID: Run ID: **GC8_151026A** SeqNo: **3529560** Prep Date: **10/23/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	150.9	4.2	166.2	35.72	69.3	48-110	148.3	1.76	30	
Surr: 4-Terphenyl-d14	*1.765*	0	*1.662*	0	*106*	*39-133*	1.535	*13.9*	*30*	

The following samples were analyzed in this batch: 15101138-01A 15101138-04A

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

Client: Olsson Associates
Work Order: 15101138
Project: Emerald 35 Spill

QC BATCH REPORT

Batch ID: **77980** Instrument ID **GC8** Method: **SW8015M**

MBLK Sample ID: **DBLKS1-77980-77980** Units: **mg/Kg** Analysis Date: **10/26/2015 04:51 PM**
Client ID: Run ID: **GC8_151026A** SeqNo: **3531813** Prep Date: **10/26/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	ND	5.0								
Surr: 4-Terphenyl-d14	*1.491*	0	*2*	0	*74.5*	*39-133*	0			

LCS Sample ID: **DLCSS1-77980-77980** Units: **mg/Kg** Analysis Date: **10/26/2015 05:21 PM**
Client ID: Run ID: **GC8_151026A** SeqNo: **3531815** Prep Date: **10/26/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	158.9	5.0	200	0	79.4	61-109	0			
Surr: 4-Terphenyl-d14	*1.316*	0	*2*	0	*65.8*	*39-133*	0			

MS Sample ID: **15101138-05A MS** Units: **mg/Kg** Analysis Date: **10/26/2015 05:50 PM**
Client ID: **EMD 35-SS3** Run ID: **GC8_151026A** SeqNo: **3531817** Prep Date: **10/26/2015** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	211.8	21	164.7	105.5	64.6	48-110	0			
Surr: 4-Terphenyl-d14	*1.161*	0	*1.647*	0	*70.5*	*39-133*	0			

MSD Sample ID: **15101138-05A MSD** Units: **mg/Kg** Analysis Date: **10/26/2015 06:20 PM**
Client ID: **EMD 35-SS3** Run ID: **GC8_151026A** SeqNo: **3531818** Prep Date: **10/26/2015** DF: **5**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	208.8	21	166.2	105.5	62.2	48-110	211.8	1.45	30	
Surr: 4-Terphenyl-d14	*1.025*	0	*1.662*	0	*61.7*	*39-133*	1.161	*12.4*	*30*	

The following samples were analyzed in this batch: 15101138-05A

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

Client: Olsson Associates
Work Order: 15101138
Project: Emerald 35 Spill

QC BATCH REPORT

Batch ID: **77666** Instrument ID **GC9** Method: **SW8015D**

MBLK Sample ID: **MBLK-77666-77666** Units: **µg/Kg** Analysis Date: **10/20/2015 01:32 AM**
Client ID: Run ID: **GC9_151019B** SeqNo: **3518824** Prep Date: **10/19/2015** 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	*5072*	0	*5000*	0	*101*	*50-150*	0			

LCS Sample ID: **LCS-77666-77666** Units: **µg/Kg** Analysis Date: **10/20/2015 01:07 AM**
Client ID: Run ID: **GC9_151019B** SeqNo: **3518822** Prep Date: **10/19/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	506300	2,500	500000	0	101	70-130	0			
Surr: Toluene-d8	*4931*	0	*5000*	0	*98.6*	*50-150*	0			

MS Sample ID: **15101138-04A MS** Units: **µg/Kg** Analysis Date: **10/20/2015 05:42 AM**
Client ID: **EMD-35-SS2** Run ID: **GC9_151019B** SeqNo: **3518836** Prep Date: **10/19/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	507500	2,500	500000	0	102	70-130	0			
Surr: Toluene-d8	*5193*	0	*5000*	0	*104*	*50-150*	0			

MSD Sample ID: **15101138-04A MSD** Units: **µg/Kg** Analysis Date: **10/20/2015 06:07 AM**
Client ID: **EMD-35-SS2** Run ID: **GC9_151019B** SeqNo: **3518837** Prep Date: **10/19/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	516300	2,500	500000	0	103	70-130	507500	1.72	30	
Surr: Toluene-d8	*5186*	0	*5000*	0	*104*	*50-150*	5193	*0.145*	*30*	

The following samples were analyzed in this batch: 15101138-01A 15101138-04A 15101138-05A

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

Client: Olsson Associates
Work Order: 15101138
Project: Emerald 35 Spill

QC BATCH REPORT

Batch ID: **78085** Instrument ID **HG1** Method: **SW7471B**

MBLK	Sample ID: **MBLK-78085-78085**			Units: **mg/Kg**			Analysis Date: **10/28/2015 11:17 AM**			
Client ID:	Run ID: **HG1_151028A**			SeqNo: **3535042**			Prep Date: **10/27/2015**		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-78085-78085**			Units: **mg/Kg**			Analysis Date: **10/28/2015 11:20 AM**			
Client ID:	Run ID: **HG1_151028A**			SeqNo: **3535045**			Prep Date: **10/27/2015**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1833	0.020	0.1665	0	110	80-120	0			

MS	Sample ID: **15101538-04AMS**			Units: **mg/Kg**			Analysis Date: **10/28/2015 11:25 AM**			
Client ID:	Run ID: **HG1_151028A**			SeqNo: **3535048**			Prep Date: **10/27/2015**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1102	0.012	0.101	0.002989	106	75-125	0			

MSD	Sample ID: **15101538-04AMSD**			Units: **mg/Kg**			Analysis Date: **10/28/2015 11:27 AM**			
Client ID:	Run ID: **HG1_151028A**			SeqNo: **3535050**			Prep Date: **10/27/2015**		DF: **1**	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1121	0.013	0.1042	0.002989	105	75-125	0.1102	1.69	35	

The following samples were analyzed in this batch:

15101138-01A	15101138-02A	15101138-03A
15101138-04A	15101138-05A	

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

Client: Olsson Associates
Work Order: 15101138
Project: Emerald 35 Spill

QC BATCH REPORT

Batch ID: **77667** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK Sample ID: **MBLK-77667-77667** Units: **mg/Kg** Analysis Date: **10/20/2015 11:45 AM**
Client ID: Run ID: **ICP2_151020A** SeqNo: **3519679** Prep Date: **10/19/2015** 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	0.009282	0.25								J
Copper	ND	0.50								
Lead	ND	0.25								
Nickel	ND	0.25								
Selenium	ND	0.50								
Silver	ND	0.25								
Zinc	ND	0.50								

LCS Sample ID: **LCS-77667-77667** Units: **mg/Kg** Analysis Date: **10/20/2015 11:50 AM**
Client ID: Run ID: **ICP2_151020A** SeqNo: **3519680** Prep Date: **10/19/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	5.038	0.25	5	0	101	80-120	0			
Barium	5.205	0.25	5	0	104	80-120	0			
Cadmium	4.81	0.50	5	0	96.2	80-120	0			
Chromium	5.301	0.25	5	0	106	80-120	0			
Copper	5.47	0.50	5	0	109	80-120	0			
Lead	5.027	0.25	5	0	101	80-120	0			
Nickel	5.069	0.25	5	0	101	80-120	0			
Selenium	5.087	0.50	5	0	102	80-120	0			
Silver	4.896	0.25	5	0	97.9	80-120	0			
Zinc	5.533	0.50	5	0	111	80-120	0			

MS Sample ID: **15101122-05AMS** Units: **mg/Kg** Analysis Date: **10/20/2015 01:24 PM**
Client ID: Run ID: **ICP2_151020A** SeqNo: **3519707** Prep Date: **10/19/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	11.95	0.36	7.257	4.427	104	75-125	0			
Barium	42.69	0.36	7.257	36.75	81.9	75-125	0			O
Cadmium	7.151	0.73	7.257	0.02866	98.1	75-125	0			
Chromium	19.56	0.36	7.257	11.15	116	75-125	0			
Copper	15.07	0.73	7.257	8.585	89.3	75-125	0			
Lead	12.57	0.36	7.257	6.629	81.8	75-125	0			
Nickel	22.07	0.36	7.257	16.86	71.8	75-125	0			S
Selenium	7.88	0.73	7.257	0.4338	103	75-125	0			
Silver	7.296	0.36	7.257	0.04285	99.9	75-125	0			
Zinc	30.12	0.73	7.257	20.72	129	75-125	0			S

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

Client: Olsson Associates
Work Order: 15101138
Project: Emerald 35 Spill

QC BATCH REPORT

Batch ID: **77667** Instrument ID **ICP2** Method: **SW846 6010C**

MSD Sample ID: **15101122-05AMSD** Units: **mg/Kg** Analysis Date: **10/20/2015 01:29 PM**

Client ID: Run ID: **ICP2_151020A** SeqNo: **3519708** Prep Date: **10/19/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	11.54	0.36	7.215	4.427	98.5	75-125	11.95	3.55	20	
Barium	39.69	0.36	7.215	36.75	40.8	75-125	42.69	7.28	20	SO
Cadmium	6.978	0.72	7.215	0.02866	96.3	75-125	7.151	2.45	20	
Chromium	18.78	0.36	7.215	11.15	106	75-125	19.56	4.07	20	
Copper	13.78	0.72	7.215	8.585	72.1	75-125	15.07	8.88	20	S
Lead	12.35	0.36	7.215	6.629	79.3	75-125	12.57	1.72	20	
Nickel	21.72	0.36	7.215	16.86	67.3	75-125	22.07	1.63	20	S
Selenium	7.787	0.72	7.215	0.4338	102	75-125	7.88	1.19	20	
Silver	7.095	0.36	7.215	0.04285	97.7	75-125	7.296	2.78	20	
Zinc	28.25	0.72	7.215	20.72	104	75-125	30.12	6.41	20	

The following samples were analyzed in this batch: 15101138-01A 15101138-02A

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

Client: Olsson Associates
Work Order: 15101138
Project: Emerald 35 Spill

QC BATCH REPORT

Batch ID: **77752** Instrument ID **ICP2** Method: **SW846 6010C**

DUP Sample ID: **15101009-01CDUP** Units: **mg/L** Analysis Date: **10/21/2015 12:26 PM**
Client ID: Run ID: **ICP2_151021A** SeqNo: **3521489** Prep Date: **10/21/2015** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	296.3	5.0	0	0	0	0-0	339.7	13.6		
Magnesium	145.9	2.0	0	0	0	0-0	165.7	12.7		
Sodium	2266	2.0	0	0	0	0-0	2461	8.26		

DUP Sample ID: **15101009-01CDUP** Units: **none** Analysis Date: **10/21/2015**
Client ID: Run ID: **SAR_151021A** SeqNo: **3521640** Prep Date: **10/21/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	26.93	0.010	0	0	0		27.37	1.64	50	

The following samples were analyzed in this batch: 15101138-01B, 15101138-02B, 15101138-03B, 15101138-04B, 15101138-05B

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

Client: Olsson Associates
Work Order: 15101138
Project: Emerald 35 Spill

QC BATCH REPORT

Batch ID: **77792** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK Sample ID: **MBLK-77792-77792** Units: **mg/Kg** Analysis Date: **10/21/2015 06:28 PM**
Client ID: Run ID: **ICP2_151021A** SeqNo: **3522549** Prep Date: **10/21/2015** 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	0.0206	0.25								J
Copper	ND	0.50								
Lead	ND	0.25								
Nickel	ND	0.25								
Selenium	ND	0.50								
Silver	ND	0.25								
Zinc	ND	0.50								

LCS Sample ID: **LCS-77792-77792** Units: **mg/Kg** Analysis Date: **10/21/2015 06:33 PM**
Client ID: Run ID: **ICP2_151021A** SeqNo: **3522550** Prep Date: **10/21/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.952	0.25	5	0	99	80-120	0			
Barium	5.031	0.25	5	0	101	80-120	0			
Cadmium	4.752	0.50	5	0	95	80-120	0			
Chromium	5.312	0.25	5	0	106	80-120	0			
Copper	4.985	0.50	5	0	99.7	80-120	0			
Lead	5.014	0.25	5	0	100	80-120	0			
Nickel	5.044	0.25	5	0	101	80-120	0			
Selenium	5.038	0.50	5	0	101	80-120	0			
Silver	4.883	0.25	5	0	97.7	80-120	0			
Zinc	4.966	0.50	5	0	99.3	80-120	0			

MS Sample ID: **1510834-37AMS** Units: **mg/Kg** Analysis Date: **10/21/2015 08:16 PM**
Client ID: Run ID: **ICP2_151021A** SeqNo: **3522570** Prep Date: **10/21/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	8.6	0.37	7.44	1.181	99.7	75-125	0			
Barium	15.42	0.37	7.44	7.212	110	75-125	0			
Cadmium	7.177	0.74	7.44	-0.06088	97.3	75-125	0			
Chromium	10.6	0.37	7.44	2.818	105	75-125	0			
Copper	9.007	0.74	7.44	1.842	96.3	75-125	0			
Lead	8.95	0.37	7.44	1.566	99.2	75-125	0			
Nickel	11.58	0.37	7.44	3.888	103	75-125	0			
Selenium	7.521	0.74	7.44	-0.09612	102	75-125	0			
Silver	7.304	0.37	7.44	-0.02525	98.5	75-125	0			
Zinc	15.95	0.74	7.44	8.661	97.9	75-125	0			

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

Client: Olsson Associates
Work Order: 15101138
Project: Emerald 35 Spill

QC BATCH REPORT

Batch ID: **77792** Instrument ID **ICP2** Method: **SW846 6010C**

MSD Sample ID: **1510834-37AMSD** Units: **mg/Kg** Analysis Date: **10/21/2015 08:21 PM**
Client ID: Run ID: **ICP2_151021A** SeqNo: **3522571** Prep Date: **10/21/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	8.583	0.37	7.463	1.181	99.2	75-125	8.6	0.196	20	
Barium	16.54	0.37	7.463	7.212	125	75-125	15.42	7.05	20	S
Cadmium	7.012	0.75	7.463	-0.06088	94.8	75-125	7.177	2.33	20	
Chromium	10.7	0.37	7.463	2.818	106	75-125	10.6	0.98	20	
Copper	9.157	0.75	7.463	1.842	98	75-125	9.007	1.66	20	
Lead	9.035	0.37	7.463	1.566	100	75-125	8.95	0.938	20	
Nickel	11.76	0.37	7.463	3.888	105	75-125	11.58	1.5	20	
Selenium	7.716	0.75	7.463	-0.09612	105	75-125	7.521	2.55	20	
Silver	7.184	0.37	7.463	-0.02525	96.6	75-125	7.304	1.66	20	
Zinc	17.26	0.75	7.463	8.661	115	75-125	15.95	7.92	20	

The following samples were analyzed in this batch: 15101138-03A 15101138-04A 15101138-05A

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

Client: Olsson Associates
Work Order: 15101138
Project: Emerald 35 Spill

QC BATCH REPORT

Batch ID: **78032** Instrument ID **SVMS8** Method: **SW846 8270D**

MBLK Sample ID: **SBLKS1-78032-78032** Units: **µg/Kg** Analysis Date: **10/27/2015 07:54 PM**
Client ID: Run ID: **SVMS8_151027B** SeqNo: **3535772** Prep Date: **10/27/2015** 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	*1443*	0	*1667*	0	*86.6*	*12-100*	0			
Surr: 4-Terphenyl-d14	*1622*	0	*1667*	0	*97.3*	*25-137*	0			
Surr: Nitrobenzene-d5	*1471*	0	*1667*	0	*88.3*	*37-107*	0			

LCS Sample ID: **SLCSS1-78032-78032** Units: **µg/Kg** Analysis Date: **10/27/2015 08:14 PM**
Client ID: Run ID: **SVMS8_151027B** SeqNo: **3535773** Prep Date: **10/27/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	561.7	6.7	666.7	0	84.2	45-110	0			
Anthracene	598.3	6.7	666.7	0	89.7	55-105	0			
Benzo(a)anthracene	648.3	6.7	666.7	0	97.2	50-110	0			
Benzo(a)pyrene	663.7	6.7	666.7	0	99.5	50-110	0			
Benzo(b)fluoranthene	673	6.7	666.7	0	101	45-115	0			
Benzo(k)fluoranthene	669.7	6.7	666.7	0	100	45-115	0			
Chrysene	638	6.7	666.7	0	95.7	55-110	0			
Dibenzo(a,h)anthracene	559.7	6.7	666.7	0	83.9	40-125	0			
Fluoranthene	646.7	6.7	666.7	0	97	55-115	0			
Fluorene	652.3	6.7	666.7	0	97.8	50-110	0			
Indeno(1,2,3-cd)pyrene	558.7	6.7	666.7	0	83.8	40-120	0			
Naphthalene	537.7	6.7	666.7	0	80.6	40-105	0			
Pyrene	648.7	6.7	666.7	0	97.3	45-125	0			
Surr: 2-Fluorobiphenyl	*1451*	0	*1667*	0	*87.1*	*12-100*	0			
Surr: 4-Terphenyl-d14	*1666*	0	*1667*	0	*99.9*	*25-137*	0			
Surr: Nitrobenzene-d5	*1468*	0	*1667*	0	*88.1*	*37-107*	0			

The following samples were analyzed in this batch: 15101138-01A 15101138-04A 15101138-05A

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

Client: Olsson Associates
Work Order: 15101138
Project: Emerald 35 Spill

QC BATCH REPORT

Batch ID: **77665** Instrument ID **VMS7** Method: **SW8260B**

MBLK Sample ID: **MBLK-77665-77665** Units: **µg/Kg** Analysis Date: **10/20/2015 03:17 AM**
Client ID: Run ID: **VMS7_151019A** SeqNo: **3519138** Prep Date: **10/19/2015** 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	*1003*	0	*1000*	0	*100*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*1008*	0	*1000*	0	*101*	*70-130*	0			
Surr: Dibromofluoromethane	*960.5*	0	*1000*	0	*96*	*70-130*	0			
Surr: Toluene-d8	*999.5*	0	*1000*	0	*100*	*70-130*	0			

LCS Sample ID: **LCS-77665-77665** Units: **µg/Kg** Analysis Date: **10/20/2015 01:37 AM**
Client ID: Run ID: **VMS7_151019A** SeqNo: **3519136** Prep Date: **10/19/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	989.5	30	1000	0	99	75-125	0			
Ethylbenzene	1009	30	1000	0	101	75-125	0			
m,p-Xylene	1915	60	2000	0	95.8	80-125	0			
o-Xylene	933.5	30	1000	0	93.4	75-125	0			
Toluene	999	30	1000	0	99.9	70-125	0			
Xylenes, Total	2848	90	3000	0	95	75-125	0			
Surr: 1,2-Dichloroethane-d4	*987*	0	*1000*	0	*98.7*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*997*	0	*1000*	0	*99.7*	*70-130*	0			
Surr: Dibromofluoromethane	*996*	0	*1000*	0	*99.6*	*70-130*	0			
Surr: Toluene-d8	*996*	0	*1000*	0	*99.6*	*70-130*	0			

MS Sample ID: **15101114-05A MS** Units: **µg/Kg** Analysis Date: **10/21/2015 11:57 PM**
Client ID: Run ID: **VMS7_151021A** SeqNo: **3523671** Prep Date: **10/19/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	957.5	30	1000	0	95.8	75-125	0			
Ethylbenzene	940	30	1000	0	94	75-125	0			
m,p-Xylene	1788	60	2000	0	89.4	80-125	0			
o-Xylene	874.5	30	1000	0	87.4	75-125	0			
Toluene	917	30	1000	0	91.7	70-125	0			
Xylenes, Total	2662	90	3000	0	88.7	75-125	0			
Surr: 1,2-Dichloroethane-d4	*979*	0	*1000*	0	*97.9*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*1030*	0	*1000*	0	*103*	*70-130*	0			
Surr: Dibromofluoromethane	*984*	0	*1000*	0	*98.4*	*70-130*	0			
Surr: Toluene-d8	*969*	0	*1000*	0	*96.9*	*70-130*	0			

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

Client: Olsson Associates
Work Order: 15101138
Project: Emerald 35 Spill

QC BATCH REPORT

Batch ID: **77665** Instrument ID **VMS7** Method: **SW8260B**

MS Sample ID: **15101138-04A MS** Units: **µg/Kg** Analysis Date: **10/29/2015 02:08 AM**
Client ID: **EMD-35-SS2** Run ID: **VMS6_151028A** SeqNo: **3536734** Prep Date: **10/19/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1046	30	1000	25.5	102	75-125	0			
Ethylbenzene	1041	30	1000	22.5	102	75-125	0			
m,p-Xylene	2148	60	2000	366	89.1	80-125	0			
o-Xylene	1021	30	1000	59	96.2	75-125	0			
Toluene	994	30	1000	207	78.7	70-125	0			
Xylenes, Total	3168	90	3000	429	91.3	75-125	0			
Surr: 1,2-Dichloroethane-d4	*969.5*	0	*1000*	0	*97*	*70-130*	0			
Surr: 4-Bromofluorobenzene	*1030*	0	*1000*	0	*103*	*70-130*	0			
Surr: Dibromofluoromethane	*958.5*	0	*1000*	0	*95.8*	*70-130*	0			
Surr: Toluene-d8	*951.5*	0	*1000*	0	*95.2*	*70-130*	0			

MSD Sample ID: **15101114-05A MSD** Units: **µg/Kg** Analysis Date: **10/22/2015 12:22 PM**
Client ID: Run ID: **VMS7_151021A** SeqNo: **3523672** Prep Date: **10/19/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1058	30	1000	0	106	75-125	957.5	10	30	
Ethylbenzene	1060	30	1000	0	106	75-125	940	12	30	
m,p-Xylene	2000	60	2000	0	100	80-125	1788	11.2	30	
o-Xylene	986.5	30	1000	0	98.6	75-125	874.5	12	30	
Toluene	1040	30	1000	0	104	70-125	917	12.5	30	
Xylenes, Total	2986	90	3000	0	99.5	75-125	2662	11.5	30	
Surr: 1,2-Dichloroethane-d4	*979*	0	*1000*	0	*97.9*	*70-130*	979	*0*	*30*	
Surr: 4-Bromofluorobenzene	*1050*	0	*1000*	0	*105*	*70-130*	1030	*1.87*	*30*	
Surr: Dibromofluoromethane	*973*	0	*1000*	0	*97.3*	*70-130*	984	*1.12*	*30*	
Surr: Toluene-d8	*974*	0	*1000*	0	*97.4*	*70-130*	969	*0.515*	*30*	

MSD Sample ID: **15101138-04A MSD** Units: **µg/Kg** Analysis Date: **10/29/2015 02:34 AM**
Client ID: **EMD-35-SS2** Run ID: **VMS6_151028A** SeqNo: **3536736** Prep Date: **10/19/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1104	30	1000	25.5	108	75-125	1046	5.39	30	
Ethylbenzene	1122	30	1000	22.5	110	75-125	1041	7.45	30	
m,p-Xylene	2296	60	2000	366	96.5	80-125	2148	6.66	30	
o-Xylene	1098	30	1000	59	104	75-125	1021	7.22	30	
Toluene	1050	30	1000	207	84.2	70-125	994	5.43	30	
Xylenes, Total	3393	90	3000	429	98.8	75-125	3168	6.84	30	
Surr: 1,2-Dichloroethane-d4	*967*	0	*1000*	0	*96.7*	*70-130*	969.5	*0.258*	*30*	
Surr: 4-Bromofluorobenzene	*1018*	0	*1000*	0	*102*	*70-130*	1030	*1.22*	*30*	
Surr: Dibromofluoromethane	*964.5*	0	*1000*	0	*96.4*	*70-130*	958.5	*0.624*	*30*	
Surr: Toluene-d8	*943.5*	0	*1000*	0	*94.4*	*70-130*	951.5	*0.844*	*30*	

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

Client: Olsson Associates
Work Order: 15101138
Project: Emerald 35 Spill

QC BATCH REPORT

Batch ID: **77665** Instrument ID **VMS7** Method: **SW8260B**

The following samples were analyzed in this batch:	15101138-01A	15101138-04A	15101138-05A

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

Client: Olsson Associates
Work Order: 15101138
Project: Emerald 35 Spill

QC BATCH REPORT

Batch ID: **77682** Instrument ID **WETCHEM** Method: **SW9045D**

LCS Sample ID: **LCS-77682-77682** Units: **s.u.** Analysis Date: **10/19/2015 04:15 PM**
Client ID: Run ID: **WETCHEM_151019I** SeqNo: **3517550** Prep Date: **10/19/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	3.97	0	4	0	99.2	90-110	0			

DUP Sample ID: **15101044-02A DUP** Units: **s.u.** Analysis Date: **10/19/2015 04:15 PM**
Client ID: Run ID: **WETCHEM_151019I** SeqNo: **3517552** Prep Date: **10/19/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.89	0	0	0	0	0-0	7.81	1.02	20	

DUP Sample ID: **15101138-03A DUP** Units: **s.u.** Analysis Date: **10/19/2015 04:15 PM**
Client ID: **EMD 35-BG2** Run ID: **WETCHEM_151019I** SeqNo: **3517562** Prep Date: **10/19/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	8.24	0	0	0	0	0-0	8.24	0	20	

The following samples were analyzed in this batch:

15101138-01A	15101138-02A	15101138-03A
15101138-04A	15101138-05A	

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

Client: Olsson Associates
Work Order: 15101138
Project: Emerald 35 Spill

QC BATCH REPORT

Batch ID: **77704** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK Sample ID: **MBLK-77704-77704** Units: **mg/Kg** Analysis Date: **10/19/2015 04:00 PM**
Client ID: Run ID: **WETCHEM_151019K** SeqNo: **3517717** Prep Date: **10/18/2015** 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-77704-77704** Units: **mg/Kg** Analysis Date: **10/19/2015 04:00 PM**
Client ID: Run ID: **WETCHEM_151019K** SeqNo: **3517716** Prep Date: **10/18/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	4.55	1.0	5	0	91	80-120	0			

MS Sample ID: **15101062-02A MS** Units: **mg/Kg** Analysis Date: **10/19/2015 04:00 PM**
Client ID: Run ID: **WETCHEM_151019K** SeqNo: **3517705** Prep Date: **10/18/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	2.864	0.97	4.854	0.2255	54.4	75-125	0			S

MS Sample ID: **15101062-02A MSI** Units: **mg/Kg** Analysis Date: **10/19/2015 04:00 PM**
Client ID: Run ID: **WETCHEM_151019K** SeqNo: **3517707** Prep Date: **10/18/2015** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	2562	100	2623	0.2255	97.7	75-125	0			

MSD Sample ID: **15101062-02A MSD** Units: **mg/Kg** Analysis Date: **10/19/2015 04:00 PM**
Client ID: Run ID: **WETCHEM_151019K** SeqNo: **3517706** Prep Date: **10/18/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	2.892	0.98	4.902	0.2255	54.4	75-125	2.864	0.976	20	S

The following samples were analyzed in this batch:

15101138-01A	15101138-02A	15101138-03A
15101138-04A	15101138-05A	

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

Client: Olsson Associates
Work Order: 15101138
Project: Emerald 35 Spill

QC BATCH REPORT

Batch ID: **77752** Instrument ID **WETCHEM** Method: **USDA H60 Method**

DUP Sample ID: **15101009-01C DUP** Units: **mmhos/cm @25°C** Analysis Date: **10/21/2015 03:30 PM**

Client ID: Run ID: **WETCHEM_151021V** SeqNo: **3521935** Prep Date: **10/21/2015** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	13.93	0.050	0	0	0		14.8	6.06	50	

The following samples were analyzed in this batch:

15101138-01B 15101138-02B 15101138-03B
15101138-04B 15101138-05B

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

Client: Olsson Associates
Work Order: 15101138
Project: Emerald 35 Spill

QC BATCH REPORT

Batch ID: **R174768** Instrument ID **MOIST** Method: **E160.3M**

MBLK Sample ID: **WBLKS-R174768** Units: **% of sample** Analysis Date: **10/26/2015 05:11 PM**
Client ID: Run ID: **MOIST_151026D** SeqNo: **3532712** 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-R174768** Units: **% of sample** Analysis Date: **10/26/2015 05:11 PM**
Client ID: Run ID: **MOIST_151026D** SeqNo: **3532708** 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: **15101138-01A DUP** Units: **% of sample** Analysis Date: **10/26/2015 05:11 PM**
Client ID: **EMD 35-SS1** Run ID: **MOIST_151026D** SeqNo: **3532623** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	9.6	0.050	0	0	0		9.63	0.312	20	

DUP Sample ID: **15101538-04A DUP** Units: **% of sample** Analysis Date: **10/26/2015 05:11 PM**
Client ID: Run ID: **MOIST_151026D** SeqNo: **3532659** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	2.98	0.050	0	0	0		2.91	2.38	20	

The following samples were analyzed in this batch:

15101138-01A	15101138-02A	15101138-03A
15101138-04A	15101138-05A	

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

ALS Environmental

Chain of Custody Form

Page 1 of 1

COC ID: 123456

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☐ Everett, WA +1 425 356 2600 ☐ Houston, TX +1 281 530 5656 ☐ Spring City, PA +1 610 948 4903
☐ Fort Collins, CO +1 970 490 1511 ☐ Middletown, PA +1 717 944 5541 ☐ York, PA +1 717 505 5280

ALS Project Manager: | Work Order #: 1510138

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Emerald 35 Spill	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@olssonsutinu.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	EMD 35-SS1	10/15/15	1355	Soil	8	2	X	X	X	X	X	X	X				
2	EMD 35-BG1	10/15/15	1405	Soil	8	2				X	X	X	X				
3	EMD 35-BG2	10/15/15	1415	Soil	8	2				X	X	X	X				
4	EMD 35-SS2	10/15/15	1420	Soil	8	2	X	X	X	X	X	X	X				
5	EMD 35-SS3	10/15/15	1430	Soil	8	2	X	X	X	X	X	X	X				

Sampler(s): Please Print & Sign: Jason McLarty

Shipment Method: FedEx

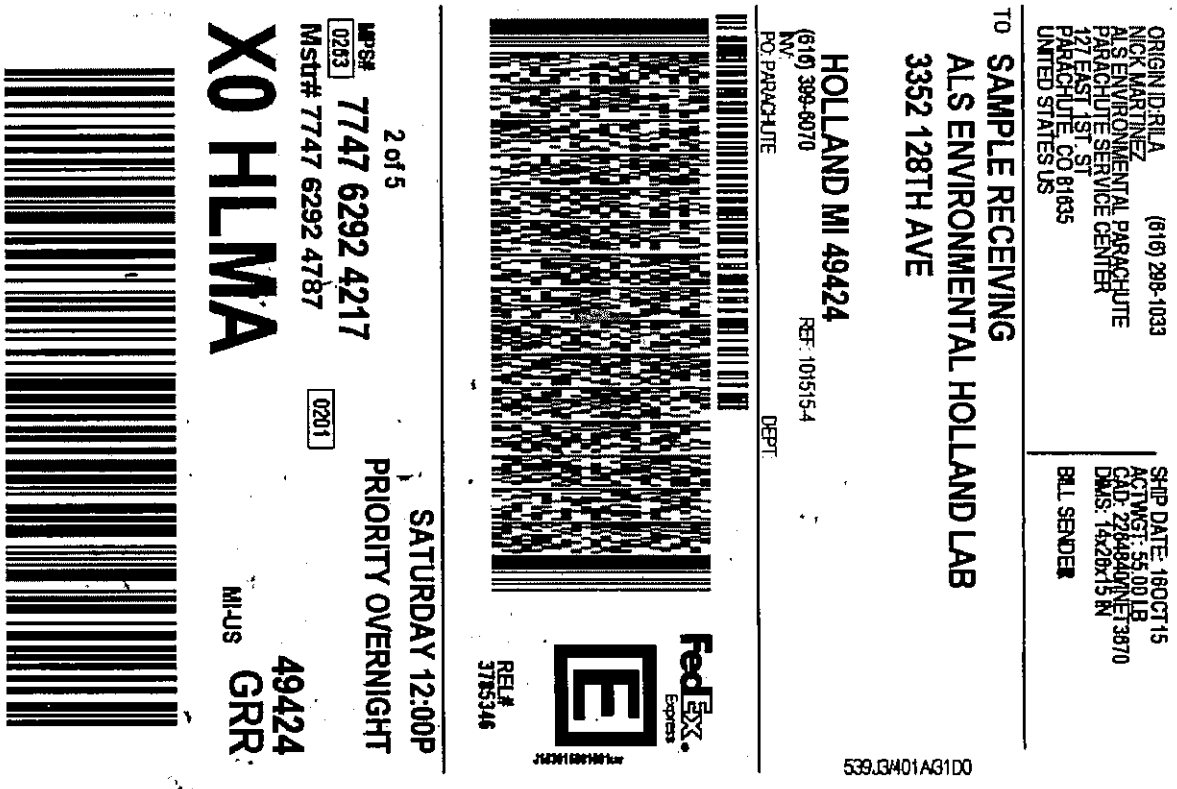
Required Turnaround Time: ☒STD 10 Wk Days ☐5 Wk Days ☐2 Wk Days ☐24 Hour ☐Other _____

Results Due Date:

Relinquished by:	Date: 10/16/15	Time: 1030	Received by:	Notes: Chevron Pricing Applies - Per Bruce Schlatter	
Relinquished by:	Date: 10-16-15	Time: 12:30	Received by (Laboratory): 10/17/15 0930	Cooler Temp.	QC Package: (Check Box Below)
Logged by (Laboratory): Kev	Date: 10/17/15	Time: 1030	Checked by (Laboratory):	2.0°c	x Level II: Standard QC ☐ ☐ ☐ Level III: Std QC + Raw Data ☐ ☐ 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.



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 misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

ALS Parachute Custody Seal

Time 1800 Date 10-16-15

Name

ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **OLSSON** Date/Time Received: **17-Oct-15 09:30**

Work Order: **15101138** Received by: **KRW**

Checklist completed by Keith Wierenga (eSignature) 17-Oct-15 (Date) Reviewed by: Lee Arnold (eSignature) 17-Oct-15 (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):	2.0/2.0 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	10/17/2015 10:42:33 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:

31-Jul-2018

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

Re: **Emerald 35 Spill Resampling** Work Order: **1807958**

Dear Tim,

ALS Environmental received 2 samples on 17-Jul-2018 09:00 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 8.

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,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Report of Laboratory Analysis

Certificate No: MN 998501

ALS Group, USA

Date: 31-Jul-18

Client: Olsson Associates
Project: Emerald 35 Spill Resampling
Work Order: **1807958**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1807958-01	EMD 35-SS1	Soil		7/12/2018 13:45	7/17/2018 08:00	☐
1807958-02	EMD 35-SS3	Soil		7/12/2018 13:55	7/17/2018 08:00	☐

ALS Group, USA

Date: 31-Jul-18

Client: Olsson Associates
Project: Emerald 35 Spill Resampling
WorkOrder: **1807958**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	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.

Acronym	Description
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

Units Reported	Description
mg/L	Milligrams per Liter
mmhos/cm @25°C	Millimhos-Centimeter at 25 Degrees Celcius
none	

ALS Group, USA

Date: *31-Jul-18*

Client: Olsson Associates
Project: Emerald 35 Spill Resampling
Sample ID: EMD 35-SS1
Collection Date: 7/12/2018 01:45 PM

Work Order: 1807958
Lab ID: 1807958-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
SOLUBLE CATIONS FOR SAR		Method: **SW6020A**			Prep: USDA Method 20B / 7/23/18		Analyst: **STP**
Calcium	**2,000**		**8.6**	**50**	**mg/L**	100	7/24/2018 17:48
Magnesium	**97**		**0.068**	**2.0**	**mg/L**	10	7/23/2018 21:24
Sodium	**81**		**0.34**	**2.0**	**mg/L**	10	7/23/2018 21:24
SODIUM ADSORPTION RATIO		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 7/23/18		Analyst: **STP**
Sodium Adsorption Ratio	**0.48**		**0.010**	**0.010**	**none**	1	7/23/2018
ELECTRICAL CONDUCTIVITY (SAR)		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 7/23/18		Analyst: **JB**
Electrical Conductivity @ Saturation	**12**		**0.014**	**0.12**	**mmhos/cm @25°**	25	7/24/2018 14:40

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

ALS Group, USA

Date: *31-Jul-18*

Client: Olsson Associates
Project: Emerald 35 Spill Resampling
Sample ID: EMD 35-SS3
Collection Date: 7/12/2018 01:55 PM

Work Order: 1807958
Lab ID: 1807958-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
SOLUBLE CATIONS FOR SAR		Method: **SW6020A**			Prep: USDA Method 20B / 7/23/18		Analyst: **STP**
Calcium	**170**		**0.86**	**5.0**	**mg/L**	10	7/23/2018 21:25
Magnesium	**10**		**0.068**	**2.0**	**mg/L**	10	7/23/2018 21:25
Sodium	**13**		**0.34**	**2.0**	**mg/L**	10	7/23/2018 21:25
SODIUM ADSORPTION RATIO		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 7/23/18		Analyst: **STP**
Sodium Adsorption Ratio	**0.27**		**0.010**	**0.010**	**none**	1	7/23/2018
ELECTRICAL CONDUCTIVITY (SAR)		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 7/23/18		Analyst: **JB**
Electrical Conductivity @ Saturation	**1.0**		**0.014**	**0.12**	**mmhos/cm @25°**	25	7/24/2018 14:40

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

ALS Group, USA

Date: 31-Jul-18

Client: Olsson Associates

Work Order: 1807958

Project: Emerald 35 Spill Resampling

QC BATCH REPORT

Batch ID: **121697** Instrument ID **ICPMS3** Method: **SW6020A**

DUP Sample ID: **1807961-03ADUP** Units: **mg/L** Analysis Date: **7/23/2018 09:42 PM**

Client ID: Run ID: **ICPMS3_180723A** SeqNo: **5163147** Prep Date: **7/23/2018** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	177.5	5.0	0	0	0	0-0	205.6	14.6		
Magnesium	29.51	2.0	0	0	0	0-0	35.09	17.3		
Sodium	14.66	2.0	0	0	0	0-0	16.44	11.4		

The following samples were analyzed in this batch: 1807958-01A 1807958-02A

Batch ID: **121697** Instrument ID **SAR** Method: **USDA H60 Metho**

DUP Sample ID: **1807961-03ADUP** Units: **none** Analysis Date: **7/23/2018**

Client ID: Run ID: **SAR_180723A** SeqNo: **5172824** Prep Date: **7/23/2018** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	0.2684	0.010	0	0	0		0.2789	3.83	50	

The following samples were analyzed in this batch: 1807958-01A 1807958-02A

Batch ID: **121697** Instrument ID **WETCHEM** Method: **USDA H60 Metho**

DUP Sample ID: **1807961-03A DUP** Units: **mmhos/cm @25°** Analysis Date: **7/24/2018 02:40 PM**

Client ID: Run ID: **WETCHEM_180724H** SeqNo: **5164875** Prep Date: **7/23/2018** DF: **25**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	1.195	0.12	0	0	0		1.2	0.418	50	

The following samples were analyzed in this batch: 1807958-01A 1807958-02A

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

Chain of Custody Form

ALS Environmental

Page 1 of 1

COC ID: 123456

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☐ Fort Collins, CO +1 970 490 1511 ☐ Middletown, PA +1 717 944 5541 ☐ York, PA +1 717 505 5280

ALS Project Manager: | Work Order #: 1807958

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Emerald 35 Spill Resampling	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.	Dana Mack	D	Electrical Conductivity
Address		Address	760 Horizon Drive, Ste. 102	E	Sodium Adsorption Ratio
				F	pH
City/State/Zip		City/State/Zip	Grand Junction, CO 81506	G	Metals (See Attached List) CO Table 910
Phone		Phone	970.263.7800	H	Arsenic Only
Fax		Fax	970.263.7456	I	
e-Mail Address	tdobransky@enfradainc.com	e-Mail Address	dmack@olssonassociates.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	EMD 35-SS1	07/12/18	1345	Soil	8	1				X	X						
2	EMD 35-SS3	07/12/18	1355	Soil	8	1				X	X						
3																	
4																	
5																	

Sampler(s): Please Print & Sign
Tim Dobransky

Shipment Method: FedEx

Required Turnaround Time: ☑ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other _____

Results Due Date:

Relinquished by:	Date: 7/16/18	Time:	Received by:	Notes: Chevron Pricing Applies - Per Bruce Schlatter	
Relinquished by:	Date: 7-16-18	Time: 1830	Received by (Laboratory): 7/17/18 0900	Cooler Temp.	QC Package: (Check Box Below)
Logged by (Laboratory): KL	Date: 7/17/18	Time: 1545	Checked by (Laboratory):	4.2° c	x Level II: Standard QC
					Level III: Std QC + Raw Data
					Level IV: SW846 CLP-Like
				SR	Other: _____

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035

ALS Group, USA

Sample Receipt Checklist

Client Name: **OLSSON** Date/Time Received: **17-Jul-18 09:00**

Work Order: **1807958** Received by: **KRW**

Checklist completed by Keith Wierenga (eSignature) 17-Jul-18 (Date) Reviewed by: Chad Whelton (eSignature) 18-Jul-18 (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):	4.2/4.2 C	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	7/17/2018 3:58:01 PM		
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:

21-Aug-2020

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

Re: **Emerald 35 Spill Resampling** Work Order: **20080802**

Dear Tim,

ALS Environmental received 1 sample on 11-Aug-2020 11:30 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 6.

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,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Report of Laboratory Analysis

ALS Group, USA

Date: 21-Aug-20

Client: Entrada Consulting Group
Project: Emerald 35 Spill Resampling
Work Order: **20080802**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
20080802-01	EMD 35-SS1	Soil		8/7/2020 11:15	8/11/2020 11:30	☐

ALS Group, USA

Date: 21-Aug-20

Client: Entrada Consulting Group
Project: Emerald 35 Spill Resampling
WorkOrder: **20080802**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	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.

Acronym	Description
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

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

ALS Group, USA

Date: *21-Aug-20*

Client: Entrada Consulting Group
Project: Emerald 35 Spill Resampling
Sample ID: EMD 35-SS1
Collection Date: 8/7/2020 11:15 AM

Work Order: 20080802
Lab ID: 20080802-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
ELECTRICAL CONDUCTIVITY (SAR)		Method:	**USDA H60 METHOD 2**	Prep: USDA Method 20B / 8/21/20			Analyst: **QTN**
Electrical Conductivity @ Saturation	**0.89**		**0.011**	**0.10**	**mmhos/cm @25°**	20	8/21/2020 14:35

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

Chain of Custody Form

ALS Environmental

Page 1 of 1

COC ID: 123456

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

ALS Project Manager: | Work Order #: 20080802

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Emerald 35 Spill 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 Dobranskyy	D	Electrical Conductivity
Address		Address	330 Grand Ave. STE C	E	Sodium Adsorption Ratio
				F	pH
City/State/Zip		City/State/Zip	Grand Junction, CO 81501	G	Metals (See Attached List) CO Table 910
Phone		Phone	970.549.1015	H	Arsenic Only
Fax		Fax		I	
e-Mail Address	tdobransky@entradainc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	EMD 35-SS1	8/7/20	1115	Soil	8	1				X							
2																	
3																	
4																	
5																	

Sampler(s): Please Print & Sign: Tim Dobransky

Shipment Method: FedEx

Required Turnaround Time: ■ STD 10 Wk Days ▫ 5 Wk Days ▫ 2 Wk Days ▫ 24 Hour ▫ Other _____

Results Due Date:

Relinquished by:	Date: 8/10/20	Time: 1710	Received by:	Notes: Chevron Pricing Applies - Per Bruce Schlatter	
Relinquished by:	Date: 8-10-20	Time: 1820	Received by (Laboratory): 8/11/20 1130	Cooler Temp.	QC Package: (Check Box Below)
Logged by (Laboratory): DFS	Date: 8/11/20	Time: 1545	Checked by (Laboratory):	IR1 2.4°C	x Level II: Standard QC Level III: Std QC + Raw Data 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.

ALS Group, USA

Sample Receipt Checklist

Client Name: **ENTRADA** Date/Time Received: **11-Aug-20 11:30**

Work Order: **20080802** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 11-Aug-20 (Date) Reviewed by: Chad Whelton (eSignature) 12-Aug-20 (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):	2.4/2.4 c	IR1	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	8/11/2020 3:44:24 PM		
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:

13-Apr-2021

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

Re: **Emerald 35 Resample** Work Order: **21040279**

Dear Tim,

ALS Environmental received 1 sample on 03-Apr-2021 09:30 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 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,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Report of Laboratory Analysis

ALS Group, USA

Date: 13-Apr-21

Client: Entrada Consulting Group
Project: Emerald 35 Resample
Work Order: **21040279**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
21040279-01	EMD35-SS2	Soil		4/1/2021 08:30	4/3/2021 09:30	☐

Qualifier	Description
*	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.

Acronym	Description
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

Units Reported	Description
mg/L	Milligrams per Liter
mmhos/cm @25°C	Millimhos-Centimeter at 25 Degrees Celcius
none	

ALS Group, USA

Date: *13-Apr-21*

Client: Entrada Consulting Group
Project: Emerald 35 Resample
Sample ID: EMD35-SS2
Collection Date: 4/1/2021 08:30 AM

Work Order: 21040279
Lab ID: 21040279-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
SOLUBLE CATIONS FOR SAR		Method: **SW6020B**			Prep: USDA Method 20B / 4/12/21		Analyst: **STP**
Calcium	**1,200**		**2.5**	**5.0**	**mg/L**	10	4/12/2021 15:27
Magnesium	**110**		**0.50**	**2.0**	**mg/L**	10	4/12/2021 15:27
Sodium	**1,200**		**1.8**	**2.0**	**mg/L**	10	4/12/2021 15:27
SODIUM ADSORPTION RATIO		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 4/12/21		Analyst: **STP**
Sodium Adsorption Ratio	**8.6**		**0.010**	**0.010**	**none**	1	4/12/2021
ELECTRICAL CONDUCTIVITY (SAR)		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 4/12/21		Analyst: **QTN**
Electrical Conductivity @ Saturation	**13**		**0.011**	**0.10**	**mmhos/cm @25°**	20	4/12/2021 15:58

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

ALS Group, USA

Date: 13-Apr-21

Client: Entrada Consulting Group

Work Order: 21040279

Project: Emerald 35 Resample

QC BATCH REPORT

Batch ID: **174917** Instrument ID **ICPMS3** Method: **SW6020B**

DUP Sample ID: **21040280-01ADUP** Units: **mg/L** Analysis Date: **4/12/2021 03:31 PM**

Client ID: Run ID: **ICPMS3_210412A** SeqNo: **7296695** Prep Date: **4/12/2021** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	938.4	5.0	0	0	0	0-0	820.4	13.4		
Magnesium	147.1	2.0	0	0	0	0-0	125	16.3		
Sodium	227.6	2.0	0	0	0	0-0	192.7	16.6		

The following samples were analyzed in this batch: 21040279-01A

Batch ID: **174917** Instrument ID **SAR** Method: **USDA H60 Method**

DUP Sample ID: **21040280-01ADUP** Units: **none** Analysis Date: **4/12/2021**

Client ID: Run ID: **SAR_210412A** SeqNo: **7296714** Prep Date: **4/12/2021** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	1.824	0.010	0	0	0		1.656	9.6	50	

The following samples were analyzed in this batch: 21040279-01A

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

Chain of Custody Form

ALS Environmental

Page 1 of 1

COC ID: 123456

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

ALS Project Manager: | Work Order #: 21040279

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	Emerald 35 Resample	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
				F	pH
City/State/Zip	Grand Junction, CO 81501	City/State/Zip		G	Metals (See Attached List) CO Table 910
Phone	970.270.2986	Phone		H	Arsenic
Fax		Fax		I	
e-Mail Address	tdobransky@entradainc.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	EMD35-SS2	04/01/21	830	Soil	8	1				X	X						
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s): Please Print & Sign: Jason McLarty

Shipment Method: FedEx

Required Turnaround Time: ☐ STD 10 Wk Days ☑ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other _____

Results Due Date:

Relinquished by:	Date: 4/2/21	Time:	Received by:	Notes: Chevron Pricing Applies - Per Bruce Schlatter	
Relinquished by:	Date: 4-2-21	Time: 1850	Received by (Laboratory): 4/3/21 0930	Cooler Temp.	QC Package: (Check Box Below)
Logged by (Laboratory): DCS	Date: 4/5/21	Time: 0930	Checked by (Laboratory):	IP/4.0°C	x Level II: Standard QC; Level III: Std QC + Raw Data; 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.

ALS Group, USA

Sample Receipt Checklist

Client Name: **ENTRADA** Date/Time Received: **03-Apr-21 09:30**

Work Order: **21040279** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 05-Apr-21 (Date) Reviewed by: Chad Whelton (eSignature) 05-Apr-21 (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):	4.0/4.0 c	IR1	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	4/5/2021 9:35:26 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: