



10-Jun-2015

Robert Stockton
Olsson Associates
760 Horizon Drive
Suite 102
Grand Junction, CO 81506

Re: **Hawxhurst 2409 (015-1250)**

Work Order: **1506014**

Dear Robert,

ALS Environmental received 9 samples on 30-May-2015 09:30 AM for the analyses presented in the following report.

This is a REVISED REPORT. The Case Narrative provides information discussing the reason for issuing a revised report. The total number of pages in this revision is 39.

If you have any questions regarding these test results, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Les Arnold".

Electronically approved by: Les Arnold

Les Arnold
Senior Project Manager



Certificate No: MN 532786

Report of Laboratory Analysis

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Environmental 

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Client: Olsson Associates
Project: Hawxhurst 2409 (015-1250)
Work Order: 1506014

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>
1506014-01	2409-FPT-52815: 1-6"	Soil		5/28/2015 14:32	5/30/2015 09:30	<input type="checkbox"/>
1506014-02	2409-FPM-52815: 1-4"	Soil		5/28/2015 14:44	5/30/2015 09:30	<input type="checkbox"/>
1506014-03	2409-FPO-52815: 1-6"	Soil		5/28/2015 14:51	5/30/2015 09:30	<input type="checkbox"/>
1506014-04	2409-NW-52815: 3.5'	Soil		5/28/2015 15:16	5/30/2015 09:30	<input type="checkbox"/>
1506014-05	2409-SW-52815: 4'	Soil		5/28/2015 15:24	5/30/2015 09:30	<input type="checkbox"/>
1506014-06	2409-EW-52815: 4'	Soil		5/28/2015 15:33	5/30/2015 09:30	<input type="checkbox"/>
1506014-07	2409-WW-52815: 5'	Soil		5/28/2015 15:40	5/30/2015 09:30	<input type="checkbox"/>
1506014-08	2409-BOT-52815: 6'	Soil		5/28/2015 15:50	5/30/2015 09:30	<input type="checkbox"/>
1506014-09	2409-Stream-52815	Water		5/28/2015 16:01	5/30/2015 09:30	<input type="checkbox"/>

Client: Olsson Associates
Project: Hawxhurst 2409 (015-1250)
WorkOrder: 1506014

**QUALIFIERS,
ACRONYMS, UNITS**

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

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

<u>Units Reported</u>	<u>Description</u>
% of sample	Percent of Sample
µg/Kg-dry	Micrograms per Kilogram Dry Weight
µg/L	Micrograms per Liter
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

Client: Olsson Associates
Project: Hawxhurst 2409 (015-1250)
Work Order: 1506014

Case Narrative

This report is REVISED to include the results of Mercury analysis on sample 1506014-08 (2409 - BOT - 52815: 6').

Batch 71778, Method ICP_6010_S, Sample 1506014-06AMS: The matrix spike recovery was outside of the control limit for Zinc; however, the matrix spike duplicate recovery and the RPD between the MS and MSD were in control. No qualification is required for this analyte.

Batch 71778, Method ICP_6010_S, Sample 1506014-06AMS: The MS recovery was outside of the control limit for Barium; however, the result in the parent sample is greater than 4x the spike amount. No qualification is required for this analyte.

ALS Group USA, Corp**Date:** 10-Jun-15

Client: Olsson Associates
Project: Hawxhurst 2409 (015-1250)
Sample ID: 2409-FPT-52815: 1-6"
Collection Date: 5/28/2015 02:32 PM

Work Order: 1506014
Lab ID: 1506014-01
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS ANALYSIS BY ICP						
Arsenic	8.6		SW846 6010C 0.42	mg/Kg-dry	Prep Date: 6/2/2015 1	Analyst: JEC 6/3/2015 02:51 PM
SOLUBLE CATIONS FOR SAR						
Calcium	18		SW846 6010C 5.0	mg/L	Prep Date: 6/3/2015 10	Analyst: JEC 6/3/2015 06:09 PM
Magnesium	5.3		2.0	mg/L	10	6/3/2015 06:09 PM
Sodium	420		2.0	mg/L	10	6/3/2015 06:09 PM
SODIUM ADSORPTION RATIO						
Exchangeable Sodium Percentage	24		USDA H60 METHO 0.010	none	Prep Date: 6/3/2015 1	Analyst: JEC 6/3/2015
Sodium Adsorption Ratio	23		0.010	none	1	6/3/2015
ELECTRICAL CONDUCTIVITY (SAR)						
Electrical Conductivity @ Saturation	2.4		USDA H60 METHO 0.050	mmhos/cm @2	Prep Date: 6/3/2015 10	Analyst: JB 6/4/2015 04:15 PM
MOISTURE						
Moisture	20		E160.3M 0.050	% of sample	1	Analyst: EVB 6/3/2015 06:12 PM
PH						
pH	9.0		SW9045D	s.u.	Prep Date: 6/1/2015 1	Analyst: STP 6/1/2015 05:30 PM

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

ALS Group USA, Corp**Date:** 10-Jun-15

Client: Olsson Associates
Project: Hawxhurst 2409 (015-1250)
Sample ID: 2409-FPM-52815: 1-4"
Collection Date: 5/28/2015 02:44 PM

Work Order: 1506014
Lab ID: 1506014-02
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS ANALYSIS BY ICP						
Arsenic	4.9		SW846 6010C 0.42	mg/Kg-dry	Prep Date: 6/2/2015 1	Analyst: JEC 6/3/2015 02:57 PM
SOLUBLE CATIONS FOR SAR						
Calcium	220		SW846 6010C 5.0	mg/L	Prep Date: 6/3/2015 10	Analyst: JEC 6/3/2015 06:15 PM
Magnesium	75		2.0	mg/L	10	6/3/2015 06:15 PM
Sodium	720		2.0	mg/L	10	6/3/2015 06:15 PM
SODIUM ADSORPTION RATIO						
Exchangeable Sodium Percentage	13		USDA H60 METHO 0.010	none	Prep Date: 6/3/2015 1	Analyst: JEC 6/3/2015
Sodium Adsorption Ratio	11		0.010	none	1	6/3/2015
ELECTRICAL CONDUCTIVITY (SAR)						
Electrical Conductivity @ Saturation	6.0		USDA H60 METHO 0.050	mmhos/cm @2	Prep Date: 6/3/2015 10	Analyst: JB 6/4/2015 04:15 PM
MOISTURE						
Moisture	16		E160.3M 0.050	% of sample	1	Analyst: EVB 6/3/2015 06:12 PM
PH						
pH	8.4		SW9045D	s.u.	Prep Date: 6/1/2015 1	Analyst: STP 6/1/2015 05:30 PM

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

ALS Group USA, Corp

Date: 10-Jun-15

Client: Olsson Associates
Project: Hawxhurst 2409 (015-1250)
Sample ID: 2409-FPO-52815: 1-6"
Collection Date: 5/28/2015 02:51 PM

Work Order: 1506014
Lab ID: 1506014-03
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
METALS ANALYSIS BY ICP						
Arsenic	5.1		SW846 6010C 0.43	mg/Kg-dry	Prep Date: 6/2/2015 1	Analyst: JEC 6/3/2015 03:03 PM
SOLUBLE CATIONS FOR SAR						
Calcium	95		SW846 6010C 5.0	mg/L	Prep Date: 6/3/2015 10	Analyst: JEC 6/3/2015 06:20 PM
Magnesium	22		2.0	mg/L	10	6/3/2015 06:20 PM
Sodium	2,000		2.0	mg/L	10	6/3/2015 06:20 PM
SODIUM ADSORPTION RATIO						
Exchangeable Sodium Percentage	41		USDA H60 METHO 0.010	none	Prep Date: 6/3/2015 1	Analyst: JEC 6/3/2015
Sodium Adsorption Ratio	48		0.010	none	1	6/3/2015
ELECTRICAL CONDUCTIVITY (SAR)						
Electrical Conductivity @ Saturation	12		USDA H60 METHO 0.050	mmhos/cm @2	Prep Date: 6/3/2015 10	Analyst: JB 6/4/2015 04:15 PM
MOISTURE						
Moisture	25		E160.3M 0.050	% of sample	1	Analyst: EVB 6/3/2015 06:12 PM
PH						
pH	8.7		SW9045D	s.u.	Prep Date: 6/1/2015 1	Analyst: STP 6/1/2015 05:30 PM

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

ALS Group USA, Corp

Date: 10-Jun-15

Client: Olsson Associates
Project: Hawxhurst 2409 (015-1250)
Sample ID: 2409-NW-52815: 3.5'
Collection Date: 5/28/2015 03:16 PM

