

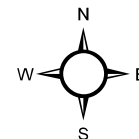


Legend

- Spill Origin
- Other Soil Sample Location
- Spill Path

0 50 100 200 Feet

1 inch = 131 feet



PROJECT NO:	013-3287
DRAWN BY:	SBS
DATE:	07/23/2014

EMERALD 72X
SPILL RESPONSE
CHEVRON USA, INC
RIO BLANCO COUNTY, COLORADO
NWNW S30 T2N R102W

OLSSON
ASSOCIATES

760 HORIZON DRIVE, SUITE 102
GRAND JUNCTION, CO 81506
TEL 970.263.7800
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FIGURE

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Table 1
Emerald 72X
Soil Data Summary

SAMPLE SUMMARY	
Location Description	Emerald 72X
Sample Type	Soil

LABORATORY DATA SUMMARY				
Sample ID	EM72X-SS1	EM72X-BG1	COGCC TABLE 910-1 CONCENTRATION LEVELS	UNITS
Depth	0-6"	0-6"		
Sample Date	4/9/2014	4/9/2014		
Analytical Parameters				
TPH				
TPH Gasoline Range Organics	<2.9	51	500	mg/kg
TPH Diesel Range Organics	29	<11		
BTEX				
Benzene	<0.034	<0.041	0.17	mg/kg
Toluene	<0.034	<0.041	85	mg/kg
Ethylbenzene	<0.034	<0.041	100	mg/kg
Total Xylene	<0.100	<0.120	175	mg/kg
Metals				
Arsenic	4.7	8.9	0.39	mg/kg
Barium	210	350	15,000	mg/kg
Cadmium	<0.78	<1.1	70	mg/kg
Chromium	14	25	NA	mg/kg
Copper	14	24	3,100	mg/kg
Lead	13	24	400	mg/kg
Mercury	0.036	0.03	23	mg/kg
Nickel	17	33	1,600	mg/kg
Selenium	<1.9	<2.7	390	mg/kg
Silver	<1.9	<2.7	390	mg/kg
Zinc	78	140	23,000	mg/kg
SAR Metals Analysis				
Calcium	510	540	NA	mg/L
Magnesium	76	49	NA	mg/L
Sodium	990	380	NA	mg/L
Sodium Adsorption Ratio	11	4.2	<12	ratio
Polynuclear Aromatic Hydrocarbons				
Acenaphthene	<0.0075	<0.018	1,000	mg/kg
Anthracene	<0.0075	<0.018	1,000	mg/kg
Benzo(a)anthracene	<0.0075	<0.018	0.22	mg/kg
Benzo(a)pyrene	<0.0075	<0.018	0.022	mg/kg
Benzo(b)fluoranthene	<0.0075	<0.018	0.22	mg/kg
Benzo(k)fluoranthene	<0.0075	<0.018	2.2	mg/kg
Chrysene	<0.0075	<0.018	22	mg/kg
Dibenzo(a,h)anthracene	<0.0075	<0.018	0.022	mg/kg
Fluoranthene	<0.0075	<0.018	1,000	mg/kg
Fluorene	<0.0075	<0.018	1,000	mg/kg
Indeno(1,2,3-cd)pyrene	<0.0075	<0.018	0.22	mg/kg
Napthalene	<0.0075	<0.018	23	mg/kg
Pyrene	<0.0075	<0.018	1,000	mg/kg
General Chemistry				
Chromium, Hexavalent	<0.57	<0.67	23	mg/kg
Chromium, Trivalent	14	25	120,000	mg/kg
Specific Conductivity	8.2	5.4	<4 or 2 x the background	mmhos/cm
pH	8.2	8.0	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



24-Apr-2014

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

Re: **Chevron Emerald 72X 4.9.14**

Work Order: **1404844**

Dear Tim,

ALS Environmental received 2 samples on 16-Apr-2014 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 26.

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

Sincerely,

A handwritten signature in cursive script that reads "Ann Preston".

Electronically approved by: Ann Preston

Ann Preston
Project Manager



Certificate No: MN 532786

Report of Laboratory Analysis

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

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

Environmental 

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER

Client: Olsson Associates
Project: Chevron Emerald 72X 4.9.14
Work Order: 1404844

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>
1404844-01	EM72X-SS1	Soil		4/9/2014 12:35	4/16/2014 09:30	<input type="checkbox"/>
1404844-02	EM72X-BG1	Soil		4/9/2014 12:45	4/16/2014 09:30	<input type="checkbox"/>

Client: Olsson Associates
Project: Chevron Emerald 72X 4.9.14
Work Order: 1404844

Case Narrative

Batch 57689 samples 1404844-01 and 1404844-02 were received on the last day of hold time. They were analyzed for pH outside of the holding time due to laboratory error. Sample results should be considered as estimated. The data is provided at no charge.

Batch 57691 MS/MSD data for Metals is not related to this project's samples. No data requires qualification.

Batch 57691 sample 1404844-01 reporting limits for Metals were elevated due to dilution for high concentrations of non-target analytes.

Batch 57782 sample EM72X-SS1 MS/MSD recoveries for Hexavalent Chromium were below control limits. The corresponding result in the parent sample may be biased low.

Batch 57709 RPD between the MS/MSD recoveries for DRO was above control limits. The individual MS/MSD recoveries met quality control criteria. No data requires qualification.

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

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

<u>Units Reported</u>	<u>Description</u>
% of sample	Percent of Sample
µg/Kg-dry	Micrograms per Kilogram Dry Weight
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: 24-Apr-14

Client: Olsson Associates
Project: Chevron Emerald 72X 4.9.14
Sample ID: EM72X-SS1
Collection Date: 4/9/2014 12:35 PM

Work Order: 1404844
Lab ID: 1404844-01
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	29		SW8015M		Prep: SW3541 / 4/18/14	Analyst: IT
<i>Surr: 4-Terphenyl-d14</i>	83.6		4.7	mg/Kg-dry	1	4/19/2014 05:16 PM
			39-115	%REC	1	4/19/2014 05:16 PM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	ND		SW8015		Prep: SW5035 / 4/17/14	Analyst: IT
<i>Surr: Toluene-d8</i>	109		2.9	mg/Kg-dry	1	4/18/2014 11:11 AM
			50-150	%REC	1	4/18/2014 11:11 AM
MERCURY BY CVAA						
Mercury	0.036		SW7471		Prep: SW7471 / 4/18/14	Analyst: LR
			0.016	mg/Kg-dry	1	4/18/2014 02:12 PM
METALS BY ICP-MS						
Arsenic	4.7		SW6020A		Prep: SW3050B / 4/17/14	Analyst: ML
Barium	210		1.9	mg/Kg-dry	5	4/21/2014 07:11 AM
Cadmium	ND		1.9	mg/Kg-dry	5	4/21/2014 07:11 AM
Chromium	14		0.78	mg/Kg-dry	5	4/21/2014 07:11 AM
Copper	14		1.9	mg/Kg-dry	5	4/21/2014 07:11 AM
Lead	13		1.9	mg/Kg-dry	5	4/21/2014 04:13 PM
Nickel	17		1.9	mg/Kg-dry	5	4/21/2014 07:11 AM
Selenium	ND		1.9	mg/Kg-dry	5	4/21/2014 07:11 AM
Silver	ND		1.9	mg/Kg-dry	5	4/21/2014 07:11 AM
Zinc	78		3.9	mg/Kg-dry	5	4/21/2014 07:11 AM
SOLUBLE CATIONS FOR SAR						
			SW6020A		Prep: USDA Method 20B / 4/20/14	Analyst: ML
Calcium	510		10	mg/L	20	4/21/2014 09:07 PM
Magnesium	76		4.0	mg/L	20	4/21/2014 09:07 PM
Sodium	990		4.0	mg/L	20	4/21/2014 09:07 PM
SODIUM ADSORPTION RATIO						
			USDA H60 METHO		Prep: USDA Method 20B / 4/20/14	Analyst: ML
Sodium Adsorption Ratio	11		0.010	none	1	4/21/2014
SEMI-VOLATILE ORGANIC COMPOUNDS						
			SW8270		Prep: SW3541 / 4/18/14	Analyst: HL
Acenaphthene	ND		7.5	µg/Kg-dry	1	4/18/2014 10:36 PM
Anthracene	ND		7.5	µg/Kg-dry	1	4/18/2014 10:36 PM
Benzo(a)anthracene	ND		7.5	µg/Kg-dry	1	4/18/2014 10:36 PM
Benzo(a)pyrene	ND		7.5	µg/Kg-dry	1	4/18/2014 10:36 PM
Benzo(b)fluoranthene	ND		7.5	µg/Kg-dry	1	4/18/2014 10:36 PM
Benzo(k)fluoranthene	ND		7.5	µg/Kg-dry	1	4/18/2014 10:36 PM
Chrysene	ND		7.5	µg/Kg-dry	1	4/18/2014 10:36 PM
Dibenzo(a,h)anthracene	ND		7.5	µg/Kg-dry	1	4/18/2014 10:36 PM
Fluoranthene	ND		7.5	µg/Kg-dry	1	4/18/2014 10:36 PM

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

ALS Group USA, Corp

Date: 24-Apr-14

Client: Olsson Associates
Project: Chevron Emerald 72X 4.9.14
Sample ID: EM72X-SS1
Collection Date: 4/9/2014 12:35 PM

Work Order: 1404844
Lab ID: 1404844-01
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		7.5	µg/Kg-dry	1	4/18/2014 10:36 PM
Indeno(1,2,3-cd)pyrene	ND		7.5	µg/Kg-dry	1	4/18/2014 10:36 PM
Naphthalene	ND		7.5	µg/Kg-dry	1	4/18/2014 10:36 PM
Pyrene	ND		7.5	µg/Kg-dry	1	4/18/2014 10:36 PM
Surr: 2-Fluorobiphenyl	68.9		12-100	%REC	1	4/18/2014 10:36 PM
Surr: 4-Terphenyl-d14	102		25-137	%REC	1	4/18/2014 10:36 PM
Surr: Nitrobenzene-d5	50.1		37-107	%REC	1	4/18/2014 10:36 PM
VOLATILE ORGANIC COMPOUNDS			SW8260B	Prep: SW5035 / 4/17/14	Analyst: BG	
Benzene	ND		34	µg/Kg-dry	1	4/21/2014 03:51 AM
Ethylbenzene	ND		34	µg/Kg-dry	1	4/21/2014 03:51 AM
m,p-Xylene	ND		69	µg/Kg-dry	1	4/21/2014 03:51 AM
o-Xylene	ND		34	µg/Kg-dry	1	4/21/2014 03:51 AM
Toluene	ND		34	µg/Kg-dry	1	4/21/2014 03:51 AM
Xylenes, Total	ND		100	µg/Kg-dry	1	4/21/2014 03:51 AM
Surr: 1,2-Dichloroethane-d4	103		70-130	%REC	1	4/21/2014 03:51 AM
Surr: 4-Bromofluorobenzene	101		70-130	%REC	1	4/21/2014 03:51 AM
Surr: Dibromofluoromethane	89.6		70-130	%REC	1	4/21/2014 03:51 AM
Surr: Toluene-d8	96.7		70-130	%REC	1	4/21/2014 03:51 AM
ELECTRICAL CONDUCTIVITY (SAR)			USDA H60 METHO	Prep: USDA Method 20B / 4/20/14	Analyst: MELB	
Electrical Conductivity @ Saturation	8.2		0.050	mmhos/cm @25	10	4/21/2014 11:45 AM
CHROMIUM, TRIVALENT			CALCULATION	Analyst: JJG		
Chromium, Trivalent	14		0.57	mg/Kg-dry	1	4/22/2014 07:57 AM
CHROMIUM, HEXAVALENT			SW7196A	Prep: SW3060A / 4/18/14	Analyst: AG	
Chromium, Hexavalent	ND		0.57	mg/Kg-dry	1	4/18/2014 04:00 PM
MOISTURE			A2540 G	Analyst: AT		
Moisture	13		0.050	% of sample	1	4/16/2014 05:21 PM
PH			SW9045D	Prep: EXTRACT / 4/17/14	Analyst: KF	
pH	8.2	H		s.u.	1	4/17/2014 11:35 AM

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

ALS Group USA, Corp

Date: 24-Apr-14

Client: Olsson Associates
Project: Chevron Emerald 72X 4.9.14
Sample ID: EM72X-BG1
Collection Date: 4/9/2014 12:45 PM

Work Order: 1404844
Lab ID: 1404844-02
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
			SW8015M		Prep: SW3541 / 4/18/14	Analyst: IT
DRO (C10-C28)	ND		11	mg/Kg-dry	1	4/19/2014 01:47 PM
Surr: 4-Terphenyl-d14	77.4		39-115	%REC	1	4/19/2014 01:47 PM
GASOLINE RANGE ORGANICS BY GC-FID						
			SW8015		Prep: SW5035 / 4/17/14	Analyst: IT
GRO (C6-C10)	51		3.4	mg/Kg-dry	1	4/18/2014 03:31 PM
Surr: Toluene-d8	122		50-150	%REC	1	4/18/2014 03:31 PM
MERCURY BY CVAA						
			SW7471		Prep: SW7471 / 4/18/14	Analyst: LR
Mercury	0.030		0.022	mg/Kg-dry	1	4/18/2014 02:15 PM
METALS BY ICP-MS						
			SW6020A		Prep: SW3050B / 4/17/14	Analyst: ML
Arsenic	8.9		2.7	mg/Kg-dry	5	4/19/2014 10:23 AM
Barium	350		2.7	mg/Kg-dry	5	4/19/2014 10:23 AM
Cadmium	ND		1.1	mg/Kg-dry	5	4/19/2014 10:23 AM
Chromium	25		2.7	mg/Kg-dry	5	4/19/2014 10:23 AM
Copper	24		2.7	mg/Kg-dry	5	4/19/2014 10:23 AM
Lead	24		2.7	mg/Kg-dry	5	4/19/2014 10:23 AM
Nickel	33		2.7	mg/Kg-dry	5	4/19/2014 10:23 AM
Selenium	ND		2.7	mg/Kg-dry	5	4/19/2014 10:23 AM
Silver	ND		2.7	mg/Kg-dry	5	4/19/2014 10:23 AM
Zinc	140		5.3	mg/Kg-dry	5	4/19/2014 10:23 AM
SOLUBLE CATIONS FOR SAR						
			SW6020A		Prep: USDA Method 20B / 4/20/14	Analyst: ML
Calcium	540		10	mg/L	20	4/21/2014 09:13 PM
Magnesium	49		4.0	mg/L	20	4/21/2014 09:13 PM
Sodium	380		4.0	mg/L	20	4/21/2014 09:13 PM
SODIUM ADSORPTION RATIO						
			USDA H60 METHO		Prep: USDA Method 20B / 4/20/14	Analyst: ML
Sodium Adsorption Ratio	4.2		0.010	none	1	4/21/2014
SEMI-VOLATILE ORGANIC COMPOUNDS						
			SW8270		Prep: SW3541 / 4/18/14	Analyst: HL
Acenaphthene	ND		18	µg/Kg-dry	1	4/19/2014 12:51 PM
Anthracene	ND		18	µg/Kg-dry	1	4/19/2014 12:51 PM
Benzo(a)anthracene	ND		18	µg/Kg-dry	1	4/19/2014 12:51 PM
Benzo(a)pyrene	ND		18	µg/Kg-dry	1	4/19/2014 12:51 PM
Benzo(b)fluoranthene	ND		18	µg/Kg-dry	1	4/19/2014 12:51 PM
Benzo(k)fluoranthene	ND		18	µg/Kg-dry	1	4/19/2014 12:51 PM
Chrysene	ND		18	µg/Kg-dry	1	4/19/2014 12:51 PM
Dibenzo(a,h)anthracene	ND		18	µg/Kg-dry	1	4/19/2014 12:51 PM
Fluoranthene	ND		18	µg/Kg-dry	1	4/19/2014 12:51 PM

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

ALS Group USA, Corp

Date: 24-Apr-14

Client: Olsson Associates
Project: Chevron Emerald 72X 4.9.14
Sample ID: EM72X-BG1
Collection Date: 4/9/2014 12:45 PM

Work Order: 1404844
Lab ID: 1404844-02
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluorene	ND		18	µg/Kg-dry	1	4/19/2014 12:51 PM
Indeno(1,2,3-cd)pyrene	ND		18	µg/Kg-dry	1	4/19/2014 12:51 PM
Naphthalene	ND		18	µg/Kg-dry	1	4/19/2014 12:51 PM
Pyrene	ND		18	µg/Kg-dry	1	4/19/2014 12:51 PM
Surr: 2-Fluorobiphenyl	73.3		12-100	%REC	1	4/19/2014 12:51 PM
Surr: 4-Terphenyl-d14	103		25-137	%REC	1	4/19/2014 12:51 PM
Surr: Nitrobenzene-d5	57.2		37-107	%REC	1	4/19/2014 12:51 PM
VOLATILE ORGANIC COMPOUNDS			SW8260B	Prep: SW5035 / 4/17/14	Analyst: BG	
Benzene	ND		41	µg/Kg-dry	1	4/21/2014 04:17 AM
Ethylbenzene	ND		41	µg/Kg-dry	1	4/21/2014 04:17 AM
m,p-Xylene	ND		82	µg/Kg-dry	1	4/21/2014 04:17 AM
o-Xylene	ND		41	µg/Kg-dry	1	4/21/2014 04:17 AM
Toluene	ND		41	µg/Kg-dry	1	4/21/2014 04:17 AM
Xylenes, Total	ND		120	µg/Kg-dry	1	4/21/2014 04:17 AM
Surr: 1,2-Dichloroethane-d4	103		70-130	%REC	1	4/21/2014 04:17 AM
Surr: 4-Bromofluorobenzene	101		70-130	%REC	1	4/21/2014 04:17 AM
Surr: Dibromofluoromethane	89.1		70-130	%REC	1	4/21/2014 04:17 AM
Surr: Toluene-d8	95.6		70-130	%REC	1	4/21/2014 04:17 AM
ELECTRICAL CONDUCTIVITY (SAR)			USDA H60 METHO	Prep: USDA Method 20B / 4/20/14	Analyst: MELB	
Electrical Conductivity @ Saturation	5.4		0.050	mmhos/cm @25	10	4/21/2014 11:45 AM
CHROMIUM, TRIVALENT			CALCULATION	Analyst: JJG		
Chromium, Trivalent	25		0.68	mg/Kg-dry	1	4/22/2014 07:57 AM
CHROMIUM, HEXAVALENT			SW7196A	Prep: SW3060A / 4/18/14	Analyst: AG	
Chromium, Hexavalent	ND		0.67	mg/Kg-dry	1	4/18/2014 04:00 PM
MOISTURE			A2540 G	Analyst: AT		
Moisture	27		0.050	% of sample	1	4/16/2014 03:32 PM
PH			SW9045D	Prep: EXTRACT / 4/17/14	Analyst: KF	
pH	8.0	H		s.u.	1	4/17/2014 11:35 AM

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

Client: Olsson Associates

QC BATCH REPORT

Work Order: 1404844

Project: Chevron Emerald 72X 4.9.14

Batch ID: 57709

Instrument ID GC8

Method: SW8015M

MBLK		Sample ID: DBLKS1-57709-57709				Units: mg/Kg		Analysis Date: 4/19/2014 03:17 PM		
Client ID:		Run ID: GC8_140419A				SeqNo: 2722509		Prep Date: 4/18/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	ND	4.2								
Surr: 4-Terphenyl-d14	1.383	0	1.667	0	83	39-115	0			

LCS		Sample ID: DLCSS1-57709-57709				Units: mg/Kg		Analysis Date: 4/19/2014 03:47 PM		
Client ID:		Run ID: GC8_140419A				SeqNo: 2722511		Prep Date: 4/18/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	161.5	4.2	166.7	0	96.9	49-124	0			
Surr: 4-Terphenyl-d14	1.429	0	1.667	0	85.7	39-115	0			

MS		Sample ID: 1404844-01A MS				Units: mg/Kg		Analysis Date: 4/19/2014 04:17 PM		
Client ID: EM72X-SS1		Run ID: GC8_140419A				SeqNo: 2722514		Prep Date: 4/18/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	710.9	8.1	645.2	25.44	106	49-130	0			
Surr: 4-Terphenyl-d14	2.895	0	3.226	0	89.7	39-115	0			

MSD		Sample ID: 1404844-01A MSD				Units: mg/Kg		Analysis Date: 4/19/2014 04:47 PM		
Client ID: EM72X-SS1		Run ID: GC8_140419A				SeqNo: 2722516		Prep Date: 4/18/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	342.5	8.1	322.6	25.44	98.3	49-130	710.9	69.9	30	R
Surr: 4-Terphenyl-d14	2.908	0	3.226	0	90.1	39-115	2.895	0.432	30	

The following samples were analyzed in this batch: | 1404844-01A | 1404844-02A |

Client: Olsson Associates
 Work Order: 1404844
 Project: Chevron Emerald 72X 4.9.14

QC BATCH REPORT

Batch ID: **57670** Instrument ID **GC9** Method: **SW8015C**

MBLK		Sample ID: MBLK-57670-57670				Units: µg/Kg		Analysis Date: 4/18/2014 01:28 AM		
Client ID:		Run ID: GC9_140417B				SeqNo: 2719371		Prep Date: 4/17/2014		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	5998	0	5000	0	120	50-150	0			

LCS		Sample ID: LCS-57670-57670				Units: µg/Kg		Analysis Date: 4/18/2014 12:10 PM		
Client ID:		Run ID: GC9_140417B				SeqNo: 2719382		Prep Date: 4/17/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	488200	2,500	500000	0	97.6	70-130	0			
Surr: Toluene-d8	4562	0	5000	0	91.2	50-150	0			

MS		Sample ID: 1404844-01A MS				Units: µg/Kg		Analysis Date: 4/18/2014 12:05 PM		
Client ID: EM72X-SS1		Run ID: GC9_140417B				SeqNo: 2720038		Prep Date: 4/17/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	480400	2,500	500000	0	96.1	70-130	0			
Surr: Toluene-d8	4638	0	5000	0	92.8	50-150	0			

MSD		Sample ID: 1404844-01A MSD				Units: µg/Kg		Analysis Date: 4/18/2014 12:29 PM		
Client ID: EM72X-SS1		Run ID: GC9_140417B				SeqNo: 2720039		Prep Date: 4/17/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	461400	2,500	500000	0	92.3	70-130	480400	4.03	30	
Surr: Toluene-d8	5577	0	5000	0	112	50-150	4638	18.4	30	

The following samples were analyzed in this batch:

1404844-01A 1404844-02A

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

Client: Olsson Associates
Work Order: 1404844
Project: Chevron Emerald 72X 4.9.14

QC BATCH REPORT

Batch ID: **57720** Instrument ID **HG1** Method: **SW7471**

MBLK		Sample ID: MBLK-57720-57720				Units: mg/Kg		Analysis Date: 4/18/2014 01:26 PM		
Client ID:		Run ID: HG1_140418A				SeqNo: 2720046		Prep Date: 4/18/2014		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-57720-57720				Units: mg/Kg		Analysis Date: 4/18/2014 01:28 PM		
Client ID:		Run ID: HG1_140418A				SeqNo: 2720048		Prep Date: 4/18/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1552 0.020 0.1665 0 93.2 80-120 0

MS		Sample ID: 1404924-01BMS				Units: mg/Kg		Analysis Date: 4/18/2014 01:33 PM		
Client ID:		Run ID: HG1_140418A				SeqNo: 2720307		Prep Date: 4/18/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1451 0.015 0.1229 0.01938 102 75-125 0

MSD		Sample ID: 1404924-01BMSD				Units: mg/Kg		Analysis Date: 4/18/2014 01:35 PM		
Client ID:		Run ID: HG1_140418A				SeqNo: 2720308		Prep Date: 4/18/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1445 0.014 0.1199 0.01938 104 75-125 0.1451 0.417 35

The following samples were analyzed in this batch:

1404844-01A 1404844-02A

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

Client: Olsson Associates
 Work Order: 1404844
 Project: Chevron Emerald 72X 4.9.14

QC BATCH REPORT

Batch ID: **57691** Instrument ID **ICPMS1** Method: **SW6020A**

MBLK		Sample ID: MBLK-57691-57691				Units: mg/Kg		Analysis Date: 4/21/2014 03:34 AM		
Client ID:		Run ID: ICPMS1_140420A				SeqNo: 2722158		Prep Date: 4/17/2014		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	0.10								
Chromium	ND	0.25								
Copper	ND	0.25								
Lead	0.002518	0.25								J
Nickel	ND	0.25								
Selenium	ND	0.25								
Silver	ND	0.25								
Zinc	0.2224	0.50								J

LCS		Sample ID: LCS-57691-57691				Units: mg/Kg		Analysis Date: 4/21/2014 03:40 AM		
Client ID:		Run ID: ICPMS1_140420A				SeqNo: 2722159		Prep Date: 4/17/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.744	0.25	5	0	94.9	80-120	0			
Barium	5.215	0.25	5	0	104	80-120	0			
Cadmium	5.005	0.10	5	0	100	80-120	0			
Chromium	5.475	0.25	5	0	110	80-120	0			
Copper	5.5	0.25	5	0	110	80-120	0			
Lead	5.425	0.25	5	0	108	80-120	0			
Nickel	5.455	0.25	5	0	109	80-120	0			
Selenium	4.504	0.25	5	0	90.1	80-120	0			
Silver	5.23	0.25	5	0	105	80-120	0			
Zinc	5.1	0.50	5	0	102	80-120	0			

MS		Sample ID: 1404693-01BMS				Units: mg/Kg		Analysis Date: 4/21/2014 03:58 AM		
Client ID:		Run ID: ICPMS1_140420A				SeqNo: 2722162		Prep Date: 4/17/2014		DF: 5
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	14.16	1.6	6.305	4.856	148	75-125	0			S
Barium	61.35	1.6	6.305	80.13	-298	75-125	0			SO
Cadmium	6.895	0.63	6.305	0.2299	106	75-125	0			
Chromium	21.95	1.6	6.305	11.62	164	75-125	0			S
Copper	18.98	1.6	6.305	12.57	102	75-125	0			
Lead	48.05	1.6	6.305	32.7	243	75-125	0			SO
Nickel	18.53	1.6	6.305	11.18	117	75-125	0			
Selenium	7.147	1.6	6.305	0.4936	106	75-125	0			
Silver	6.28	1.6	6.305	0.03209	99.1	75-125	0			
Zinc	55.71	3.2	6.305	38.48	273	75-125	0			SO

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

Client: Olsson Associates
Work Order: 1404844
Project: Chevron Emerald 72X 4.9.14

QC BATCH REPORT

Batch ID: **57691** Instrument ID **ICPMS1** Method: **SW6020A**

MSD		Sample ID: 1404693-01BMSD				Units: mg/Kg		Analysis Date: 4/21/2014 04:04 AM		
Client ID:		Run ID: ICPMS1_140420A				SeqNo: 2722163		Prep Date: 4/17/2014		DF: 5
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	11.5	1.6	6.57	4.856	101	75-125	14.16	20.8	25	
Barium	63.44	1.6	6.57	80.13	-254	75-125	61.35	3.34	25	SO
Cadmium	7.526	0.66	6.57	0.2299	111	75-125	6.895	8.76	25	
Chromium	27.03	1.6	6.57	11.62	235	75-125	21.95	20.7	25	S
Copper	20.9	1.6	6.57	12.57	127	75-125	18.98	9.59	25	S
Lead	42.58	1.6	6.57	32.7	150	75-125	48.05	12.1	25	SO
Nickel	20.44	1.6	6.57	11.18	141	75-125	18.53	9.8	25	S
Selenium	7.263	1.6	6.57	0.4936	103	75-125	7.147	1.62	25	
Silver	6.718	1.6	6.57	0.03209	102	75-125	6.28	6.74	25	
Zinc	52.17	3.3	6.57	38.48	208	75-125	55.71	6.56	25	SO

The following samples were analyzed in this batch: 1404844-01A 1404844-02A

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

Client: Olsson Associates
Work Order: 1404844
Project: Chevron Emerald 72X 4.9.14

QC BATCH REPORT

Batch ID: **57717** Instrument ID **ICPMS1** Method: **SW6020A**

DUP		Sample ID: 1404833-01ADUP				Units: mg/L		Analysis Date: 4/21/2014 09:01 PM		
Client ID:		Run ID: ICPMS1_140421A				SeqNo: 2724563		Prep Date: 4/20/2014		DF: 20
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	111.5	10	0	0	0	0-0	102.8	8.12		
Magnesium	12.29	4.0	0	0	0	0-0	14.74	18.1		
Sodium	87.54	4.0	0	0	0	0-0	101.3	14.6		

The following samples were analyzed in this batch:

1404844-01B 1404844-02B

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

Client: Olsson Associates
 Work Order: 1404844
 Project: Chevron Emerald 72X 4.9.14

QC BATCH REPORT

Batch ID: **57708** Instrument ID **SVMS7** Method: **SW8270**

MBLK		Sample ID: SBLKS1-57708-57708				Units: µg/Kg		Analysis Date: 4/18/2014 07:12 PM		
Client ID:		Run ID: SVMS7_140418A				SeqNo: 2725198		Prep Date: 4/18/2014		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	1350	0	1667	0	81	12-100	0			
Surr: 4-Terphenyl-d14	1819	0	1667	0	109	25-137	0			
Surr: Nitrobenzene-d5	1007	0	1667	0	60.4	37-107	0			

LCS		Sample ID: SLCSS1-57708-57708				Units: µg/Kg		Analysis Date: 4/18/2014 07:35 PM		
Client ID:		Run ID: SVMS7_140418A				SeqNo: 2725199		Prep Date: 4/18/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	494.3	6.7	666.7	0	74.1	45-110	0			
Anthracene	577.7	6.7	666.7	0	86.6	55-105	0			
Benzo(a)anthracene	572	6.7	666.7	0	85.8	50-110	0			
Benzo(a)pyrene	637	6.7	666.7	0	95.5	50-110	0			
Benzo(b)fluoranthene	615.7	6.7	666.7	0	92.3	45-115	0			
Benzo(k)fluoranthene	654.7	6.7	666.7	0	98.2	45-115	0			
Chrysene	591.3	6.7	666.7	0	88.7	55-110	0			
Dibenzo(a,h)anthracene	581	6.7	666.7	0	87.1	40-125	0			
Fluoranthene	573.3	6.7	666.7	0	86	55-115	0			
Fluorene	556	6.7	666.7	0	83.4	50-110	0			
Indeno(1,2,3-cd)pyrene	616.3	6.7	666.7	0	92.4	40-120	0			
Naphthalene	446.7	6.7	666.7	0	67	40-105	0			
Pyrene	614.3	6.7	666.7	0	92.1	45-125	0			
Surr: 2-Fluorobiphenyl	1175	0	1667	0	70.5	12-100	0			
Surr: 4-Terphenyl-d14	1711	0	1667	0	103	25-137	0			
Surr: Nitrobenzene-d5	959.3	0	1667	0	57.6	37-107	0			

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

Client: Olsson Associates
 Work Order: 1404844
 Project: Chevron Emerald 72X 4.9.14

QC BATCH REPORT

Batch ID: 57708 Instrument ID SVMS7 Method: SW8270

MS				Sample ID: 1404844-01A MS			Units: µg/Kg		Analysis Date: 4/18/2014 09:50 PM		
Client ID: EM72X-SS1			Run ID: SVMS7_140418A			SeqNo: 2725200		Prep Date: 4/18/2014		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	1080	13	1296	0	83.3	45-110	0				
Anthracene	1187	13	1296	0	91.6	55-105	0				
Benzo(a)anthracene	1221	13	1296	0	94.2	50-110	0				
Benzo(a)pyrene	1252	13	1296	0	96.6	50-110	0				
Benzo(b)fluoranthene	1264	13	1296	0	97.5	45-115	0				
Benzo(k)fluoranthene	1326	13	1296	0	102	45-115	0				
Chrysene	1210	13	1296	0	93.4	55-110	0				
Dibenzo(a,h)anthracene	1181	13	1296	0	91.1	40-125	0				
Fluoranthene	1094	13	1296	0	84.4	55-115	0				
Fluorene	1245	13	1296	0	96.1	50-110	0				
Indeno(1,2,3-cd)pyrene	1251	13	1296	0	96.5	40-120	0				
Naphthalene	903.2	13	1296	0	69.7	40-105	0				
Pyrene	1263	13	1296	0	97.4	45-125	0				
Surr: 2-Fluorobiphenyl	2540	0	3240	0	78.4	12-100	0				
Surr: 4-Terphenyl-d14	3491	0	3240	0	108	25-137	0				
Surr: Nitrobenzene-d5	2080	0	3240	0	64.2	37-107	0				

MSD				Sample ID: 1404844-01A MSD				Units: µg/Kg		Analysis Date: 4/18/2014 10:13 PM			
Client ID: EM72X-SS1				Run ID: SVMS7_140418A				SeqNo: 2725201		Prep Date: 4/18/2014		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Acenaphthene	1088	13	1292	0	84.2	45-110	1080	0.691	30				
Anthracene	1208	13	1292	0	93.5	55-105	1187	1.78	30				
Benzo(a)anthracene	1177	13	1292	0	91.1	50-110	1221	3.67	30				
Benzo(a)pyrene	1232	13	1292	0	95.3	50-110	1252	1.63	30				
Benzo(b)fluoranthene	1208	13	1292	0	93.5	45-115	1264	4.51	30				
Benzo(k)fluoranthene	1254	13	1292	0	97	45-115	1326	5.59	30				
Chrysene	1190	13	1292	0	92.1	55-110	1210	1.67	30				
Dibenzo(a,h)anthracene	1169	13	1292	0	90.5	40-125	1181	0.984	30				
Fluoranthene	1089	13	1292	0	84.3	55-115	1094	0.501	30				
Fluorene	1166	13	1292	0	90.3	50-110	1245	6.55	30				
Indeno(1,2,3-cd)pyrene	1240	13	1292	0	96	40-120	1251	0.895	30				
Naphthalene	940.3	13	1292	0	72.8	40-105	903.2	4.03	30				
Pyrene	1177	13	1292	0	91.1	45-125	1263	7	30				
Surr: 2-Fluorobiphenyl	2491	0	3229	0	77.1	12-100	2540	1.94	40				
Surr: 4-Terphenyl-d14	3432	0	3229	0	106	25-137	3491	1.71	40				
Surr: Nitrobenzene-d5	2063	0	3229	0	63.9	37-107	2080	0.823	40				

The following samples were analyzed in this batch:

1404844-01A 1404844-02A

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

Client: Olsson Associates
 Work Order: 1404844
 Project: Chevron Emerald 72X 4.9.14

QC BATCH REPORT

Batch ID: **57682** Instrument ID **VMS5** Method: **SW8260B**

MBLK				Sample ID: MBLK-57682-57682				Units: µg/Kg			Analysis Date: 4/17/2014 04:39 PM		
Client ID:			Run ID: VMS5_140417A				SeqNo: 2719938			Prep Date: 4/17/2014		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	927	0	1000	0	92.7	70-130	0						
Surr: 4-Bromofluorobenzene	964.5	0	1000	0	96.4	70-130	0						
Surr: Dibromofluoromethane	979	0	1000	0	97.9	70-130	0						
Surr: Toluene-d8	973	0	1000	0	97.3	70-130	0						

LCS				Sample ID: LCS-57682-57682			Units: µg/Kg		Analysis Date: 4/17/2014 03:22 PM		
Client ID:		Run ID: VMS5_140417A			SeqNo: 2719937		Prep Date: 4/17/2014		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	1076	30	1000	0	108	75-125	0				
Ethylbenzene	1050	30	1000	0	105	75-125	0				
m,p-Xylene	2088	60	2000	0	104	80-125	0				
o-Xylene	1054	30	1000	0	105	75-125	0				
Toluene	1026	30	1000	0	103	70-125	0				
Xylenes, Total	3142	90	3000	0	105	75-125	0				
Surr: 1,2-Dichloroethane-d4	922	0	1000	0	92.2	70-130	0				
Surr: 4-Bromofluorobenzene	984.5	0	1000	0	98.4	70-130	0				
Surr: Dibromofluoromethane	988.5	0	1000	0	98.8	70-130	0				
Surr: Toluene-d8	973	0	1000	0	97.3	70-130	0				

MS				Sample ID: 1404846-02A MS				Units: µg/Kg			Analysis Date: 4/21/2014 06:54 AM		
Client ID:			Run ID: VMS6_140420A				SeqNo: 2722832			Prep Date: 4/17/2014		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Benzene	1124	30	1000	0	112	75-125	0						
Ethylbenzene	1075	30	1000	0	108	75-125	0						
m,p-Xylene	2150	60	2000	0	108	80-125	0						
o-Xylene	1072	30	1000	0	107	75-125	0						
Toluene	1028	30	1000	0	103	70-125	0						
Xylenes, Total	3222	90	3000	0	107	75-125	0						
Surr: 1,2-Dichloroethane-d4	1032	0	1000	0	103	70-130	0						
Surr: 4-Bromofluorobenzene	1035	0	1000	0	104	70-130	0						
Surr: Dibromofluoromethane	993	0	1000	0	99.3	70-130	0						
Surr: Toluene-d8	966.5	0	1000	0	96.6	70-130	0						

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

Client: Olsson Associates
Work Order: 1404844
Project: Chevron Emerald 72X 4.9.14

QC BATCH REPORT

Batch ID: **57682** Instrument ID **VMS5** Method: **SW8260B**

MSD				Sample ID: 1404846-02A MSD				Units: µg/Kg			Analysis Date: 4/21/2014 07:19 AM		
Client ID:			Run ID: VMS6_140420A			SeqNo: 2722833			Prep Date: 4/17/2014			DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			
Benzene	1073	30	1000	0	107	75-125	1124	4.6	30				
Ethylbenzene	1022	30	1000	0	102	75-125	1075	5.01	30				
m,p-Xylene	2047	60	2000	0	102	80-125	2150	4.91	30				
o-Xylene	1042	30	1000	0	104	75-125	1072	2.79	30				
Toluene	989.5	30	1000	0	99	70-125	1028	3.87	30				
Xylenes, Total	3090	90	3000	0	103	75-125	3222	4.2	30				
Surr: 1,2-Dichloroethane-d4	1008	0	1000	0	101	70-130	1032	2.45	30				
Surr: 4-Bromofluorobenzene	1037	0	1000	0	104	70-130	1035	0.193	30				
Surr: Dibromofluoromethane	979.5	0	1000	0	98	70-130	993	1.37	30				
Surr: Toluene-d8	963	0	1000	0	96.3	70-130	966.5	0.363	30				

The following samples were analyzed in this batch: 1404844-01A 1404844-02A

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

Client: Olsson Associates
Work Order: 1404844
Project: Chevron Emerald 72X 4.9.14

QC BATCH REPORT

Batch ID: **57689** Instrument ID **WETCHEM** Method: **SW9045D**

LCS		Sample ID: LCS-57689-57689					Units: s.u.		Analysis Date: 4/17/2014 11:35 AM		
Client ID:			Run ID: WETCHEM_140417D			SeqNo: 2718550		Prep Date: 4/17/2014		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

pH 4.04 0 4 0 101 90-110 0

DUP		Sample ID: 1404615-02B DUP					Units: s.u.		Analysis Date: 4/17/2014 11:35 AM		
Client ID:		Run ID: WETCHEM_140417D			SeqNo: 2718552		Prep Date: 4/17/2014		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

pH 8.35 0 0 0 0 0-0 8.44 1.07 20

DUP		Sample ID: 1404811-01B DUP					Units: s.u.		Analysis Date: 4/17/2014 11:35 AM		
Client ID:			Run ID: WETCHEM_140417D			SeqNo: 2718561		Prep Date: 4/17/2014		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 8.08 1.35 20

The following samples were analyzed in this batch:

1404844-01A 1404844-02A

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

Client: Olsson Associates
Work Order: 1404844
Project: Chevron Emerald 72X 4.9.14

QC BATCH REPORT

Batch ID: **57717** Instrument ID **WETCHEM** Method: **USDA H60 Method**

MBLK		Sample ID: WBLKW1-140421-57717				Units: mmhos/cm @25°C		Analysis Date: 4/21/2014 11:45 AM		
Client ID:		Run ID: WETCHEM_140421D				SeqNo: 2722808		Prep Date: 4/20/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Electrical Conductivity @ Saturation ND 0.0050

DUP		Sample ID: 1404833-01A DUP				Units: mmhos/cm @25°C		Analysis Date: 4/21/2014 11:45 AM		
Client ID:		Run ID: WETCHEM_140421D				SeqNo: 2722821		Prep Date: 4/20/2014		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Electrical Conductivity @ Saturation 0.977 0.050 0 0 0 1.035 5.77 50

LCS1		Sample ID: WLCS1W1-140421-57717				Units: mmhos/cm @25°C		Analysis Date: 4/21/2014 11:45 AM		
Client ID:		Run ID: WETCHEM_140421D				SeqNo: 2722809		Prep Date: 4/20/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Electrical Conductivity @ Saturation 0.01413 0.0050 0.0149 0 94.8 85-107 0

LCS2		Sample ID: WLCS2W1-140421-57717				Units: mmhos/cm @25°C		Analysis Date: 4/21/2014 11:45 AM		
Client ID:		Run ID: WETCHEM_140421D				SeqNo: 2722810		Prep Date: 4/20/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Electrical Conductivity @ Saturation 0.587 0.0050 0.592 0 99.2 85-107 0

The following samples were analyzed in this batch:

1404844-01B	1404844-02B
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Olsson Associates
 Work Order: 1404844
 Project: Chevron Emerald 72X 4.9.14

QC BATCH REPORT

Batch ID: **57782** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK		Sample ID: MBLK-57782-57782				Units: mg/Kg		Analysis Date: 4/18/2014 04:00 PM		
Client ID:		Run ID: WETCHEM_140418K				SeqNo: 2721486		Prep Date: 4/18/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent ND 0.50

LCS		Sample ID: LCS-57782-57782				Units: mg/Kg		Analysis Date: 4/18/2014 04:00 PM		
Client ID:		Run ID: WETCHEM_140418K				SeqNo: 2721485		Prep Date: 4/18/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1.96 0.50 2 0 98 80-120 0

MS		Sample ID: 1404844-01A MS				Units: mg/Kg		Analysis Date: 4/18/2014 04:00 PM		
Client ID: EM72X-SS1		Run ID: WETCHEM_140418K				SeqNo: 2721477		Prep Date: 4/18/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 0.9725 0.49 1.961 0.028 48.2 75-125 0 S

MS		Sample ID: 1404844-01A MSI				Units: mg/Kg		Analysis Date: 4/18/2014 04:00 PM		
Client ID: EM72X-SS1		Run ID: WETCHEM_140418K				SeqNo: 2721479		Prep Date: 4/18/2014		DF: 100
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 518.8 49 647.4 0.028 80.1 75-125 0

MSD		Sample ID: 1404844-01A MSD				Units: mg/Kg		Analysis Date: 4/18/2014 04:00 PM		
Client ID: EM72X-SS1		Run ID: WETCHEM_140418K				SeqNo: 2721478		Prep Date: 4/18/2014		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1.024 0.49 1.961 0.028 50.8 75-125 0.9725 5.11 20 S

The following samples were analyzed in this batch:

1404844-01A 1404844-02A

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

Client: Olsson Associates
 Work Order: 1404844
 Project: Chevron Emerald 72X 4.9.14

QC BATCH REPORT

Batch ID: **R139097** Instrument ID **MOIST** Method: **A2540 G**

MBLK		Sample ID: WBLKS-R139097				Units: % of sample		Analysis Date: 4/16/2014 03:32 PM		
Client ID:		Run ID: MOIST_140416B				SeqNo: 2717825		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-R139097				Units: % of sample		Analysis Date: 4/16/2014 03:32 PM		
Client ID:		Run ID: MOIST_140416B				SeqNo: 2717823		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: 1404731-01A DUP				Units: % of sample		Analysis Date: 4/16/2014 03:32 PM		
Client ID:		Run ID: MOIST_140416B				SeqNo: 2717782		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 18.95 0.050 0 0 0 0-0 18.33 3.33 20

DUP		Sample ID: 1404758-09A DUP				Units: % of sample		Analysis Date: 4/16/2014 03:32 PM		
Client ID:		Run ID: MOIST_140416B				SeqNo: 2717792		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 13.71 0.050 0 0 0 0-0 14.73 7.17 20

The following samples were analyzed in this batch:

1404844-02A

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

Client: Olsson Associates
 Work Order: 1404844
 Project: Chevron Emerald 72X 4.9.14

QC BATCH REPORT

Batch ID: **R139101** Instrument ID **MOIST** Method: **A2540 G**

MBLK		Sample ID: WBLKS-R139101				Units: % of sample			Analysis Date: 4/16/2014 05:21 PM		
Client ID:		Run ID: MOIST_140416C				SeqNo: 2717927			Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Moisture	0.05	0.050								J	

LCS		Sample ID: LCS-R139101				Units: % of sample			Analysis Date: 4/16/2014 05:21 PM		
Client ID:		Run ID: MOIST_140416C				SeqNo: 2717926			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: 1404844-01A DUP				Units: % of sample			Analysis Date: 4/16/2014 05:21 PM		
Client ID: EM72X-SS1		Run ID: MOIST_140416C				SeqNo: 2717909			Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Moisture	13.95	0.050	0	0	0	0-0	12.93	7.59	20		

DUP		Sample ID: 1404846-05A DUP				Units: % of sample			Analysis Date: 4/16/2014 05:21 PM		
Client ID:		Run ID: MOIST_140416C				SeqNo: 2717920			Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Moisture	7.2	0.050	0	0	0	0-0	8.13	12.1	20		

The following samples were analyzed in this batch:

1404844-01A

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



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

Customer Information		Project Information					Parameter/Method Request for Analysis												
Purchase Order		Project Name	Chevron Emerald 72X					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, Sta. 102	Address	760 Horizon Drive, Sta. 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@oasconsulting.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	EM72X-SS1	04/09/14	1235	Soil	8	2	X	X	X	X	X	X	X						
	EM72X-BG1	04/09/14	1245	Soil	8	2	X	X	X	X	X	X	X						
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Sampler(s): Please Print & Sign Tim Dobransky		Shipment Method: FedEx	Required Turnaround Time: <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	Other: <input type="checkbox"/>	Results Due Date:
Relinquished by:	Date: 4/14/14 Time: 1645	Received by:	Notes: Chevron Pricing Applies - Per Bruce Schlatter		
Relinquished by:	Date: 4/16/14 Time: 0930	Received by (Laboratory):	Cooler Temp. 56°C	QC Package: (Check Box Below)	
Logged by (Laboratory):	Date: 4/16/14 Time: 1545	Checked by (Laboratory):	<input checked="" type="checkbox"/> Level II: Standard QC <input type="checkbox"/> Level III: Std QC + Raw Data <input type="checkbox"/> Level IV: SW846 CLP-Like Other:		
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035					

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

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Sample Receipt Checklist

Client Name: **OLSSON**

Date/Time Received: **16-Apr-14 09:30**

Work Order: **1404844**

Received by: **DS**

Checklist completed by Diane Shaw 16-Apr-14
eSignature Date

Reviewed by: Ann Preston 17-Apr-14
eSignature Date

Matrices: **Soil**

Carrier name: **FedEx**

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>5.6 c</u>		
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	<u>4/16/2014 3:48:32 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:			

Login Notes:

Client Contacted:

Date Contacted:


Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction:

ALS Envrionmental 3352 128th Avenue Holland, Michigan 49424 Tel. +1 616 399 6070 Fax. +1 616 399 6185	CUSTODY SEAL	Seal Broken By:
		Date:
	Date: 4/14/14 Time: 10:45 Name: T. Dobransky Company: Olsson Associates	

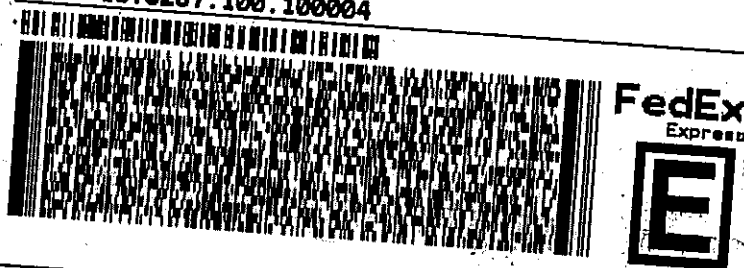
ORIGIN ID: GJTA (970) 270-2986
 TIM DOBRANSKY
 OLSSON ASSOCIATES, INC
 780 HORIZON DRIVE STE 102
 GRAND JUNCTION, CO 81506
 UNITED STATES US

SHIP DATE: 14APR14
 ACTWT: 55.0 LB MAN
 CAD: 390082/CAFE2704

BILL SENDER

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

HOLLAND MI 49424
 (616) 399-6070
 PO: 13.3287.100.100004

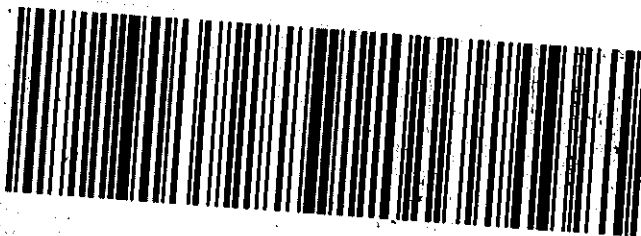


TRKH
 8201 5632 6808 4698

TUE - 15 APR 10:30A
PRIORITY OVERNIGHT

XX GRRRA

49424
MI-US GRR



Part # 156148-434 NRIT 06-07 ::