Work Order: 1506014
Lab ID: 1506014-04
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	ND		SW8015M 6.2	mg/Kg-dry	1	Prep Date: 6/2/2015 Analyst: IT 6/2/2015 11:50 PM
Surr: 4-Terphenyl-d14	68.9		39-133	%REC	1	6/2/2015 11:50 PM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	ND		SW8015D 3.7	mg/Kg-dry	1	Prep Date: 6/1/2015 Analyst: IT 6/2/2015 12:08 PM
Surr: Toluene-d8	101		50-150	%REC	1	6/2/2015 12:08 PM
METALS ANALYSIS BY ICP						
Arsenic	4.4		SW846 6010C 0.57	mg/Kg-dry	1	Prep Date: 6/2/2015 Analyst: JEC 6/3/2015 03:09 PM
SOLUBLE CATIONS FOR SAR						
Calcium	62		SW846 6010C 5.0	mg/L	10	Prep Date: 6/3/2015 Analyst: JEC 6/3/2015 06:26 PM
Magnesium	31		2.0	mg/L	10	6/3/2015 06:26 PM
Sodium	36		2.0	mg/L	10	6/3/2015 06:26 PM
SODIUM ADSORPTION RATIO						
Exchangeable Sodium Percentage	0.13		USDA H60 METHO 0.010	none	1	Prep Date: 6/3/2015 Analyst: JEC 6/3/2015
Sodium Adsorption Ratio	0.94		0.010	none	1	6/3/2015
VOLATILE ORGANIC COMPOUNDS						
Benzene	ND		SW8260B 44	µg/Kg-dry	1	Prep Date: 6/1/2015 Analyst: AK 6/6/2015 05:07 PM
Ethylbenzene	ND		44	µg/Kg-dry	1	6/6/2015 05:07 PM
m,p-Xylene	ND		89	µg/Kg-dry	1	6/6/2015 05:07 PM
o-Xylene	ND		44	µg/Kg-dry	1	6/6/2015 05:07 PM
Toluene	ND		44	µg/Kg-dry	1	6/6/2015 05:07 PM
Xylenes, Total	ND		130	µg/Kg-dry	1	6/6/2015 05:07 PM
Surr: 1,2-Dichloroethane-d4	94.6		70-130	%REC	1	6/6/2015 05:07 PM
Surr: 4-Bromofluorobenzene	97.5		70-130	%REC	1	6/6/2015 05:07 PM
Surr: Dibromofluoromethane	96.4		70-130	%REC	1	6/6/2015 05:07 PM
Surr: Toluene-d8	94.6		70-130	%REC	1	6/6/2015 05:07 PM
ELECTRICAL CONDUCTIVITY (SAR)						
Electrical Conductivity @ Saturation	0.90		USDA H60 METHO 0.050	mmhos/cm @2	10	Prep Date: 6/3/2015 Analyst: JB 6/4/2015 04:15 PM
MOISTURE						
Moisture	33		E160.3M 0.050	% of sample	1	Analyst: EVB 6/3/2015 06:12 PM
PH						
pH	8.6		SW9045D	s.u.	1	Prep Date: 6/1/2015 Analyst: STP 6/1/2015 05:30 PM

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

ALS Group USA, Corp

Date: 10-Jun-15

Client: Olsson Associates
Project: Hawxhurst 2409 (015-1250)
Sample ID: 2409-SW-52815: 4'
Collection Date: 5/28/2015 03:24 PM

Work Order: 1506014
Lab ID: 1506014-05
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	62		SW8015M		Prep Date: 6/2/2015	Analyst: IT
			5.0	mg/Kg-dry	1	6/2/2015 07:21 PM
Surr: 4-Terphenyl-d14	63.6		39-133	%REC	1	6/2/2015 07:21 PM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	ND		SW8015D		Prep Date: 6/1/2015	Analyst: IT
			3.0	mg/Kg-dry	1	6/2/2015 12:57 PM
Surr: Toluene-d8	108		50-150	%REC	1	6/2/2015 12:57 PM
METALS ANALYSIS BY ICP						
Arsenic	12		SW846 6010C		Prep Date: 6/2/2015	Analyst: JEC
			0.43	mg/Kg-dry	1	6/3/2015 03:14 PM
SOLUBLE CATIONS FOR SAR						
Calcium	98		SW846 6010C		Prep Date: 6/3/2015	Analyst: JEC
			5.0	mg/L	10	6/3/2015 06:32 PM
Magnesium	48		2.0	mg/L	10	6/3/2015 06:32 PM
Sodium	310		2.0	mg/L	10	6/3/2015 06:32 PM
SODIUM ADSORPTION RATIO						
Exchangeable Sodium Percentage	7.5		USDA H60 METHO		Prep Date: 6/3/2015	Analyst: JEC
			0.010	none	1	6/3/2015
Sodium Adsorption Ratio	6.4		0.010	none	1	6/3/2015
VOLATILE ORGANIC COMPOUNDS						
Benzene	ND		SW8260B		Prep Date: 6/1/2015	Analyst: LSY
			37	µg/Kg-dry	1	6/7/2015 05:23 AM
Ethylbenzene	ND		37	µg/Kg-dry	1	6/7/2015 05:23 AM
m,p-Xylene	ND		73	µg/Kg-dry	1	6/7/2015 05:23 AM
o-Xylene	ND		37	µg/Kg-dry	1	6/7/2015 05:23 AM
Toluene	ND		37	µg/Kg-dry	1	6/7/2015 05:23 AM
Xylenes, Total	ND		110	µg/Kg-dry	1	6/7/2015 05:23 AM
Surr: 1,2-Dichloroethane-d4	102		70-130	%REC	1	6/7/2015 05:23 AM
Surr: 4-Bromofluorobenzene	96.8		70-130	%REC	1	6/7/2015 05:23 AM
Surr: Dibromofluoromethane	101		70-130	%REC	1	6/7/2015 05:23 AM
Surr: Toluene-d8	96.7		70-130	%REC	1	6/7/2015 05:23 AM
ELECTRICAL CONDUCTIVITY (SAR)						
Electrical Conductivity @ Saturation	2.8		USDA H60 METHO		Prep Date: 6/3/2015	Analyst: JB
			0.050	mmhos/cm @2	10	6/4/2015 04:15 PM
MOISTURE						
Moisture	18		E160.3M			Analyst: EVB
			0.050	% of sample	1	6/3/2015 06:12 PM
PH						
pH	8.5		SW9045D		Prep Date: 6/1/2015	Analyst: STP
			s.u.		1	6/1/2015 05:30 PM

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

ALS Group USA, Corp

Date: 10-Jun-15

Client: Olsson Associates
Project: Hawxhurst 2409 (015-1250)
Sample ID: 2409-EW-52815: 4'
Collection Date: 5/28/2015 03:33 PM

Work Order: 1506014
Lab ID: 1506014-06
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	40		SW8015M		Prep Date: 6/2/2015	Analyst: IT
			5.1	mg/Kg-dry	1	6/3/2015 12:20 PM
Surr: 4-Terphenyl-d14	62.1		39-133	%REC	1	6/3/2015 12:20 PM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	ND		SW8015D		Prep Date: 6/1/2015	Analyst: IT
			3.1	mg/Kg-dry	1	6/2/2015 01:22 AM
Surr: Toluene-d8	104		50-150	%REC	1	6/2/2015 01:22 AM
METALS ANALYSIS BY ICP						
Arsenic	11		SW846 6010C		Prep Date: 6/2/2015	Analyst: JEC
			0.90	mg/Kg-dry	2	6/3/2015 10:13 PM
SOLUBLE CATIONS FOR SAR						
Calcium	790		SW846 6010C		Prep Date: 6/3/2015	Analyst: JEC
			5.0	mg/L	10	6/3/2015 06:43 PM
Magnesium	350			mg/L	10	6/3/2015 06:43 PM
			2.0			
Sodium	2,800			mg/L	10	6/3/2015 06:43 PM
			2.0			
SODIUM ADSORPTION RATIO						
Exchangeable Sodium Percentage	23		USDA H60 METHO		Prep Date: 6/3/2015	Analyst: JEC
			0.010	none	1	6/3/2015
Sodium Adsorption Ratio	21			none	1	6/3/2015
			0.010			
VOLATILE ORGANIC COMPOUNDS						
Benzene	ND		SW8260B		Prep Date: 6/1/2015	Analyst: LSY
			38	µg/Kg-dry	1	6/7/2015 05:49 AM
Ethylbenzene	ND			µg/Kg-dry	1	6/7/2015 05:49 AM
			38			
m,p-Xylene	ND		75	µg/Kg-dry	1	6/7/2015 05:49 AM
				µg/Kg-dry	1	6/7/2015 05:49 AM
o-Xylene	ND		38	µg/Kg-dry	1	6/7/2015 05:49 AM
				µg/Kg-dry	1	6/7/2015 05:49 AM
Toluene	ND		38	µg/Kg-dry	1	6/7/2015 05:49 AM
				µg/Kg-dry	1	6/7/2015 05:49 AM
Xylenes, Total	ND		110	µg/Kg-dry	1	6/7/2015 05:49 AM
				µg/Kg-dry	1	6/7/2015 05:49 AM
Surr: 1,2-Dichloroethane-d4	101		70-130	%REC	1	6/7/2015 05:49 AM
Surr: 4-Bromofluorobenzene	98.1		70-130	%REC	1	6/7/2015 05:49 AM
Surr: Dibromofluoromethane	102		70-130	%REC	1	6/7/2015 05:49 AM
Surr: Toluene-d8	95.6		70-130	%REC	1	6/7/2015 05:49 AM
ELECTRICAL CONDUCTIVITY (SAR)						
Electrical Conductivity @ Saturation	22		USDA H60 METHO		Prep Date: 6/3/2015	Analyst: JB
			0.050	mmhos/cm @2	10	6/4/2015 04:15 PM
MOISTURE						
Moisture	20		E160.3M			Analyst: EVB
			0.050	% of sample	1	6/3/2015 06:12 PM
PH						
pH	8.4		SW9045D		Prep Date: 6/1/2015	Analyst: STP
				s.u.	1	6/1/2015 05:30 PM

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

ALS Group USA, Corp

Date: 10-Jun-15

Client: Olsson Associates
Project: Hawxhurst 2409 (015-1250)
Sample ID: 2409-WW-52815: 5'
Collection Date: 5/28/2015 03:40 PM

Work Order: 1506014
Lab ID: 1506014-07
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	30		SW8015M		Prep Date: 6/2/2015	Analyst: IT
			5.5	mg/Kg-dry	1	6/3/2015 12:50 PM
Surr: 4-Terphenyl-d14	72.4		39-133	%REC	1	6/3/2015 12:50 PM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	ND		SW8015D		Prep Date: 6/1/2015	Analyst: IT
			3.3	mg/Kg-dry	1	6/2/2015 01:47 AM
Surr: Toluene-d8	103		50-150	%REC	1	6/2/2015 01:47 AM
METALS ANALYSIS BY ICP						
Arsenic	9.2		SW846 6010C		Prep Date: 6/2/2015	Analyst: JEC
			0.46	mg/Kg-dry	1	6/3/2015 04:01 PM
SOLUBLE CATIONS FOR SAR						
Calcium	140		SW846 6010C		Prep Date: 6/3/2015	Analyst: JEC
			5.0	mg/L	10	6/3/2015 06:49 PM
Magnesium	27		2.0	mg/L	10	6/3/2015 06:49 PM
Sodium	3,000		2.0	mg/L	10	6/3/2015 06:49 PM
SODIUM ADSORPTION RATIO						
Exchangeable Sodium Percentage	47		USDA H60 METHO		Prep Date: 6/3/2015	Analyst: JEC
			0.010	none	1	6/3/2015
Sodium Adsorption Ratio	60		0.010	none	1	6/3/2015
VOLATILE ORGANIC COMPOUNDS						
Benzene	ND		SW8260B		Prep Date: 6/1/2015	Analyst: AK
			40	µg/Kg-dry	1	6/6/2015 06:21 PM
Ethylbenzene	ND		40	µg/Kg-dry	1	6/6/2015 06:21 PM
m,p-Xylene	ND		80	µg/Kg-dry	1	6/6/2015 06:21 PM
o-Xylene	ND		40	µg/Kg-dry	1	6/6/2015 06:21 PM
Toluene	ND		40	µg/Kg-dry	1	6/6/2015 06:21 PM
Xylenes, Total	ND		120	µg/Kg-dry	1	6/6/2015 06:21 PM
Surr: 1,2-Dichloroethane-d4	95.9		70-130	%REC	1	6/6/2015 06:21 PM
Surr: 4-Bromofluorobenzene	98.6		70-130	%REC	1	6/6/2015 06:21 PM
Surr: Dibromofluoromethane	94.7		70-130	%REC	1	6/6/2015 06:21 PM
Surr: Toluene-d8	94.8		70-130	%REC	1	6/6/2015 06:21 PM
ELECTRICAL CONDUCTIVITY (SAR)						
Electrical Conductivity @ Saturation	17		USDA H60 METHO		Prep Date: 6/3/2015	Analyst: JB
			0.050	mmhos/cm @2	10	6/4/2015 04:15 PM
MOISTURE						
Moisture	25		E160.3M			Analyst: EVB
			0.050	% of sample	1	6/3/2015 06:12 PM
PH						
pH	9.7		SW9045D		Prep Date: 6/1/2015	Analyst: STP
			s.u.		1	6/1/2015 05:30 PM

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

ALS Group USA, Corp

Date: 10-Jun-15

Client: Olsson Associates
Project: Hawxhurst 2409 (015-1250)
Sample ID: 2409-BOT-52815: 6'
Collection Date: 5/28/2015 03:50 PM

Work Order: 1506014
Lab ID: 1506014-08
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
DRO (C10-C28)	37		SW8015M		Prep Date: 6/2/2015	Analyst: IT
			5.1	mg/Kg-dry	1	6/3/2015 01:20 AM
<i>Surr: 4-Terphenyl-d14</i>	<i>62.6</i>		<i>39-133</i>	<i>%REC</i>	<i>1</i>	6/3/2015 01:20 AM
GASOLINE RANGE ORGANICS BY GC-FID						
GRO (C6-C10)	33		SW8015D		Prep Date: 6/1/2015	Analyst: IT
			3.1	mg/Kg-dry	1	6/2/2015 02:12 AM
<i>Surr: Toluene-d8</i>	<i>112</i>		<i>50-150</i>	<i>%REC</i>	<i>1</i>	6/2/2015 02:12 AM
MERCURY BY CVAA						
Mercury	0.025		SW7471B		Prep Date: 6/10/2015	Analyst: LR
			0.016	mg/Kg-dry	1	6/10/2015 05:24 PM
METALS ANALYSIS BY ICP						
Arsenic	9.8		SW846 6010C		Prep Date: 6/2/2015	Analyst: JEC
			0.41	mg/Kg-dry	1	6/3/2015 04:06 PM
Barium	270		0.41	mg/Kg-dry	1	6/3/2015 04:06 PM
Cadmium	ND		0.41	mg/Kg-dry	1	6/3/2015 04:06 PM
Chromium	12		0.41	mg/Kg-dry	1	6/3/2015 04:06 PM
Copper	14		0.41	mg/Kg-dry	1	6/3/2015 04:06 PM
Lead	4.5		0.41	mg/Kg-dry	1	6/3/2015 04:06 PM
Nickel	24		0.41	mg/Kg-dry	1	6/3/2015 04:06 PM
Selenium	ND		0.41	mg/Kg-dry	1	6/3/2015 04:06 PM
Silver	ND		0.41	mg/Kg-dry	1	6/3/2015 04:06 PM
Zinc	36		0.82	mg/Kg-dry	1	6/3/2015 04:06 PM
SOLUBLE CATIONS FOR SAR						
Calcium	340		SW846 6010C		Prep Date: 6/3/2015	Analyst: JEC
			5.0	mg/L	10	6/3/2015 06:55 PM
Magnesium	160		2.0	mg/L	10	6/3/2015 06:55 PM
Sodium	1,800		2.0	mg/L	10	6/3/2015 06:55 PM
SODIUM ADSORPTION RATIO						
Exchangeable Sodium Percentage	22		USDA H60 METHO		Prep Date: 6/3/2015	Analyst: JEC
			0.010	none	1	6/3/2015
Sodium Adsorption Ratio	20		0.010	none	1	6/3/2015
SEMI-VOLATILE ORGANIC COMPOUNDS						
Acenaphthene	ND		SW846 8270D		Prep Date: 6/2/2015	Analyst: RS
			8.2	µg/Kg-dry	1	6/3/2015 03:34 AM
Acenaphthylene	ND		8.2	µg/Kg-dry	1	6/3/2015 03:34 AM
Anthracene	ND		8.2	µg/Kg-dry	1	6/3/2015 03:34 AM
Benzo(a)anthracene	ND		8.2	µg/Kg-dry	1	6/3/2015 03:34 AM
Benzo(a)pyrene	ND		8.2	µg/Kg-dry	1	6/3/2015 03:34 AM
Benzo(b)fluoranthene	ND		8.2	µg/Kg-dry	1	6/3/2015 03:34 AM
Benzo(g,h,i)perylene	ND		8.2	µg/Kg-dry	1	6/3/2015 03:34 AM
Benzo(k)fluoranthene	ND		8.2	µg/Kg-dry	1	6/3/2015 03:34 AM
Chrysene	ND		8.2	µg/Kg-dry	1	6/3/2015 03:34 AM
Dibenzo(a,h)anthracene	ND		8.2	µg/Kg-dry	1	6/3/2015 03:34 AM

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

ALS Group USA, Corp

Date: 10-Jun-15

Client: Olsson Associates
Project: Hawxhurst 2409 (015-1250)
Sample ID: 2409-BOT-52815: 6'
Collection Date: 5/28/2015 03:50 PM

Work Order: 1506014
Lab ID: 1506014-08
Matrix: SOIL

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Fluoranthene	9.0		8.2	µg/Kg-dry	1	6/3/2015 03:34 AM
Fluorene	ND		8.2	µg/Kg-dry	1	6/3/2015 03:34 AM
Indeno(1,2,3-cd)pyrene	ND		8.2	µg/Kg-dry	1	6/3/2015 03:34 AM
Naphthalene	ND		8.2	µg/Kg-dry	1	6/3/2015 03:34 AM
Pyrene	24		8.2	µg/Kg-dry	1	6/3/2015 03:34 AM
Surr: 2-Fluorobiphenyl	74.1		12-100	%REC	1	6/3/2015 03:34 AM
Surr: 4-Terphenyl-d14	95.7		25-137	%REC	1	6/3/2015 03:34 AM
Surr: Nitrobenzene-d5	74.1		37-107	%REC	1	6/3/2015 03:34 AM
VOLATILE ORGANIC COMPOUNDS			SW8260B		Prep Date: 6/1/2015	Analyst: AK
Benzene	ND		37	µg/Kg-dry	1	6/6/2015 02:07 PM
Ethylbenzene	ND		37	µg/Kg-dry	1	6/6/2015 02:07 PM
m,p-Xylene	ND		75	µg/Kg-dry	1	6/6/2015 02:07 PM
o-Xylene	ND		37	µg/Kg-dry	1	6/6/2015 02:07 PM
Toluene	ND		37	µg/Kg-dry	1	6/6/2015 02:07 PM
Xylenes, Total	ND		110	µg/Kg-dry	1	6/6/2015 02:07 PM
Surr: 1,2-Dichloroethane-d4	95.9		70-130	%REC	1	6/6/2015 02:07 PM
Surr: 4-Bromofluorobenzene	98.2		70-130	%REC	1	6/6/2015 02:07 PM
Surr: Dibromofluoromethane	98.5		70-130	%REC	1	6/6/2015 02:07 PM
Surr: Toluene-d8	97.6		70-130	%REC	1	6/6/2015 02:07 PM
ELECTRICAL CONDUCTIVITY (SAR)			USDA H60 METHO		Prep Date: 6/3/2015	Analyst: JB
Electrical Conductivity @ Saturation	13		0.050	mmhos/cm @2	10	6/4/2015 04:15 PM
CHROMIUM, TRIVALENT			CALCULATION			Analyst: JB
Chromium, Trivalent	12		0.62	mg/Kg-dry	1	6/5/2015 06:15 PM
CHROMIUM, HEXAVALENT			SW7196A		Prep Date: 6/4/2015	Analyst: MB
Chromium, Hexavalent	ND		1.2	mg/Kg-dry	1	6/5/2015 03:00 PM
MOISTURE			E160.3M			Analyst: EVB
Moisture	20		0.050	% of sample	1	6/3/2015 06:12 PM
PH			SW9045D		Prep Date: 6/1/2015	Analyst: STP
pH	8.4			s.u.	1	6/1/2015 05:30 PM

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

ALS Group USA, Corp

Date: 10-Jun-15

Client: Olsson Associates
Project: Hawxhurst 2409 (015-1250)
Sample ID: 2409-Stream-52815
Collection Date: 5/28/2015 04:01 PM

Work Order: 1506014
Lab ID: 1506014-09
Matrix: WATER

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID						
			SW8015C		Prep Date: 6/2/2015	Analyst: RM
DRO (C10-C28)	ND		0.10	mg/L	1	6/4/2015 05:15 AM
Surr: 4-Terphenyl-d14	104		31-176	%REC	1	6/4/2015 05:15 AM
GASOLINE RANGE ORGANICS BY GC-FID						
			SW8015D			Analyst: IT
GRO (C6-C10)	ND		0.20	mg/L	1	6/2/2015 11:55 AM
Surr: Toluene-d8	108		70-130	%REC	1	6/2/2015 11:55 AM
VOLATILE ORGANIC COMPOUNDS						
			SW8260			Analyst: LSY
Benzene	ND		1.0	µg/L	1	6/7/2015 04:58 AM
Ethylbenzene	ND		1.0	µg/L	1	6/7/2015 04:58 AM
m,p-Xylene	ND		2.0	µg/L	1	6/7/2015 04:58 AM
o-Xylene	ND		1.0	µg/L	1	6/7/2015 04:58 AM
Toluene	ND		1.0	µg/L	1	6/7/2015 04:58 AM
Xylenes, Total	ND		3.0	µg/L	1	6/7/2015 04:58 AM
Surr: 1,2-Dichloroethane-d4	102		75-120	%REC	1	6/7/2015 04:58 AM
Surr: 4-Bromofluorobenzene	95.4		80-110	%REC	1	6/7/2015 04:58 AM
Surr: Dibromofluoromethane	105		85-115	%REC	1	6/7/2015 04:58 AM
Surr: Toluene-d8	100		85-110	%REC	1	6/7/2015 04:58 AM
ANIONS BY ION CHROMATOGRAPHY						
			SW9056A			Analyst: EE
Chloride	20		20	mg/L	20	6/4/2015 06:33 PM
Sulfate	200		20	mg/L	20	6/4/2015 06:33 PM
TOTAL DISSOLVED SOLIDS						
			A2540 C-97		Prep Date: 6/2/2015	Analyst: YM
Total Dissolved Solids	720		10	mg/L	1	6/2/2015 11:22 AM

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

ALS Group USA, Corp

Date: 10-Jun-15

Client: Olsson Associates

Work Order: 1506014

Project: Hawxhurst 2409 (015-1250)

QC BATCH REPORT

Batch ID: 71745

Instrument ID GC8

Method: SW8015M

MBLK		Sample ID: DBLKS1-71745-71745				Units: mg/Kg		Analysis Date: 6/2/2015 05:22 PM		
Client ID:		Run ID: GC8_150602B				SeqNo: 3304750		Prep Date: 6/2/2015		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	1.56	0	2	0	78	39-133	0			

LCS		Sample ID: DLCSS1-71745-71745				Units: mg/Kg		Analysis Date: 6/2/2015 05:52 PM		
Client ID:		Run ID: GC8_150602B				SeqNo: 3304751		Prep Date: 6/2/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	142.5	5.0	200	0	71.2	61-109	0			
Surr: 4-Terphenyl-d14	1.194	0	2	0	59.7	39-133	0			

MS		Sample ID: 1506014-05A MS				Units: mg/Kg		Analysis Date: 6/2/2015 06:22 PM		
Client ID: 2409-SW-52815: 4'		Run ID: GC8_150602B				SeqNo: 3304752		Prep Date: 6/2/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	264.9	8.1	322.7	51.26	66.2	48-110	0			
Surr: 4-Terphenyl-d14	2.115	0	3.227	0	65.5	39-133	0			

MSD		Sample ID: 1506014-05A MSD				Units: mg/Kg		Analysis Date: 6/2/2015 06:52 PM		
Client ID: 2409-SW-52815: 4'		Run ID: GC8_150602B				SeqNo: 3304753		Prep Date: 6/2/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	281.8	8.0	318.7	51.26	72.4	48-110	264.9	6.19	30	
Surr: 4-Terphenyl-d14	2.127	0	3.187	0	66.8	39-133	2.115	0.574	30	

The following samples were analyzed in this batch:

1506014-04A	1506014-05A	1506014-06A
1506014-07A	1506014-08A	

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

Client: Olsson Associates
 Work Order: 1506014
 Project: Hawxhurst 2409 (015-1250)

QC BATCH REPORT

Batch ID: **71787** Instrument ID **GC8** Method: **SW8015C**

MBLK		Sample ID: DBLKW1-71787-71787				Units: mg/L		Analysis Date: 6/3/2015 08:46 PM		
Client ID:		Run ID: GC8_150603B				SeqNo: 3307017		Prep Date: 6/2/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	ND	0.10								
Surr: 4-Terphenyl-d14	0.1248	0	0.1143	0	109	31-176	0			

LCS		Sample ID: DLC SW1-71787-71787				Units: mg/L		Analysis Date: 6/3/2015 09:16 PM		
Client ID:		Run ID: GC8_150603B				SeqNo: 3307018		Prep Date: 6/2/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	5.636	0.10	11.43	0	49.3	35-95	0			
Surr: 4-Terphenyl-d14	0.1247	0	0.1143	0	109	31-176	0			

MS		Sample ID: 15051622-01B MS				Units: mg/L		Analysis Date: 6/3/2015 09:46 PM		
Client ID:		Run ID: GC8_150603B				SeqNo: 3307019		Prep Date: 6/2/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

DRO (C10-C28)	6.078	0.10	11.43	1.466	40.3	29-96	0			
Surr: 4-Terphenyl-d14	0.1288	0	0.1143	0	113	31-176	0			

The following samples were analyzed in this batch: 1506014-09B

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

Client: Olsson Associates
 Work Order: 1506014
 Project: Hawxhurst 2409 (015-1250)

QC BATCH REPORT

Batch ID: **71702** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: MBLK-71702-71702				Units: µg/Kg		Analysis Date: 6/1/2015 11:14 AM		
Client ID:		Run ID: GC9_150601A				SeqNo: 3299868		Prep Date: 6/1/2015		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	5472	0	5000	0	109	50-150	0			

LCS		Sample ID: LCS-71702-71702				Units: µg/Kg		Analysis Date: 6/1/2015 10:50 AM		
Client ID:		Run ID: GC9_150601A				SeqNo: 3299867		Prep Date: 6/1/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	507600	2,500	500000	0	102	70-130	0			
Surr: Toluene-d8	4445	0	5000	0	88.9	50-150	0			

MS		Sample ID: 15051675-05A MS				Units: µg/Kg		Analysis Date: 6/1/2015 08:25 PM		
Client ID:		Run ID: GC9_150601A				SeqNo: 3301399		Prep Date: 6/1/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	556600	2,500	500000	0	111	70-130	0			
Surr: Toluene-d8	5719	0	5000	0	114	50-150	0			

MSD		Sample ID: 15051675-05A MSD				Units: µg/Kg		Analysis Date: 6/1/2015 08:50 PM		
Client ID:		Run ID: GC9_150601A				SeqNo: 3301400		Prep Date: 6/1/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	542000	2,500	500000	0	108	70-130	556600	2.66	30	
Surr: Toluene-d8	5954	0	5000	0	119	50-150	5719	4.02	30	

The following samples were analyzed in this batch:

1506014-04C	1506014-05C	1506014-06C
1506014-07C	1506014-08C	

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

Client: Olsson Associates
 Work Order: 1506014
 Project: Hawxhurst 2409 (015-1250)

QC BATCH REPORT

Batch ID: **R164608** Instrument ID **GC9** Method: **SW8015D**

MBLK		Sample ID: GBLKW1-150602-R164608				Units: µg/L		Analysis Date: 6/2/2015 10:16 AM		
Client ID:		Run ID: GC9_150602A				SeqNo: 3302308		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	ND	200								
Surr: Toluene-d8	116.6	0	100	0	117	70-130	0			

LCS		Sample ID: GLCSW1-150602-R164608				Units: µg/L		Analysis Date: 6/2/2015 09:52 AM		
Client ID:		Run ID: GC9_150602A				SeqNo: 3302307		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	10000	200	10000	0	100	70-130	0			
Surr: Toluene-d8	122	0	100	0	122	70-130	0			

MS		Sample ID: 15051564-01B MS				Units: µg/L		Analysis Date: 6/2/2015 01:09 PM		
Client ID:		Run ID: GC9_150602A				SeqNo: 3302313		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	9436	200	10000	0	94.4	70-130	0			
Surr: Toluene-d8	117.5	0	100	0	118	70-130	0			

MSD		Sample ID: 15051564-01B MSD				Units: µg/L		Analysis Date: 6/2/2015 01:33 PM		
Client ID:		Run ID: GC9_150602A				SeqNo: 3302314		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

GRO (C6-C10)	8743	200	10000	0	87.4	70-130	9436	7.61	30	
Surr: Toluene-d8	110.2	0	100	0	110	70-130	117.5	6.38	30	

The following samples were analyzed in this batch: 1506014-09A

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

Client: Olsson Associates
 Work Order: 1506014
 Project: Hawxhurst 2409 (015-1250)

QC BATCH REPORT

Batch ID: **72094** Instrument ID **HG1** Method: **SW7471B**

MBLK		Sample ID: MBLK-72094-72094					Units: mg/Kg		Analysis Date: 6/10/2015 05:19 PM		
Client ID:			Run ID: HG1_150610A				SeqNo: 3315667		Prep Date: 6/10/2015		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-72094-72094				Units: mg/Kg		Analysis Date: 6/10/2015 05:22 PM		
Client ID:		Run ID: HG1_150610A				SeqNo: 3315669		Prep Date: 6/10/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1896 0.020 0.1665 0 114 80-120 0

MS		Sample ID: 1506532-03BMS					Units: mg/Kg		Analysis Date: 6/10/2015 05:28 PM		
Client ID:			Run ID: HG1_150610A			SeqNo: 3315675		Prep Date: 6/10/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Mercury 0.1303 0.013 0.1073 0.01689 106 75-125 0

MSD		Sample ID: 1506532-03BMSD				Units: mg/Kg		Analysis Date: 6/10/2015 05:31 PM		
Client ID:		Run ID: HG1_150610A			SeqNo: 3315678		Prep Date: 6/10/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.135 0.013 0.1088 0.01689 109 75-125 0.1303 3.57 35

The following samples were analyzed in this batch:

1506014-08A

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

Client: Olsson Associates
Work Order: 1506014
Project: Hawxhurst 2409 (015-1250)

QC BATCH REPORT

Batch ID: **71725** Instrument ID **ICP2** Method: **SW846 6010C**

DUP				Sample ID: 1506014-05BDUP			Units: mg/L		Analysis Date: 6/3/2015 06:38 PM		
Client ID: 2409-SW-52815: 4'			Run ID: ICP2_150603A			SeqNo: 3305461		Prep Date: 6/3/2015		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Calcium	93.04	5.0	0	0	0	0-0	98.16	5.36			
Magnesium	44.48	2.0	0	0	0	0-0	47.92	7.44			
Sodium	297.1	2.0	0	0	0	0-0	307.6	3.48			

DUP				Sample ID: 1506014-05BDUP				Units: none		Analysis Date: 6/3/2015		
Client ID: 2409-SW-52815: 4'			Run ID: SAR_150603A			SeqNo: 3306123		Prep Date: 6/3/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual		
Exchangeable Sodium Percentage	7.488	0.010	0	0	0		7.515	0.36	50			
Sodium Adsorption Ratio	6.342	0.010	0	0	0		6.363	0.336	50			

The following samples were analyzed in this batch:

1506014-01B	1506014-02B	1506014-03B
1506014-04B	1506014-05B	1506014-06B
1506014-07B	1506014-08B	

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

Client: Olsson Associates
Work Order: 1506014
Project: Hawxhurst 2409 (015-1250)

QC BATCH REPORT

Batch ID: **71778** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK		Sample ID: MBLK-71778-71778				Units: mg/L		Analysis Date: 6/3/2015 02:23 PM		
Client ID:		Run ID: ICP2_150603A				SeqNo: 3304689		Prep Date: 6/2/2015		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	0.07874	0.25								J
Copper	ND	0.50								
Lead	ND	0.25								
Nickel	ND	0.25								
Selenium	ND	0.50								
Silver	ND	0.25								
Zinc	0.1271	0.50								J

LCS		Sample ID: LCS-71778-71778				Units: mg/L		Analysis Date: 6/3/2015 02:29 PM		
Client ID:		Run ID: ICP2_150603A				SeqNo: 3304691		Prep Date: 6/2/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.991	0.25	5	0	99.8	80-120	0			
Barium	5.136	0.25	5	0	103	80-120	0			
Cadmium	4.92	0.50	5	0	98.4	80-120	0			
Chromium	5.346	0.25	5	0	107	80-120	0			
Copper	5.453	0.50	5	0	109	80-120	0			
Lead	5.218	0.25	5	0	104	80-120	0			
Nickel	5.162	0.25	5	0	103	80-120	0			
Selenium	5.018	0.50	5	0	100	80-120	0			
Silver	4.975	0.25	5	0	99.5	80-120	0			
Zinc	5.295	0.50	5	0	106	80-120	0			

MS		Sample ID: 1506014-06AMS				Units: mg/Kg		Analysis Date: 6/3/2015 03:44 PM		
Client ID: 2409-EW-52815: 4'		Run ID: ICP2_150603A				SeqNo: 3305404		Prep Date: 6/2/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	261	0.36	7.153	259.7	18.7	75-125	0			SO
Cadmium	7.269	0.72	7.153	-0.1294	103	75-125	0			
Copper	17.74	0.72	7.153	11.04	93.7	75-125	0			
Nickel	18.41	0.36	7.153	12.54	82	75-125	0			
Silver	7.815	0.36	7.153	-0.1211	111	75-125	0			

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

Client: Olsson Associates
 Work Order: 1506014
 Project: Hawxhurst 2409 (015-1250)

QC BATCH REPORT

Batch ID: 71778 Instrument ID ICP2 Method: SW846 6010C

MS					Sample ID: 1506014-06AMS		Units: mg/Kg		Analysis Date: 6/3/2015 10:18 PM	
Client ID: 2409-EW-52815: 4'			Run ID: ICP2_150603A			SeqNo: 3305520		Prep Date: 6/2/2015		DF: 2
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	17.52	0.72	7.153	8.841	121	75-125		0		
Chromium	18.82	0.72	7.153	10.01	123	75-125		0		
Lead	10.31	0.72	7.153	3.028	102	75-125		0		
Selenium	7.528	1.4	7.153	-0.4613	112	75-125		0		
Zinc	34.35	1.4	7.153	24.24	141	75-125		0		S

MSD				Sample ID: 1506014-06AMSD			Units: mg/Kg		Analysis Date: 6/3/2015 03:50 PM		
Client ID: 2409-EW-52815: 4'			Run ID: ICP2_150603A			SeqNo: 3305406		Prep Date: 6/2/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Barium	275.2	0.36	7.215	259.7	214	75-125	261	5.26	20	SO	
Cadmium	7.261	0.72	7.215	-0.1294	102	75-125	7.269	0.108	20		
Copper	18.29	0.72	7.215	11.04	101	75-125	17.74	3.06	20		
Nickel	19.22	0.36	7.215	12.54	92.5	75-125	18.41	4.3	20		
Silver	7.784	0.36	7.215	-0.1211	110	75-125	7.815	0.398	20		

MSD					Sample ID: 1506014-06AMSD		Units: mg/Kg		Analysis Date: 6/3/2015 10:24 PM	
Client ID: 2409-EW-52815: 4'			Run ID: ICP2_150603A			SeqNo: 3305524		Prep Date: 6/2/2015		DF: 2
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	16.56	0.72	7.215	8.841	107	75-125	17.52	5.67	20	
Chromium	18.13	0.72	7.215	10.01	113	75-125	18.82	3.69	20	
Lead	9.823	0.72	7.215	3.028	94.2	75-125	10.31	4.81	20	
Selenium	6.933	1.4	7.215	-0.4613	102	75-125	7.528	8.23	20	
Zinc	32.48	1.4	7.215	24.24	114	75-125	34.35	5.6	20	

The following samples were analyzed in this batch:

1506014-01A	1506014-02A	1506014-03A
1506014-04A	1506014-05A	1506014-06A
1506014-07A	1506014-08A	

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

Client: Olsson Associates
 Work Order: 1506014
 Project: Hawxhurst 2409 (015-1250)

QC BATCH REPORT

Batch ID: **71744** Instrument ID **SVMS5** Method: **SW846 8270D**

MBLK				Sample ID: SBLKS1-71744-71744			Units: µg/Kg		Analysis Date: 6/3/2015 04:12 PM	
Client ID:				Run ID: SVMS5_150603A			SeqNo: 3304910		Prep Date: 6/2/2015	
									DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	ND	6.7								
Acenaphthylene	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(g,h,i)perylene	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								
<i>Surr: 2-Fluorobiphenyl</i>	1490	0	1667	0	89.4	12-100	0			
<i>Surr: 4-Terphenyl-d14</i>	1895	0	1667	0	114	25-137	0			
<i>Surr: Nitrobenzene-d5</i>	1469	0	1667	0	88.1	37-107	0			

LCS				Sample ID: SLCSS1-71744-71744			Units: µg/Kg		Analysis Date: 6/3/2015 04:35 PM	
Client ID:				Run ID: SVMS5_150603A			SeqNo: 3304911		Prep Date: 6/2/2015	
									DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	545.7	6.7	666.7	0	81.8	45-110	0			
Acenaphthylene	573.3	6.7	666.7	0	86	45-105	0			
Anthracene	646	6.7	666.7	0	96.9	55-105	0			
Benzo(a)anthracene	674	6.7	666.7	0	101	50-110	0			
Benzo(a)pyrene	670.7	6.7	666.7	0	101	50-110	0			
Benzo(b)fluoranthene	676.3	6.7	666.7	0	101	45-115	0			
Benzo(g,h,i)perylene	642	6.7	666.7	0	96.3	40-125	0			
Benzo(k)fluoranthene	657.3	6.7	666.7	0	98.6	45-115	0			
Chrysene	635	6.7	666.7	0	95.2	55-110	0			
Dibenzo(a,h)anthracene	656.7	6.7	666.7	0	98.5	40-125	0			
Fluoranthene	666.3	6.7	666.7	0	99.9	55-115	0			
Fluorene	599	6.7	666.7	0	89.8	50-110	0			
Indeno(1,2,3-cd)pyrene	659	6.7	666.7	0	98.8	40-120	0			
Naphthalene	411	6.7	666.7	0	61.6	40-105	0			
Pyrene	614.3	6.7	666.7	0	92.1	45-125	0			
<i>Surr: 2-Fluorobiphenyl</i>	1405	0	1667	0	84.3	12-100	0			
<i>Surr: 4-Terphenyl-d14</i>	1598	0	1667	0	95.9	25-137	0			
<i>Surr: Nitrobenzene-d5</i>	1386	0	1667	0	83.2	37-107	0			

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

Client: Olsson Associates
 Work Order: 1506014
 Project: Hawxhurst 2409 (015-1250)

QC BATCH REPORT

Batch ID: 71744 Instrument ID SVMS5 Method: SW846 8270D

MS				Sample ID: 1506027-02A MS			Units: µg/Kg		Analysis Date: 6/2/2015 09:40 PM	
Client ID:		Run ID: SVMS5_150602A			SeqNo: 3304147		Prep Date: 6/2/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1093	13	1310	9.228	82.7	45-110	0			
Acenaphthylene	1087	13	1310	13.84	81.9	45-105	0			
Anthracene	1267	13	1310	39.22	93.7	55-105	0			
Benzo(a)anthracene	1453	13	1310	145.7	99.8	50-110	0			
Benzo(a)pyrene	1449	13	1310	142.7	99.7	50-110	0			
Benzo(b)fluoranthene	1481	13	1310	183.2	99	45-115	0			
Benzo(g,h,i)perylene	1230	13	1310	84.7	87.4	40-125	0			
Benzo(k)fluoranthene	1344	13	1310	64.59	97.7	45-115	0			
Chrysene	1349	13	1310	144.3	92	55-110	0			
Dibenzo(a,h)anthracene	1172	13	1310	0	89.4	40-125	0			
Fluoranthene	1678	13	1310	255.4	109	55-115	0			
Fluorene	1163	13	1310	11.53	87.9	50-110	0			
Indeno(1,2,3-cd)pyrene	1296	13	1310	95.57	91.6	40-120	0			
Naphthalene	715.4	13	1310	0	54.6	40-105	0			
Pyrene	1310	13	1310	197.4	84.9	45-125	0			
Surr: 2-Fluorobiphenyl	2559	0	3276	0	78.1	12-100	0			
Surr: 4-Terphenyl-d14	3143	0	3276	0	96	25-137	0			
Surr: Nitrobenzene-d5	2285	0	3276	0	69.8	37-107	0			

MSD				Sample ID: 1506027-02A MSD			Units: µg/Kg		Analysis Date: 6/2/2015 10:02 PM	
Client ID:		Run ID: SVMS5_150602A			SeqNo: 3304160		Prep Date: 6/2/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1034	13	1279	9.228	80.1	45-110	1093	5.6	30	
Acenaphthylene	1054	13	1279	13.84	81.3	45-105	1087	3.16	30	
Anthracene	1163	13	1279	39.22	87.9	55-105	1267	8.56	30	
Benzo(a)anthracene	1235	13	1279	145.7	85.2	50-110	1453	16.2	30	
Benzo(a)pyrene	1208	13	1279	142.7	83.3	50-110	1449	18.1	30	
Benzo(b)fluoranthene	1270	13	1279	183.2	85	45-115	1481	15.3	30	
Benzo(g,h,i)perylene	1109	13	1279	84.7	80.1	40-125	1230	10.3	30	
Benzo(k)fluoranthene	1102	13	1279	64.59	81.1	45-115	1344	19.8	30	
Chrysene	1146	13	1279	144.3	78.3	55-110	1349	16.3	30	
Dibenzo(a,h)anthracene	1124	13	1279	0	87.9	40-125	1172	4.18	30	
Fluoranthene	1290	13	1279	255.4	80.9	55-115	1678	26.2	30	
Fluorene	1090	13	1279	11.53	84.3	50-110	1163	6.51	30	
Indeno(1,2,3-cd)pyrene	1164	13	1279	95.57	83.6	40-120	1296	10.7	30	
Naphthalene	781.3	13	1279	0	61.1	40-105	715.4	8.81	30	
Pyrene	1159	13	1279	197.4	75.2	45-125	1310	12.2	30	
Surr: 2-Fluorobiphenyl	2589	0	3197	0	81	12-100	2559	1.19	40	
Surr: 4-Terphenyl-d14	3183	0	3197	0	99.6	25-137	3143	1.25	40	
Surr: Nitrobenzene-d5	2617	0	3197	0	81.9	37-107	2285	13.6	40	

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

Client: Olsson Associates
Work Order: 1506014
Project: Hawxhurst 2409 (015-1250)

QC BATCH REPORT

Batch ID: **71744** Instrument ID **SVMS5** Method: **SW846 8270D**

The following samples were analyzed in this batch:

1506014-08A

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

Client: Olsson Associates
Work Order: 1506014
Project: Hawxhurst 2409 (015-1250)

QC BATCH REPORT

Batch ID: **71703** Instrument ID **VMS7** Method: **SW8260B**

MBLK				Sample ID: MBLK-71703-71703				Units: µg/Kg			Analysis Date: 6/1/2015 11:53 AM			
Client ID:				Run ID: VMS7_150601A				SeqNo: 3301616			Prep Date: 6/1/2015		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	1056	0	1000	0	106	70-130	0							
Surr: 4-Bromofluorobenzene	1005	0	1000	0	100	70-130	0							
Surr: Dibromofluoromethane	1040	0	1000	0	104	70-130	0							
Surr: Toluene-d8	1022	0	1000	0	102	70-130	0							

LCS				Sample ID: LCS-71703-71703			Units: µg/Kg		Analysis Date: 6/1/2015 10:05 AM		
Client ID:			Run ID: VMS7_150601A			SeqNo: 3301613		Prep Date: 6/1/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	1104	30	1000	0	110	75-125	0				
Ethylbenzene	1085	30	1000	0	108	75-125	0				
m,p-Xylene	2200	60	2000	0	110	80-125	0				
o-Xylene	1042	30	1000	0	104	75-125	0				
Toluene	1124	30	1000	0	112	70-125	0				
Xylenes, Total	3243	90	3000	0	108	75-125	0				
Surr: 1,2-Dichloroethane-d4	1028	0	1000	0	103	70-130	0				
Surr: 4-Bromofluorobenzene	1013	0	1000	0	101	70-130	0				
Surr: Dibromofluoromethane	1059	0	1000	0	106	70-130	0				
Surr: Toluene-d8	1023	0	1000	0	102	70-130	0				

MS				Sample ID: 15051616-01A MS			Units: µg/Kg		Analysis Date: 6/5/2015 01:01 PM		
Client ID:			Run ID: VMS5_150604B			SeqNo: 3308938		Prep Date: 6/1/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	985.7	32	1062	0	92.8	75-125	0				
Ethylbenzene	1001	32	1062	0	94.3	75-125	0				
m,p-Xylene	2094	64	2123	0	98.6	80-125	0				
o-Xylene	1029	32	1062	0	97	75-125	0				
Toluene	1070	32	1062	31.85	97.8	70-125	0				
Xylenes, Total	3124	96	3185	0	98.1	75-125	0				
Surr: 1,2-Dichloroethane-d4	1005	0	1062	0	94.6	70-130	0				
Surr: 4-Bromofluorobenzene	1088	0	1062	0	102	70-130	0				
Surr: Dibromofluoromethane	1028	0	1062	0	96.8	70-130	0				
Surr: Toluene-d8	1047	0	1062	0	98.6	70-130	0				

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

Client: Olsson Associates
 Work Order: 1506014
 Project: Hawxhurst 2409 (015-1250)

QC BATCH REPORT

Batch ID: **71703** Instrument ID **VMS7** Method: **SW8260B**

MSD				Sample ID: 15051616-01A MSD			Units: µg/Kg		Analysis Date: 6/5/2015 01:26 PM	
Client ID:				Run ID: VMS5_150604B			SeqNo: 3308939		Prep Date: 6/1/2015	
									DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1007	32	1062	0	94.9	75-125	985.7	2.18	30	
Ethylbenzene	1037	32	1062	0	97.7	75-125	1001	3.54	30	
m,p-Xylene	2121	64	2123	0	99.9	80-125	2094	1.26	30	
o-Xylene	1045	32	1062	0	98.4	75-125	1029	1.54	30	
Toluene	1081	32	1062	31.85	98.8	70-125	1070	1.09	30	
Xylenes, Total	3166	96	3185	0	99.4	75-125	3124	1.35	30	
Surr: 1,2-Dichloroethane-d4	1013	0	1062	0	95.4	70-130	1005	0.789	30	
Surr: 4-Bromofluorobenzene	1089	0	1062	0	103	70-130	1088	0.0488	30	
Surr: Dibromofluoromethane	1025	0	1062	0	96.6	70-130	1028	0.207	30	
Surr: Toluene-d8	1053	0	1062	0	99.2	70-130	1047	0.607	30	

The following samples were analyzed in this batch:

1506014-04C	1506014-05C	1506014-06C
1506014-07C	1506014-08C	

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

Client: Olsson Associates
 Work Order: 1506014
 Project: Hawxhurst 2409 (015-1250)

QC BATCH REPORT

Batch ID: **R164910** Instrument ID **VMS9** Method: **SW8260**

MBLK				Sample ID: VBLKW1-150606-R164910				Units: µg/L		Analysis Date: 6/6/2015 11:28 PM	
Client ID:			Run ID: VMS9_150606A			SeqNo: 3311174		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	ND	1.0									
Ethylbenzene	ND	1.0									
m,p-Xylene	ND	2.0									
o-Xylene	ND	1.0									
Toluene	ND	1.0									
Xylenes, Total	ND	3.0									
Surr: 1,2-Dichloroethane-d4	21.46	0	20	0	107	75-120		0			
Surr: 4-Bromofluorobenzene	19	0	20	0	95	80-110		0			
Surr: Dibromofluoromethane	20.81	0	20	0	104	85-115		0			
Surr: Toluene-d8	19.84	0	20	0	99.2	85-110		0			

LCS				Sample ID: VLCSW1-150606-R164910			Units: µg/L		Analysis Date: 6/6/2015 10:12 PM		
Client ID:			Run ID: VMS9_150606A			SeqNo: 3311173		Prep Date:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	20.81	1.0	20	0	104	85-125	0				
Ethylbenzene	19.18	1.0	20	0	95.9	85-125	0				
m,p-Xylene	39.98	2.0	40	0	100	75-130	0				
o-Xylene	19.27	1.0	20	0	96.4	80-125	0				
Toluene	19.49	1.0	20	0	97.4	85-125	0				
Xylenes, Total	59.25	3.0	60	0	98.8	80-126	0				
Surr: 1,2-Dichloroethane-d4	19.91	0	20	0	99.6	75-120	0				
Surr: 4-Bromofluorobenzene	19.5	0	20	0	97.5	80-110	0				
Surr: Dibromofluoromethane	21.19	0	20	0	106	85-115	0				
Surr: Toluene-d8	19.67	0	20	0	98.4	85-110	0				

MS				Sample ID: 1506003-01A MS			Units: µg/L		Analysis Date: 6/7/2015 08:21 AM		
Client ID:			Run ID: VMS9_150606A			SeqNo: 3311193		Prep Date:		DF: 1000	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Benzene	34390	1,000	20000	11930	112	85-125		0			
Ethylbenzene	22200	1,000	20000	500	108	85-125		0			
m,p-Xylene	50930	2,000	40000	6170	112	75-130		0			
o-Xylene	22950	1,000	20000	1500	107	80-125		0			
Toluene	39870	1,000	20000	17410	112	85-125		0			
Xylenes, Total	73880	3,000	60000	7670	110	80-126		0			
Surr: 1,2-Dichloroethane-d4	21610	0	20000	0	108	75-120		0			
Surr: 4-Bromofluorobenzene	19420	0	20000	0	97.1	80-110		0			
Surr: Dibromofluoromethane	20930	0	20000	0	105	85-115		0			
Surr: Toluene-d8	19800	0	20000	0	99	85-110		0			

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

Client: Olsson Associates
 Work Order: 1506014
 Project: Hawxhurst 2409 (015-1250)

QC BATCH REPORT

Batch ID: **R164910** Instrument ID **VMS9** Method: **SW8260**

MSD				Sample ID: 1506003-01A MSD			Units: µg/L		Analysis Date: 6/7/2015 08:47 AM	
Client ID:				Run ID: VMS9_150606A			SeqNo: 3311194		Prep Date:	
									DF: 1000	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	35940	1,000	20000	11930	120	85-125	34390	4.41	30	
Ethylbenzene	22080	1,000	20000	500	108	85-125	22200	0.542	30	
m,p-Xylene	50960	2,000	40000	6170	112	75-130	50930	0.0589	30	
o-Xylene	22660	1,000	20000	1500	106	80-125	22950	1.27	30	
Toluene	40680	1,000	20000	17410	116	85-125	39870	2.01	30	
Xylenes, Total	73620	3,000	60000	7670	110	80-126	73880	0.353	30	
Surr: 1,2-Dichloroethane-d4	20620	0	20000	0	103	75-120	21610	4.69	30	
Surr: 4-Bromofluorobenzene	19300	0	20000	0	96.5	80-110	19420	0.62	30	
Surr: Dibromofluoromethane	21610	0	20000	0	108	85-115	20930	3.2	30	
Surr: Toluene-d8	19440	0	20000	0	97.2	85-110	19800	1.83	30	

The following samples were analyzed in this batch: 1506014-09A

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

Client: Olsson Associates
Work Order: 1506014
Project: Hawxhurst 2409 (015-1250)

QC BATCH REPORT

Batch ID: **71725** Instrument ID **WETCHEM** Method: **USDA H60 Metho**

DUP		Sample ID: 1506014-05B DUP				Units: mmhos/cm @25°		Analysis Date: 6/4/2015 04:15 PM		
Client ID: 2409-SW-52815: 4'			Run ID: WETCHEM_150604E			SeqNo: 3306875		Prep Date: 6/3/2015		DF: 10
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	2.6	0.050	0	0	0		2.79	7.05	50	

The following samples were analyzed in this batch:

1506014-01B	1506014-02B	1506014-03B
1506014-04B	1506014-05B	1506014-06B
1506014-07B	1506014-08B	

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

Client: Olsson Associates
Work Order: 1506014
Project: Hawxhurst 2409 (015-1250)

QC BATCH REPORT

Batch ID: **71729** Instrument ID **TDS** Method: **A2540 C-97**

MBLK		Sample ID: MBLK-71729-71729					Units: mg/L		Analysis Date: 6/2/2015 11:22 AM		
Client ID:		Run ID: TDS_150602A					SeqNo: 3301531		Prep Date: 6/2/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	

Total Dissolved Solids ND 10

LCS		Sample ID: LCS-71729-71729				Units: mg/L		Analysis Date: 6/2/2015 11:22 AM		
Client ID:		Run ID: TDS_150602A			SeqNo: 3301529		Prep Date: 6/2/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Total Dissolved Solids 475 10 495 0 96 80-120 0

DUP				Sample ID: 15051307-12B DUP				Units: mg/L			Analysis Date: 6/2/2015 11:22 AM			
Client ID:				Run ID: TDS_150602A				SeqNo: 3301500			Prep Date: 6/2/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual				

Total Dissolved Solids 547 10 0 0 0 0-0 554 1.27 20

DUP				Sample ID: 1506035-01A DUP				Units: mg/L		Analysis Date: 6/2/2015 11:22 AM			
Client ID:				Run ID: TDS_150602A				SeqNo: 3301520		Prep Date: 6/2/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			

Total Dissolved Solids 1590 10 0 0 0 0-0 1618 1.75 20

The following samples were analyzed in this batch:

1506014-09C

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

Client: Olsson Associates
Work Order: 1506014
Project: Hawxhurst 2409 (015-1250)

QC BATCH REPORT

Batch ID: **71736** Instrument ID **WETCHEM** Method: **SW9045D**

LCS		Sample ID: LCS-71736-71736				Units: s.u.		Analysis Date: 6/1/2015 05:30 PM		
Client ID:		Run ID: WETCHEM_1506010				SeqNo: 3300447		Prep Date: 6/1/2015		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

pH 4.03 0 4 0 101 90-110 0

DUP				Sample ID: 1506014-08A DUP				Units: s.u.		Analysis Date: 6/1/2015 05:30 PM			
Client ID: 2409-BOT-52815: 6'				Run ID: WETCHEM_1506010				SeqNo: 3300456		Prep Date: 6/1/2015		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			

pH 8.39 0 0 0 0 0-0 8.39 0 20

DUP				Sample ID: 1506027-02A DUP				Units: s.u.			Analysis Date: 6/1/2015 05:30 PM			
Client ID:				Run ID: WETCHEM_1506010				SeqNo: 3300459			Prep Date: 6/1/2015		DF: 1	
Analyte		Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual			

pH 9.51 0 0 0 0 0-0 9.53 0.21 20

The following samples were analyzed in this batch:

1506014-01A	1506014-02A	1506014-03A
1506014-04A	1506014-05A	1506014-06A
1506014-07A	1506014-08A	

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

Client: Olsson Associates
Work Order: 1506014
Project: Hawxhurst 2409 (015-1250)

QC BATCH REPORT

Batch ID: **71946** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK		Sample ID: MBLK-71946-71946				Units: mg/Kg		Analysis Date: 6/5/2015 03:00 PM		
Client ID:		Run ID: WETCHEM_150605E		SeqNo: 3309031		Prep Date: 6/4/2015		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-71946-71946				Units: mg/Kg		Analysis Date: 6/5/2015 03:00 PM		
Client ID:		Run ID: WETCHEM_150605E		SeqNo: 3309030		Prep Date: 6/4/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.52 1.0 5 0 90.4 80-120 0

MS		Sample ID: 15051675-04A MS				Units: mg/Kg		Analysis Date: 6/5/2015 03:00 PM		
Client ID:		Run ID: WETCHEM_150605E		SeqNo: 3309022		Prep Date: 6/4/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.387 0.94 4.717 0.3519 85.5 75-125 0

MS		Sample ID: 15051675-04A MSI				Units: mg/Kg		Analysis Date: 6/5/2015 03:00 PM		
Client ID:		Run ID: WETCHEM_150605E		SeqNo: 3309024		Prep Date: 6/4/2015		DF: 50		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 271.5 47 240.6 0.3519 113 75-125 0

MSD		Sample ID: 15051675-04A MSD				Units: mg/Kg		Analysis Date: 6/5/2015 03:00 PM		
Client ID:		Run ID: WETCHEM_150605E		SeqNo: 3309023		Prep Date: 6/4/2015		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.509 0.94 4.717 0.3519 88.1 75-125 4.387 2.76 20

The following samples were analyzed in this batch:

1506014-08A

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

Client: Olsson Associates
 Work Order: 1506014
 Project: Hawxhurst 2409 (015-1250)

QC BATCH REPORT

Batch ID: **R164780** Instrument ID **MOIST** Method: **E160.3M**

MBLK		Sample ID: WBLKS-R164780				Units: % of sample		Analysis Date: 6/3/2015 06:12 PM		
Client ID:		Run ID: MOIST_150603C				SeqNo: 3306672		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-R164780				Units: % of sample		Analysis Date: 6/3/2015 06:12 PM		
Client ID:		Run ID: MOIST_150603C				SeqNo: 3306671		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: 1506014-01A DUP				Units: % of sample		Analysis Date: 6/3/2015 06:12 PM		
Client ID: 2409-FPT-52815: 1-6"		Run ID: MOIST_150603C				SeqNo: 3306657		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 19.39 0.050 0 0 0 20.26 4.39 20

DUP		Sample ID: 1506165-02A DUP				Units: % of sample		Analysis Date: 6/3/2015 06:12 PM		
Client ID:		Run ID: MOIST_150603C				SeqNo: 3306670		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Moisture 2.21 0.050 0 0 0 2.11 4.63 20

The following samples were analyzed in this batch:

1506014-01A	1506014-02A	1506014-03A
1506014-04A	1506014-05A	1506014-06A
1506014-07A	1506014-08A	

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

Client: Olsson Associates
Work Order: 1506014
Project: Hawxhurst 2409 (015-1250)

QC BATCH REPORT

Batch ID: **R164783** Instrument ID **IC4** Method: **SW9056A**

MBLK		Sample ID: CCB/MBLK-R164783				Units: mg/L		Analysis Date: 6/4/2015 10:38 AM		
Client ID:		Run ID: IC4_150604A				SeqNo: 3306769		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	ND	1.0								
Sulfate	ND	1.0								

LCS		Sample ID: LCS-R164783				Units: mg/L		Analysis Date: 6/4/2015 10:58 AM		
Client ID:		Run ID: IC4_150604A				SeqNo: 3306770		Prep Date:		DF: 1
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	9.13	1.0	10	0	91.3	88-110	0			
Sulfate	9.761	1.0	10	0	97.6	85-110	0			

MS		Sample ID: 15051572-11B MS				Units: mg/L		Analysis Date: 6/4/2015 12:49 PM		
Client ID:		Run ID: IC4_150604A				SeqNo: 3306776		Prep Date:		DF: 2
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	21.76	2.0	20	2.443	96.6	75-125	0			
Sulfate	33.44	2.0	20	14.81	93.2	75-125	0			

MSD		Sample ID: 15051572-11B MSD				Units: mg/L		Analysis Date: 6/4/2015 01:09 PM		
Client ID:		Run ID: IC4_150604A				SeqNo: 3306778		Prep Date:		DF: 2
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	21.72	2.0	20	2.443	96.4	75-125	21.76	0.171	20	
Sulfate	33.36	2.0	20	14.81	92.8	75-125	33.44	0.228	20	

The following samples were analyzed in this batch:

1506014-09C

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
+1 616 390 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	Haverburg 2409		A Colorado Table 910-1 (soil)*														
Work Order		Project Number	015-1250		B SAR, EC, pH, As														
Company Name	Olsson Associates	Bill To Company	Same		C TPH, BTEX														
Send Report To	rstuckton@olssonassociates.com	Invoice Attn.	Stuart Itali		D Colorado Table 910-1 (water)**														
Address	700 Horizon Drive #102	Address	Same		E *TPH, BTEX, PAH, EC, SAR, pH, As,														
City/State/Zip	Grand Junction, CO 81506	City/State/Zip	Same		F Ba, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Zn														
Phone	970-263-7800	Phone	Same		G ** BTEX, TDS, Cl ⁻ , SO ₄ ²⁻ , GRV, DRG														
Fax		Fax	Same		H														
e-Mail Address	rstuckton@olssonassociates.com	e-Mail Address	Same		I														
					J														
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold		
1	2409-FPT-52815: 1-6"	5/28/15	1432	Soil	Ice	2		X											
2	2409-FPM-52815: 1-4"		1444			2		X											
3	2409-FPO-52815: 1-6"		1451			2		X											
4	2409-NW-52815: 3.5'		1516			3		X	X										
5	2409-JW-52815: 4'		1524			3		X	X										
6	2409-EW-52815: 4'		1533			3		X	X										
7	2409-WW-52815: 5'		1540			3		X	X										
8	2409-BOT-52815: 6'		1550	Soil		3	X												
9	2409-STREAM-52815		1611	H ₂ O		9				X									
10																			

Sampler(s): Please Print & Sign		Shipment Method:		Required Turnaround Time:		Results Due Date:	
Robert A. Stuckton				<input checked="" type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour		<input type="checkbox"/> Other 540	
Relinquished by:	Date: 5-29-15	Time: 12:07	Received by:	Notes:			
Relinquished by:	Date: 5-29-15	Time: 1730	Received by (Laboratory):	Cooler Temp.			
Logged by (Laboratory):	Date: 6/1/15	Time: 0930	Checked by (Laboratory):	QC Package: (Check Box Below)			
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035				<input type="checkbox"/> Level II: Standard QC <input type="checkbox"/> Level III: Std QC + Raw Data <input type="checkbox"/> Level IV: SW846 CLP-Like <input type="checkbox"/> Other:			

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

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5/29/2015

FedEx Ship Manager - Print Your Label(s)

From: (616) 298-1033
 Nick Martinez
 ALS Environmental
 127 E. 1st Street

Origin ID: RILA

FedEx
Express

J151215022303uv

PARACHUTE, CO 81635

Ship Date: 29MAY15
 ActWgt: 65.0 LB
 CAD: 2264840/NET3610

Dim: 24 X 15 X 15 IN

Delivery Address Bar Code



Ref # 052915-1
 Invoice #
 PO # Parachute
 Dept #

SHIP TO: (616) 399-6070
 sample receiving
 ALS Laboratory Group
 3352 128TH AVE

BILL SENDER

HOLLAND, MI 49424

1 of 2

SATURDAY 12:00P
 PRIORITY OVERNIGHT

TRK# 7737 1877 0961

0201

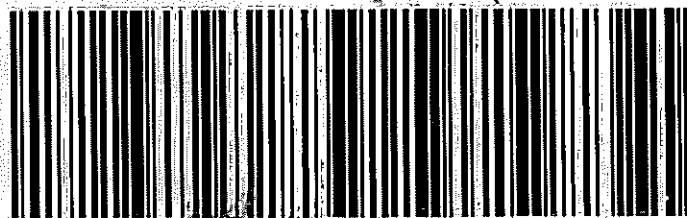
MASTER

X0 HLMA

49424

MI-US

GRR



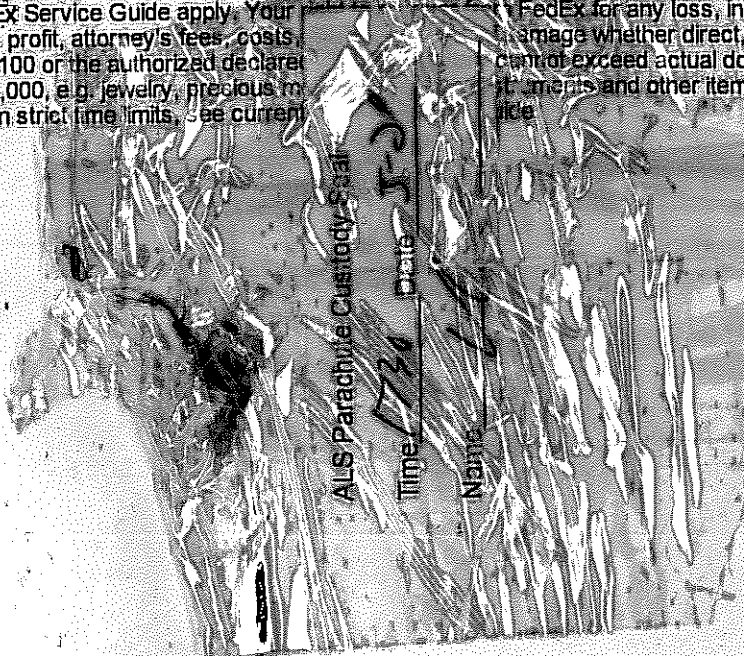
537.B3C918/EE4B

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.

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Sample Receipt Checklist

Client Name: **OLSSON**

Date/Time Received: **30-May-15 09:30**

Work Order: **1506014**

Received by: **KRW**

Checklist completed by Keith Wurenga
eSignature

01-Jun-15
Date

Reviewed by: Lee Drndol
eSignature

01-Jun-15
Date

Matrices: **Soil & Water**

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>4.8, 1.8 C</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u></u>		
Date/Time sample(s) sent to storage:	<u>6/1/2015 10:39:37 AM</u>		
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted by:	<u>-</u>		

Login Notes:

Client Contacted:

Date Contacted:

Person Contacted:

Contacted By:

Regarding:

Comments:

CorrectiveAction: