

**SAF-RC-233**  
**100-IU-2 & 100-IU-6 Remaining**  
**Waste Sites – Soil In-Process**  
**FINAL DATA PACKAGE**

**COMPLETE COPY OF DATA PACKAGE TO:**

Kathy Wendt

H4-21

KW 9/8/14  
INITIAL/DATE

**COMMENTS:**

**SDG D1423290**

**SAF-RC-233**

Rad only

Chem only

Rad & Chem

Complete

Partial

**Sample Location: 600-358, UXO Site, anomaly associated soils**



## ANALYTICAL REPORT

Report Date: September 05, 2014

Joan Kessner  
Washington Closure Hanford, LLC  
2620 Fermi Ave.  
Richland, WA 99354

Phone: (509) 375-4688

E-mail: Joan.kessner@wch-rcc.com

Workorder: **34-1423290**

Project ID: 100-IU-2 & 100-IU-6

Purchase Order: 100-IU-2 & 6

Client Sample ID	Lab ID	Collect Date	Receive Date	Sampling Site
J1TXH3	1423290001	08/14/14	08/20/14	600-358 UXO Site



# ANALYTICAL REPORT

Workorder: **34-1423290**

Client: Washington Closure Hanford, LLC

Project Manager: Kevin W. Griffiths

## Analytical Results

Sample ID: <b>J1TXH3</b>	Sampling Site: 600-358 UXO Site	Collected: 08/14/2014
Lab ID: 1423290001	Media: 1000 mL Amber Glass	Received: 08/20/2014
Matrix: Soil/Solid/Sediment	Sampling Parameter: NA	

### Analysis Method - Chemical Agent Breakdown

<b>Preparation:</b> Chemical Agent Breakdown, Soil Prep <b>Batch:</b> ELMS/1489 (HBN: 133477) <b>Prepared:</b> 08/25/2014	<u>Weight/Volume</u> <b>Initial:</b> 1.088 grams <b>Final:</b> 10 mL	<b>Analysis:</b> Chemical Agent Breakdown, Soil <b>Batch:</b> ELMS/1493 (HBN: 134041) <b>Analyzed:</b> 08/25/2014 17:37	<b>Instrument ID:</b> LCMS05 <b>Percent Solid:</b> 99.4 <b>Report Basis:</b> Dry
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Analyte	ug/g	MDL (ug/g)	RL (ug/g)	Dilution	Qual.
Thiodiglycol	ND	0.014	0.46	1	U

### Analysis Method - EPA 300.0/SW 9056

<b>Preparation:</b> EPA 300.0/SW 9056, Soil Prep <b>Batch:</b> EIC/1490 (HBN: 133926) <b>Prepared:</b> 09/02/2014	<u>Weight/Volume</u> <b>Initial:</b> 1.084 grams <b>Final:</b> 10 mL	<b>Analysis:</b> EPA 300.0/SW 9056, Soil <b>Batch:</b> EIC/1491 (HBN: 133934) <b>Analyzed:</b> 09/02/2014 16:32	<b>Instrument ID:</b> IC01 <b>Percent Solid:</b> 99.4 <b>Report Basis:</b> Dry
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Analyte	ug/g	MDL (ug/g)	RL (ug/g)	Dilution	Qual.
Fluoride	ND	3.0	10	10	U
Chloride	21	3.0	10	10	
Nitrite Ion	ND	3.0	10	10	U
Nitrite-N	ND	0.93	3.1	10	U
Bromide	720	3.0	10	10	
Nitrate Ion	12	3.0	10	10	
Nitrate-N	2.7	0.68	2.3	10	
Phosphate Ion	9.6	4.9	10	10	J
Phosphate-P	3.1	1.6	3.3	10	J
Sulfate	10	3.0	10	10	

### Analysis Method - Organosulfur Compounds, GC/MS

<b>Preparation:</b> EPA 3550, Sonic Ext, SVOA Soil <b>Batch:</b> ENVX/19764 (HBN: 133665) <b>Prepared:</b> 08/27/2014	<u>Weight/Volume</u> <b>Initial:</b> 30.21 grams <b>Final:</b> 2 mL	<b>Analysis:</b> Organosulfur Cmps by GC/MS, Soil <b>Batch:</b> ESVO/4625 (HBN: 133805) <b>Analyzed:</b> 08/28/2014 12:52	<b>Instrument ID:</b> 5975-H <b>Percent Solid:</b> 99.4 <b>Report Basis:</b> Dry
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Analyte	ug/Kg	MDL (ug/Kg)	RL (ug/Kg)	Dilution	Qual.
1,4-Oxathiane	ND	2000	6700	20	U
1,4-Dithiane	ND	2000	6700	20	U

### Analysis Method - SW 6010C

<b>Preparation:</b> SW-846, EPA 3050 Soil Prep <b>Batch:</b> EIPX/5071 (HBN: 133761) <b>Prepared:</b> 08/28/2014	<u>Weight/Volume</u> <b>Initial:</b> 1.1792 grams <b>Final:</b> 100 mL	<b>Analysis:</b> SW 6010C, Soil <b>Batch:</b> EICP/4677 (HBN: 133847) <b>Analyzed:</b> 08/29/2014 14:40	<b>Instrument ID:</b> ICP08 <b>Percent Solid:</b> 99.4 <b>Report Basis:</b> Dry
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Analyte	ug/g	MDL (ug/g)	RL (ug/g)	Dilution	Qual.
Aluminum	2790	5.1	17	1	
Antimony	ND	1.3	4.3	1	U
Arsenic	1.56	0.26	0.85	1	
Barium	49.3	0.51	1.7	1	
Beryllium	ND	0.13	0.43	1	U
Boron	3.98	1.3	8.5	1	J
Cadmium	0.551	0.13	0.43	1	
Calcium	3110	13	17	1	
Chromium	4.36	0.26	0.85	1	

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# ANALYTICAL REPORT

Workorder: **34-1423290**

Client: Washington Closure Hanford, LLC

Project Manager: Kevin W. Griffiths

## Analytical Results

Sample ID: <b>J1TXH3</b>	Sampling Site: 600-358 UXO Site	Collected: 08/14/2014
Lab ID: 1423290001	Media: 1000 mL Amber Glass	Received: 08/20/2014
Matrix: Soil/Solid/Sediment	Sampling Parameter: NA	

### Analysis Method - SW 6010C

Preparation: SW-846, EPA 3050 Soil Prep	<u>Weight/Volume</u>	Analysis: SW 6010C, Soil	Instrument ID: ICP08
Batch: EIPX/5071 (HBN: 133761)	Initial: 1.1792 grams	Batch: EICP/4677 (HBN: 133847)	Percent Solid: 99.4
Prepared: 08/28/2014	Final: 100 mL	Analyzed: 08/29/2014 14:40	Report Basis: Dry

Analyte	ug/g	MDL (ug/g)	RL (ug/g)	Dilution	Qual.
Cobalt	7.35	0.51	1.7	1	
Copper	4.48	0.51	1.7	1	
Iron	16100	5.1	8.5	1	
Lead	4.61	0.26	0.85	1	
Magnesium	2770	5.1	17	1	
Manganese	243	0.26	0.85	1	
Molybdenum	ND	0.51	1.7	1	U
Nickel	9.74	1.0	3.4	1	
Phosphorus	1070	1.3	8.5	1	
Potassium	725	26	85	1	
Selenium	ND	0.51	1.7	1	U
Silicon	287	1.3	8.5	1	
Silver	ND	0.26	0.85	1	U
Sodium	78.0	13	43	1	
Strontium	12.0	0.51	1.7	1	
Vanadium	48.3	0.51	1.7	1	
Zinc	42.3	1.3	4.3	1	

### Analysis Method - SW 8260

Preparation: Not Applicable	Analysis: SW 8260C, Soil	Instrument ID: 5972-P
	Batch: EVO/5198 (HBN: 133286)	Percent Solid: 99.4
	Analyzed: 08/22/2014 19:24	Report Basis: Dry

Analyte	ug/Kg	MDL (ug/Kg)	RL (ug/Kg)	Dilution	Qual.
Dichlorodifluoromethane	ND	8.1	27	1	U
Chloromethane	ND	8.1	27	1	U
Vinyl chloride	ND	8.1	27	1	U
Bromomethane	ND	8.1	27	1	U
Chloroethane	17	8.1	27	1	J
Dichlorofluoromethane	ND	8.1	27	1	U
Trichlorofluoromethane	ND	8.1	27	1	U
Ethyl ether	ND	8.1	27	1	U
1,1-Dichloroethene	ND	8.1	27	1	U
Freon 113	ND	8.1	27	1	U
Acetone	15	8.1	27	1	J
Iodomethane	ND	11	27	1	U
Carbon disulfide	ND	8.1	27	1	U
Methyl Acetate	ND	8.1	27	1	U

Results Continued on Next Page



# ANALYTICAL REPORT

Workorder: **34-1423290**

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Project Manager: Kevin W. Griffiths

## Analytical Results

Sample ID: <b>J1TXH3</b>	Sampling Site: 600-358 UXO Site	Collected: 08/14/2014
Lab ID: 1423290001	Media: 1000 mL Amber Glass	Received: 08/20/2014
Matrix: Soil/Solid/Sediment	Sampling Parameter: NA	

### Analysis Method - SW 8260

Preparation: Not Applicable	Analysis: SW 8260C, Soil	Instrument ID: 5972-P
	Batch: EVO/5198 (HBN: 133286)	Percent Solid: 99.4
	Analyzed: 08/22/2014 19:24	Report Basis: Dry

Analyte	ug/Kg	MDL (ug/Kg)	RL (ug/Kg)	Dilution	Qual.
Allyl chloride	ND	8.1	27	1	U
Methylene chloride	ND	8.1	27	1	U
trans-1,2-Dichloroethene	ND	8.1	27	1	U
Methyl-t-butyl ether	ND	8.1	27	1	U
cis-1,2-Dichloroethene	ND	8.1	27	1	U
1,1-Dichloroethane	ND	8.1	27	1	U
2,2-Dichloropropane	ND	8.1	27	1	U
2-Butanone	ND	9.2	27	1	U
Ethyl acetate	28	10	27	1	
Bromochloromethane	ND	8.1	27	1	U
Tetrahydrofuran	ND	8.1	27	1	U
Chloroform	ND	8.1	27	1	U
1,1,1-Trichloroethane	ND	8.1	27	1	U
Cyclohexane	ND	8.1	27	1	U
1,1-Dichloropropene	ND	8.1	27	1	U
1,2-Dichloroethane	ND	8.1	27	1	U
Carbon tetrachloride	ND	8.1	27	1	U
Benzene	ND	8.1	27	1	U
Trichloroethene	ND	8.1	27	1	U
Methylcyclohexane	ND	8.1	27	1	U
1,2-Dichloropropane	ND	8.1	27	1	U
Dibromomethane	14	8.1	27	1	J
Bromodichloromethane	ND	8.1	27	1	U
cis-1,3-Dichloropropene	ND	8.1	27	1	U
4-Methyl-2-pentanone	ND	8.1	27	1	U
trans-1,3-Dichloropropene	ND	8.1	27	1	U
Ethyl methacrylate	ND	8.1	27	1	U
1,1,2-Trichloroethane	ND	8.1	27	1	U
2-Hexanone	ND	8.1	27	1	U
1,2-Dibromoethane	ND	8.1	27	1	U
Toluene	ND	8.1	27	1	U
1,3-Dichloropropane	ND	8.1	27	1	U
Dibromochloromethane	ND	8.1	27	1	U
Bromoform	29	8.1	27	1	
Tetrachloroethene	ND	8.1	27	1	U

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# ANALYTICAL REPORT

Workorder: **34-1423290**

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Project Manager: Kevin W. Griffiths

## Analytical Results

Sample ID: <b>J1TXH3</b>	Sampling Site: 600-358 UXO Site	Collected: 08/14/2014
Lab ID: 1423290001	Media: 1000 mL Amber Glass	Received: 08/20/2014
Matrix: Soil/Solid/Sediment	Sampling Parameter: NA	

### Analysis Method - SW 8260

Preparation: Not Applicable	Analysis: SW 8260C, Soil Batch: EVO/5198 (HBN: 133286) Analyzed: 08/22/2014 19:24	Instrument ID: 5972-P Percent Solid: 99.4 Report Basis: Dry
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Analyte	ug/Kg	MDL (ug/Kg)	RL (ug/Kg)	Dilution	Qual.
1-Chlorohexane	ND	8.1	27	1	U
Chlorobenzene	ND	8.1	27	1	U
1,1,1,2-Tetrachloroethane	ND	8.1	27	1	U
Ethylbenzene	ND	8.1	27	1	U
m,p-Xylene	ND	8.1	54	1	U
o-Xylene	ND	8.1	27	1	U
Styrene	ND	8.1	27	1	U
Isopropylbenzene	ND	8.1	27	1	U
1,1,2,2-Tetrachloroethane	ND	8.1	27	1	U
Bromobenzene	15	8.1	27	1	J
1,2,3-Trichloropropane	ND	8.1	27	1	U
trans-1,4-Dichloro-2-butene	ND	8.1	27	1	U
Pentachloroethane	ND	8.1	27	1	U
n-Propylbenzene	ND	8.1	27	1	U
1,3,5-Trimethylbenzene	ND	8.1	27	1	U
2-Chlorotoluene	ND	8.1	27	1	U
4-Chlorotoluene	ND	8.1	27	1	U
tert-Butylbenzene	ND	8.1	27	1	U
1,2,4-Trimethylbenzene	ND	8.1	27	1	U
sec-Butylbenzene	ND	8.1	27	1	U
p-Isopropyltoluene	ND	8.1	27	1	U
1,3-Dichlorobenzene	ND	8.1	27	1	U
1,4-Dichlorobenzene	ND	8.1	27	1	U
n-Butylbenzene	ND	8.1	27	1	U
1,2-Dichlorobenzene	ND	8.1	27	1	U
1,2-Dibromo-3-Chloropropane	ND	8.1	27	1	U
1,2,4-Trichlorobenzene	ND	8.1	27	1	U
Hexachlorobutadiene	ND	8.1	27	1	U
Naphthalene	ND	8.1	27	1	U
1,2,3-Trichlorobenzene	ND	8.1	27	1	U

### Analysis Method - SW 8260

Preparation: Not Applicable	Analysis: SW 8260C, Soil Batch: EVO/5198 (HBN: 133286) Analyzed: 08/22/2014 19:24	Instrument ID: 5972-P Percent Solid: 99.4 Report Basis: Dry
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Tentatively Identified Compound	ug/Kg	Retention Time	Dilution	Qual.
Ethanol	57	3.95	1	J

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# ANALYTICAL REPORT

Workorder: **34-1423290**

Client: Washington Closure Hanford, LLC

Project Manager: Kevin W. Griffiths

## Analytical Results

Sample ID: <b>J1TXH3</b>	Sampling Site: 600-358 UXO Site	Collected: 08/14/2014
Lab ID: 1423290001	Media: 1000 mL Amber Glass	Received: 08/20/2014
Matrix: Soil/Solid/Sediment	Sampling Parameter: NA	

### Analysis Method - SW 8260

Preparation: Not Applicable	Analysis: SW 8260C, Soil Batch: EVO/5198 (HBN: 133286) Analyzed: 08/22/2014 19:24	Instrument ID: 5972-P Percent Solid: 99.4 Report Basis: Dry
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Tentatively Identified Compound	ug/Kg	Retention Time	Dilution	Qual.
Ethyl bromide	34	4.62	1	J
Acetic acid, bromo-, ethyl ester	1400	14.40	1	J
Propanoic acid, 2-bromo-, ethyl ester	73	14.88	1	J
Unknown Brominated Hydrocarbon	70	16.28	1	J
Ethyl dibromoacetate	3900	17.90	1	J
Acetophenone	1900	18.16	1	J
Benzoic acid, ethyl ester	340	19.62	1	J

### Analysis Method - SW 8270

Preparation: EPA 3550, Sonic Ext, SVOA Soil Batch: ENVX/19811 (HBN: 134017) Prepared: 09/03/2014	Weight/Volume Initial: 30.58 grams Final: 1 mL	Analysis: SW 8270D, Soil Batch: ESVO/4627 (HBN: 134094) Analyzed: 09/04/2014 02:13	Instrument ID: 5975-H Percent Solid: 99.4 Report Basis: Dry
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Analyte	ug/Kg	MDL (ug/Kg)	RL (ug/Kg)	Dilution	Qual.
Pyridine	ND	2000	6600	40	U
Phenol	ND	2000	6600	40	U
Bis(2-chloroethyl)ether	ND	2000	6600	40	U
2-Chlorophenol	ND	2000	6600	40	U
1,3-Dichlorobenzene	ND	2000	6600	40	U
1,4-Dichlorobenzene	ND	2000	6600	40	U
Benzyl alcohol	ND	2400	6600	40	U
1,2-Dichlorobenzene	ND	2000	6600	40	U
2-Methylphenol	ND	2000	6600	40	U
bis(2-Chloroisopropyl)ether	ND	2100	6600	40	U
4-Methylphenol	ND	2000	6600	40	U
N-Nitrosodi-n-propyl amine	ND	2000	6600	40	U
Hexachloroethane	ND	2000	6600	40	U
Nitrobenzene	ND	2000	6600	40	U
Isophorone	ND	2000	6600	40	U
2-Nitrophenol	ND	2000	6600	40	U
2,4-Dimethylphenol	ND	3200	6600	40	U
Benzoic acid	<b>53000</b>	12000	26000	40	
Bis(2-Chloroethoxy)methane	ND	2000	6600	40	U
2,4-Dichlorophenol	ND	2000	6600	40	U
1,2,4-Trichlorobenzene	ND	2000	6600	40	U
Naphthalene	ND	2000	6600	40	U
4-Chloroaniline	ND	3000	6600	40	U
Hexachlorobutadiene	ND	2000	6600	40	U

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# ANALYTICAL REPORT

Workorder: **34-1423290**

Client: Washington Closure Hanford, LLC

Project Manager: Kevin W. Griffiths

## Analytical Results

Sample ID: <b>J1TXH3</b>	Sampling Site: 600-358 UXO Site	Collected: 08/14/2014
Lab ID: 1423290001	Media: 1000 mL Amber Glass	Received: 08/20/2014
Matrix: Soil/Solid/Sediment	Sampling Parameter: NA	

### Analysis Method - SW 8270

Preparation: EPA 3550, Sonic Ext, SVOA Soil	<u>Weight/Volume</u>	Analysis: SW 8270D, Soil	Instrument ID: 5975-H
Batch: ENVX/19811 (HBN: 134017)	Initial: 30.58 grams	Batch: ESVO/4627 (HBN: 134094)	Percent Solid: 99.4
Prepared: 09/03/2014	Final: 1 mL	Analyzed: 09/04/2014 02:13	Report Basis: Dry

Analyte	ug/Kg	MDL (ug/Kg)	RL (ug/Kg)	Dilution	Qual.
4-Chloro-3-methylphenol	ND	2000	6600	40	U
2-Methylnaphthalene	ND	2000	6600	40	U
Hexachlorocyclopentadiene	ND	5100	6600	40	U
2,4,6-Trichlorophenol	ND	2000	6600	40	U
2,4,5-Trichlorophenol	ND	2000	6600	40	U
2-Chloronaphthalene	ND	2000	6600	40	U
2-Nitroaniline	ND	2000	6600	40	U
Dimethylphthalate	ND	2000	6600	40	U
2,6-Dinitrotoluene	ND	2000	6600	40	U
Acenaphthylene	ND	2000	6600	40	U
3-Nitroaniline	ND	4000	6600	40	U
Acenaphthene	ND	2000	6600	40	U
2,4-Dinitrophenol	ND	27000	46000	40	U
4-Nitrophenol	ND	7900	26000	40	U
Dibenzofuran	ND	2000	6600	40	U
2,4-Dinitrotoluene	ND	2000	6600	40	U
Diethylphthalate	ND	2000	6600	40	U
4-Chlorophenyl phenyl ether	ND	2000	6600	40	U
Fluorene	ND	2000	6600	40	U
4-Nitroaniline	ND	2500	6600	40	U
4,6-Dinitro-2-methylphenol	ND	25000	46000	40	U
N-Nitrosodiphenylamine	ND	2000	6600	40	U
4-Bromophenyl phenyl ether	ND	2000	6600	40	U
Hexachlorobenzene	ND	2000	6600	40	U
Pentachlorophenol	ND	7900	26000	40	U
Phenanthrene	ND	2000	6600	40	U
Anthracene	ND	2000	6600	40	U
Carbazole	ND	2000	6600	40	U
Di-n-butylphthalate	ND	2000	6600	40	U
Fluoranthene	ND	2000	6600	40	U
Pyrene	ND	2000	6600	40	U
Butylbenzylphthalate	ND	2000	6600	40	U
3,3'-Dichlorobenzidine	ND	2600	6600	40	U
Benzo(a)anthracene	ND	2000	6600	40	U
Chrysene	ND	2000	6600	40	U

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# ANALYTICAL REPORT

Workorder: **34-1423290**

Client: Washington Closure Hanford, LLC

Project Manager: Kevin W. Griffiths

## Analytical Results

Sample ID: <b>J1TXH3</b>	Sampling Site: 600-358 UXO Site	Collected: 08/14/2014
Lab ID: 1423290001	Media: 1000 mL Amber Glass	Received: 08/20/2014
Matrix: Soil/Solid/Sediment	Sampling Parameter: NA	

### Analysis Method - SW 8270

<b>Preparation:</b> EPA 3550, Sonic Ext, SVOA Soil	<b>Weight/Volume</b>	<b>Analysis:</b> SW 8270D, Soil	<b>Instrument ID:</b> 5975-H
<b>Batch:</b> ENVX/19811 (HBN: 134017)	<b>Initial:</b> 30.58 grams	<b>Batch:</b> ESVO/4627 (HBN: 134094)	<b>Percent Solid:</b> 99.4
<b>Prepared:</b> 09/03/2014	<b>Final:</b> 1 mL	<b>Analyzed:</b> 09/04/2014 02:13	<b>Report Basis:</b> Dry

Analyte	ug/Kg	MDL (ug/Kg)	RL (ug/Kg)	Dilution	Qual.
Bis(2-ethylhexyl)phthalate	ND	2000	6600	40	U
Di-n-octylphthalate	ND	2000	6600	40	U
Benzo(b)fluoranthene	ND	2000	6600	40	U
Benzo(k)fluoranthene	ND	2000	6600	40	U
Benzo(a)pyrene	ND	2000	6600	40	U
Indeno(1,2,3-c,d)pyrene	ND	2000	6600	40	U
Dibenz(a,h)anthracene	ND	2000	6600	40	U
Benzo(g,h,i)perylene	ND	2000	6600	40	U

### Analysis Method - SW 8270

<b>Preparation:</b> EPA 3550, Sonic Ext, SVOA Soil	<b>Weight/Volume</b>	<b>Analysis:</b> SW 8270D, Soil	<b>Instrument ID:</b> 5975-H
<b>Batch:</b> ENVX/19811 (HBN: 134017)	<b>Initial:</b> 30.58 grams	<b>Batch:</b> ESVO/4627 (HBN: 134094)	<b>Percent Solid:</b> 99.4
<b>Prepared:</b> 09/03/2014	<b>Final:</b> 1 mL	<b>Analyzed:</b> 09/04/2014 02:13	<b>Report Basis:</b> Dry

Tentatively Identified Compound	ug/Kg	Retention Time	Dilution	Qual.
2-Pentanone, 4-hydroxy-4-methyl-	19000	3.15	40	J
2-Pentanone, 4-hydroxy-4-methyl-	9200	3.18	40	J
Acetic acid, chloro-	35000	3.43	40	J
Acetic acid, bromo-, ethyl ester	19000	3.62	40	J
Acetic acid, bromo-	140000	4.03	40	J
Acetophenone	98000	4.92	40	J
Acetic acid, dibromo-	6500	5.83	40	J
1-Bromo-3,3,3-trifluoroacetone	8800	6.47	40	J
Acetic acid, bromo-, ethyl ester	8700	6.73	40	J
Ethanone, 2-bromo-1-phenyl-	7800	7.46	40	J
2(5H)-Furanone, 4,5-diphenyl-	9000	14.29	40	J
1,1':2',1"-Terphenyl, 4'-phenyl-	8100	16.59	40	J
1,1':3',1"-Terphenyl, 5'-phenyl-	7700	18.25	40	J
Naphthalene, 1,2-dihydro-2-(diphenylmethylene)-8	7800	18.38	40	J
Pent-2-ene-1,5-dione, 2-methyl-1-(4-methylphenyl)	6900	18.86	40	J
Benzeneacetonitrile, 3-benzoyl-.alpha.-methyl-	150000	19.61	40	J
1H-Cyclopenta[e]-1,2,4-triazin-3(2H)-one, 4,4a,5	18000	20.80	40	J

Results Continued on Next Page



# ANALYTICAL REPORT

Workorder: **34-1423290**

Client: Washington Closure Hanford, LLC

Project Manager: Kevin W. Griffiths

## Analytical Results

Sample ID: <b>J1TXH3</b>	Sampling Site: 600-358 UXO Site	Collected: 08/14/2014
Lab ID: 1423290001	Media: 1000 mL Amber Glass	Received: 08/20/2014
Matrix: Soil/Solid/Sediment	Sampling Parameter: NA	

### Analysis Method - SW 9012

Preparation: Not Applicable	Analysis: SW 9012A w/ Micro Dist, Soil Batch: EWC/5249 (HBN: 133566) Analyzed: 08/26/2014 18:15	Instrument ID: WET01 Percent Solid: 99.4 Report Basis: Dry
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Analyte	ug/g	MDL (ug/g)	RL (ug/g)	Dilution	Qual.
Cyanide	ND	0.070	0.11	1	U

### Analysis Method - SW 9034

Preparation: Not Applicable	Analysis: SW 9034B, Soil Batch: EWC/5257 (HBN: 133673) Analyzed: 08/29/2014 08:00	Instrument ID: NONE Percent Solid: 99.4 Report Basis: Dry
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Analyte	ug/g	RL (ug/g)	Dilution	Qual.
Sulfide	ND	50	1	

### Analysis Method - SW 9045

Preparation: Not Applicable	Analysis: SW 9045C, pH, Soil Batch: EWC/5243 (HBN: 133514) Analyzed: 08/26/2014 12:30	Instrument ID: WET02 Percent Solid: 99.4 Report Basis: Wet
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Analyte	pH	RL (pH)	Dilution	Qual.
pH	3.03	NA	1	

## Comments

### Workorder: 1423290

8260 Comments: The sample was analyzed solely at reduced volume due to the presence of high levels of non-target compounds.

EPA 300.0: The sample was analyzed at a 1:10 dilution in order to remove interferences and/or to obtain results within the calibration range of the instrument.

### Quality Control: EPA 300.0/SW 9056 - (HBN: 133934)

MS/MSD recoveries for fluoride, bromide, phosphate and sulfate are below historical limits, but within acceptable method limits of 75-125%.

### Quality Control: Organosulfur Compounds, GC/MS - (HBN: 133805)

The MS/MSD samples show a ND for both compounds because the samples were diluted below the reporting limit. Dilutions were made at the extraction level and the analysis level due to sample viscosity and the darkness of the extract.

### Quality Control: SW 6010C - (HBN: 133847)

LCS 408666 is out of performance control limits for cobalt and lead, but within method control limits.

MS 408668 is out of control limits for silicon and silver, due to possible matrix issues.

MSD 408669 is out of control limits for silver, due to possible matrix issues.

### Quality Control: SW 8260 - (HBN: 133286)

8260 VOA Soil Comments: MS/MSD failures are likely the result of matrix effect.



# ANALYTICAL REPORT

Workorder: **34-1423290**

Client: Washington Closure Hanford, LLC

Project Manager: Kevin W. Griffiths

## Comments

### Quality Control: SW 8270 - (HBN: 134094)

Three compounds in the MS/MSD samples, (N-Nitrosodiphenylamine, Bis-(2-ethylhexyl)phthalate, and Phenanthrene), were outside recovery limits. The QC criteria still passes method requirements.

Dilutions were made on samples to protect the integrity of the instrument or to bring compound concentration within the range of the curve.

Surrogates in sample 1423811002 were diluted below reporting limit and don't show up on the surrogate report. Also for sample 1423811002, Bis(2-ethylhexyl)phthalate is reported above the reporting limit and this same compound is in the method blank, which could possibly denote contamination in the sample. Normally we would do a re-extraction for this sample, however, there is not enough sample to perform a re-extract.

### Quality Control: SW 9012 - (HBN: 133566)

Cyanide recovery in the matrix spike is greater than the upper control limit. Matrix effects are suspected.

## Report Authorization (/S/ is an electronic signature that complies with 21 CFR Part 11)

Method	Analyst	Peer Review
Chemical Agent Breakdown	/S/ Thomas T. McKay 09/03/2014 14:09	/S/ Thomas Bosch 09/03/2014 15:09
EPA 300.0/SW 9056	/S/ Thomas T. McKay 09/03/2014 11:09	/S/ Thomas Bosch 09/03/2014 12:09
Organosulfur Compounds, GC/MS	/S/ Dustin Calder 08/29/2014 09:08	/S/ Brett J. Murphy 08/29/2014 11:08
SW 6010C	/S/ Neil A. Edwards 08/29/2014 15:08	/S/ Whitney Redd 08/29/2014 16:08
SW 8260	/S/ Christopher Q. Coleman 08/25/2014 23:08	/S/ Thomas J. Masoian 08/26/2014 09:08
SW 8270	/S/ Dustin Calder 09/04/2014 11:09	/S/ Thomas J. Masoian 09/05/2014 14:09
SW 9012	/S/ Christopher R. Hansen 08/27/2014 12:08	/S/ Whitney Redd 08/28/2014 14:08
SW 9034	/S/ Whitney Redd 08/29/2014 10:08	/S/ Neil A. Edwards 08/29/2014 11:08
SW 9045	/S/ Brittney Austin 08/26/2014 15:08	/S/ Whitney Redd 08/27/2014 15:08
Solids/Moisture Determination	/S/ Ilse J. Ovalle 08/26/2014 10:08	/S/ Read A. Fritts 08/27/2014 08:08

## Laboratory Contact Information

ALS Environmental  
960 W Levoy Drive  
Salt Lake City, Utah 84123

Phone: (801) 266-7700  
Email: als@alst.com  
Web: www.alssl.com



# ANALYTICAL REPORT

Workorder: **34-1423290**

Client: Washington Closure Hanford, LLC

Project Manager: Kevin W. Griffiths

## General Lab Comments

The results provided in this report relate only to the items tested.  
Samples were received in acceptable condition unless otherwise noted.  
Samples have not been blank corrected unless otherwise noted.  
This test report shall not be reproduced, except in full, without written approval of ALS.

ALS provides professional analytical services for all samples submitted. ALS is not in a position to interpret the data and assumes no responsibility for the quality of the samples submitted.

All quality control samples processed with the samples in this report yielded acceptable results unless otherwise noted.

ALS is accredited for specific fields of testing (scopes) in the following testing sectors. The quality system implemented at ALS conforms to accreditation requirements and is applied to all analytical testing performed by ALS. The following table lists testing sector, accreditation body, accreditation number and website. Please contact these accrediting bodies or your ALS project manager for the current scope of accreditation that applies to your analytical testing.

Testing Sector	Accreditation Body (Standard)	Certificate Number	Website
Environmental	ACLASS (DoD ELAP)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>
	Utah (NELAC)	DATA1	<a href="http://health.utah.gov/lab/labimp/">http://health.utah.gov/lab/labimp/</a>
	Nevada	UT00009	<a href="http://ndep.nv.gov/bsdwl/labservice.htm">http://ndep.nv.gov/bsdwl/labservice.htm</a>
	Oklahoma	UT00009	<a href="http://www.deq.state.ok.us/CSDnew/">http://www.deq.state.ok.us/CSDnew/</a>
	Iowa	IA# 376	<a href="http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx">http://www.iowadnr.gov/InsideDNR/RegulatoryWater.aspx</a>
	Florida (TNI)	E871067	<a href="http://www.dep.state.fl.us/labs/bars/sas/qa/">http://www.dep.state.fl.us/labs/bars/sas/qa/</a>
	Texas (TNI)	T104704456-11-1	<a href="http://www.tceq.texas.gov/field/qa/lab_accred_certif.html">http://www.tceq.texas.gov/field/qa/lab_accred_certif.html</a>
Industrial Hygiene	AIHA (ISO 17025 & AIHA IHLAP/ELLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Lead Testing:			
CPSC	ACLASS (ISO 17025, CPSC)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>
Soil, Dust, Paint ,Air	AIHA (ISO 17025, AIHA ELLAP and NLLAP)	101574	<a href="http://www.aihaaccreditedlabs.org">http://www.aihaaccreditedlabs.org</a>
Dietary Supplements	ACLASS (ISO 17025)	ADE-1420	<a href="http://www.aiclasscorp.com">http://www.aiclasscorp.com</a>

## Result Symbol Definitions

MDL = Method Detection Limit, a statistical estimate of method/media/instrument sensitivity.  
RL = Reporting Limit, a verified value of method/media/instrument sensitivity.  
CRDL = Contract Required Detection Limit  
Reg. Limit = Regulatory Limit.  
ND = Not Detected, testing result not detected above the MDL or RL.  
< This testing result is less than the numerical value.  
\*\* No result could be reported, see sample comments for details.

## Qualifier Symbol Definitions

U = Qualifier indicates that the analyte was not detected above the MDL.  
J = Qualifier Indicates that the analyte value is between the MDL and the RL. It is also used to indicate an estimated value for tentatively identified compounds in mass spectrometry where a 1:1 response is assumed.  
B = Qualifier indicates that the analyte was detected in the blank.  
E = Qualifier indicates that the analyte result exceeds calibration range.  
P = Qualifier indicates that the RPD between the two columns is greater than 40%.



## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** EPA 300.0/SW 9056, Soil Prep

**Batch:** EIC/1490 (HBN: 133926)

**Prepared By:** Thomas T. McKay

**Analysis:** EPA 300.0/SW 9056

**Batch:** EIC/1491 (HBN: 133934)

**Analyzed By:** Thomas T. McKay

### Blank

<b>MB:</b> 409072 <b>Analyzed:</b> 09/02/2014 14:38 <b>Units:</b> ug/g			
Analyte	Result	MDL	RL
Fluoride	ND	0.3	1.00
Chloride	ND	0.3	1.00
Nitrite Ion	ND	0.3	1.00
Nitrite-N	ND	0.092	0.305
Bromide	ND	0.3	1.00
Nitrate Ion	ND	0.3	1.00
Nitrate-N	ND	0.068	0.226
Phosphate Ion	ND	0.49	1.00
Phosphate-P	ND	0.16	0.327
Sulfate	ND	0.3	1.00

### Laboratory Control Sample - Laboratory Control Sample Duplicate

<b>LCS:</b> 409073 <b>Analyzed:</b> 09/02/2014 15:01 <b>Dilution:</b> 1 <b>Units:</b> ug/g					
Analyte	Result	Target	% Rec	QC Limits	
Fluoride	51.1	50.0	102	93.0	114.6
Chloride	49.1	50.0	98.2	92.7	108.3
Nitrite Ion	53.1	50.0	106	91.6	115.3
Nitrite-N	16.2	15.2	106	91.6	115.3
Bromide	53.2	50.0	106	89.8	111.3
Nitrate Ion	53.6	50.0	107	86.8	115.6
Nitrate-N	12.1	11.3	107	86.8	115.6
Phosphate Ion	47.5	50.0	94.9	86.7	114.6
Phosphate-P	15.5	16.3	94.9	86.7	114.6
Sulfate	50.2	50.0	100	94.1	109.8

### Matrix Spike - Matrix Spike Duplicate

<b>Sample:</b> 1423290001 <b>Analyzed:</b> 09/02/2014 16:32 <b>Dilution:</b> 10 <b>Units:</b> ug/g		<b>MS:</b> 409075 <b>Analyzed:</b> 09/02/2014 15:19 <b>Dilution:</b> 10 <b>Units:</b> ug/g					<b>MSD:</b> 409076 <b>Analyzed:</b> 09/02/2014 15:37 <b>Dilution:</b> 10 <b>Units:</b> ug/g				
Analyte	Result	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits		
Fluoride	ND	168	200	* 84.2	93.0   114.6	174	87.1	3.3	0.0   15.0		
Chloride	21.0	214	200	96.6	92.7   108.3	215	97.0	0.396	0.0   15.0		
Nitrite Ion	ND	194	200	96.8	91.6   115.3	191	95.7	1.14	0.0   15.0		
Nitrite-N	ND	58.9	60.9	96.8	91.6   115.3	58.2	95.7	1.14	0.0   15.0		
Bromide	720	898	200	* 89.7	89.8   111.3	899	90.2	0.115	0.0   15.0		



## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** EPA 300.0/SW 9056, Soil Prep

**Batch:** EIC/1490 (HBN: 133926)

**Prepared By:** Thomas T. McKay

**Analysis:** EPA 300.0/SW 9056

**Batch:** EIC/1491 (HBN: 133934)

**Analyzed By:** Thomas T. McKay

### Matrix Spike - Matrix Spike Duplicate

Sample: 1423290001 Analyzed: 09/02/2014 16:32 Dilution: 10 Units: ug/g		MS: 409075 Analyzed: 09/02/2014 15:19 Dilution: 10 Units: ug/g					MSD: 409076 Analyzed: 09/02/2014 15:37 Dilution: 10 Units: ug/g				
Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Nitrate Ion	12.0	196	200	92.1	86.8	115.6	199	93.6	1.48	0.0	15.0
Nitrate-N	2.60	44.2	45.2	92.1	86.8	115.6	44.9	93.6	1.48	0.0	15.0
Phosphate Ion	9.50	172	200	* 85.9	86.7	114.6	174	86.8	1.06	0.0	15.0
Phosphate-P	3.10	56	65.2	* 85.9	86.7	114.6	56.6	86.8	1.06	0.0	15.0
Sulfate	10.0	196	200	* 93.2	94.1	109.8	197	93.7	0.574	0.0	15.0

### Comments

MS/MSD recoveries for fluoride, bromide, phosphate and sulfate are below historical limits, but within acceptable method limits of 75-125%.

### QC Data Approved and Reviewed by

Thomas T. McKay _____ Analyst	Thomas Bosch _____ Peer Review	9/3/2014 _____ Date
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### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)  
 ND - Not Detected (U - Qualifier also flags analyte as not detected)  
 NA - Not Applicable  
 QC results are not adjusted for moisture correction, where applicable



## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** SW-846, EPA 3050 Soil Prep

**Batch:** EIPX/5071 (HBN: 133761)

**Prepared By:** Shane Stewart

**Analysis:** SW 6010C

**Batch:** EICP/4677 (HBN: 133847)

**Analyzed By:** Neil A. Edwards

### Blank

**MB:** 408665

**Analyzed:** 08/29/2014 14:10

**Units:** ug/g

Analyte	Result	MDL	RL
Aluminum	ND	6	20.0
Antimony	ND	1.5	5.00
Arsenic	ND	0.3	1.00
Barium	ND	0.6	2.00
Beryllium	ND	0.15	0.500
Boron	ND	1.5	10.0
Cadmium	ND	0.15	0.500
Calcium	ND	15	20.0
Chromium	ND	0.3	1.00
Cobalt	ND	0.6	2.00
Copper	ND	0.6	2.00
Iron	ND	6	10.0
Lead	ND	0.3	1.00
Magnesium	ND	6	20.0
Manganese	ND	0.3	1.00
Molybdenum	ND	0.6	2.00
Nickel	ND	1.2	4.00
Phosphorus	ND	1.5	10.0
Potassium	ND	30	100
Selenium	ND	0.6	2.00
Silicon	ND	1.5	10.0
Silver	ND	0.3	1.00
Sodium	ND	15	50.0
Strontium	ND	0.6	2.00
Vanadium	ND	0.6	2.00
Zinc	ND	1.5	5.00

### Laboratory Control Sample - Laboratory Control Sample Duplicate

**LCS:** 408666

**Analyzed:** 08/29/2014 14:13

**Dilution:** 1

**Units:** ug/g

Analyte	Result	Target	% Rec	QC Limits	
Aluminum	974	1000	97.4	92.3	112.9
Antimony	197	200	98.6	83.4	106.6
Arsenic	193	200	96.7	86.8	106.1
Barium	198	200	98.8	92.3	110.0
Beryllium	50.5	50.0	101	94.4	116.4



## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** SW-846, EPA 3050 Soil Prep

**Batch:** EIPX/5071 (HBN: 133761)

**Prepared By:** Shane Stewart

**Analysis:** SW 6010C

**Batch:** EICP/4677 (HBN: 133847)

**Analyzed By:** Neil A. Edwards

### Laboratory Control Sample - Laboratory Control Sample Duplicate

**LCS:** 408666

**Analyzed:** 08/29/2014 14:13

**Dilution:** 1

**Units:** ug/g

Analyte	Result	Target	% Rec	QC Limits
Boron	188	200	94.1	89.8 106.4
Cadmium	48.7	50.0	97.4	92.7 113.0
Calcium	990	1000	99.0	93.3 112.3
Chromium	48.6	50.0	97.2	95.1 112.6
Cobalt	45.7	50.0	* 91.4	95.2 114.9
Copper	51.4	50.0	103	91.6 115.3
Iron	979	1000	97.9	93.9 112.6
Lead	185	200	* 92.5	92.7 110.2
Magnesium	975	1000	97.5	90.6 113.6
Manganese	49.5	50.0	99.0	96.3 113.5
Molybdenum	199	200	99.5	69.3 133.1
Nickel	50.1	50.0	100	95.0 116.1
Phosphorus	203	200	102	87.2 115.7
Potassium	962	1000	96.2	91.9 110.5
Selenium	199	200	99.3	82.5 111.1
Silicon	182	200	90.9	0.0 130.1
Silver	48.3	50.0	96.7	84.6 113.2
Sodium	989	1000	98.9	89.9 109.4
Strontium	49.9	50.0	99.9	93.8 112.1
Vanadium	47.4	50.0	94.8	94.4 115.0
Zinc	50.6	50.0	101	93.0 111.6

### Matrix Spike - Matrix Spike Duplicate

**Sample:** 1423290001

**Analyzed:** 08/29/2014 14:40

**Dilution:** 1

**Units:** ug/g

**MS:** 408668

**Analyzed:** 08/29/2014 14:22

**Dilution:** 1

**Units:** ug/g

**MSD:** 408669

**Analyzed:** 08/29/2014 14:25

**Dilution:** 1

**Units:** ug/g

Analyte	Result	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits
Aluminum	2770	3340	171	▲ 330	75.0 125.0	3460	401	3.55	0.0 20.0
Antimony	ND	37.6	42.7	88.1	75.0 125.0	37.8	88.4	0.47	0.0 20.0
Arsenic	1.55	77.6	85.3	89.2	75.0 125.0	78	89.5	0.459	0.0 20.0
Barium	49.0	213	171	95.9	75.0 125.0	197	86.9	7.43	0.0 20.0
Beryllium	ND	4	4.27	93.6	75.0 125.0	3.99	93.6	0.042	0.0 20.0
Boron	3.96	71.4	85.3	83.7	75.0 125.0	71.2	83.4	0.307	0.0 20.0
Cadmium	0.548	4.36	4.27	89.3	75.0 125.0	4.36	89.4	0.117	0.0 20.0
Chromium	4.34	18.7	17.1	83.9	75.0 125.0	19.7	89.9	5.39	0.0 20.0
Cobalt	7.31	47.3	42.7	93.7	75.0 125.0	47.8	94.9	1.06	0.0 20.0
Copper	4.46	24.2	21.3	92.5	75.0 125.0	24.5	93.9	1.33	0.0 20.0





## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance  
**Basis:** ALS Laboratory Group

**Preparation:** SW-846, EPA 3050 Soil Prep  
**Batch:** EIPX/5071 (HBN: 133761)  
**Prepared By:** Shane Stewart

**Analysis:** SW 6010C  
**Batch:** EICP/4677 (HBN: 133847)  
**Analyzed By:** Neil A. Edwards

### Matrix Spike - Matrix Spike Duplicate

Sample: 1423290001 Analyzed: 08/29/2014 14:40 Dilution: 1 Units: ug/g		MS: 408668 Analyzed: 08/29/2014 14:22 Dilution: 1 Units: ug/g				MSD: 408669 Analyzed: 08/29/2014 14:25 Dilution: 1 Units: ug/g			
Analyte	Result	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits
Iron	16000	16100	85.3	▲ 128	75.0 125.0	16300	436	1.63	0.0 20.0
Lead	4.58	44.9	42.7	94.6	75.0 125.0	45.4	95.7	1.05	0.0 20.0
Manganese	241	314	42.7	▲ 171	75.0 125.0	294	124	6.46	0.0 20.0
Molybdenum	ND	157	171	91.8	75.0 125.0	157	91.7	0.031	0.0 20.0
Nickel	9.68	46.9	42.7	87.3	75.0 125.0	48.8	91.7	3.96	0.0 20.0
Selenium	ND	77.9	85.3	91.4	75.0 125.0	77.7	91.0	0.279	0.0 20.0
Silicon	286	301	85.3	* 18.2	75.0 125.0	307	24.5	1.76	0.0 20.0
Silver	ND	109	4.27	* 2560	75.0 125.0	3.7	86.7	* 187	0.0 20.0
Strontium	11.9	83	85.3	83.4	75.0 125.0	84.8	85.4	2.1	0.0 20.0
Vanadium	48.0	87.1	42.7	91.6	75.0 125.0	88.3	94.5	1.4	0.0 20.0
Zinc	42.0	78.6	42.7	85.8	75.0 125.0	83.3	96.8	5.84	0.0 20.0

### Comments

LCS 408666 is out of performance control limits for cobalt and lead, but within method control limits.

MS 408668 is out of control limits for silicon and silver, due to possible matrix issues.

MSD 408669 is out of control limits for silver, due to possible matrix issues.

### QC Data Approved and Reviewed by

Neil A. Edwards	Whitney Redd	8/29/2014
<b>Analyst</b>	<b>Peer Review</b>	<b>Date</b>

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)  
 ND - Not Detected (U - Qualifier also flags analyte as not detected)  
 NA - Not Applicable  
 QC results are not adjusted for moisture correction, where applicable



## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance  
**Basis:** ALS Laboratory Group

**Preparation:** Chemical Agent Breakdown, Soil Prep  
**Batch:** ELMS/1489 (HBN: 133477)  
**Prepared By:** Thomas T. McKay

**Analysis:** Chemical Agent Breakdown  
**Batch:** ELMS/1493 (HBN: 134041)  
**Analyzed By:** Thomas T. McKay

### Blank

**LMB:** 407911  
**Analyzed:** 08/25/2014 17:25  
**Units:** ug/g

Analyte	Result	MDL	RL
Thiodiglycol	ND	0.015	0.500

### Laboratory Control Sample - Laboratory Control Sample Duplicate

**LCS:** 407912  
**Analyzed:** 08/25/2014 17:31  
**Dilution:** 1  
**Units:** ug/g

Analyte	Result	Target	% Rec	QC Limits
Thiodiglycol	23.0	20.0	115	80.0   120.0

### Matrix Spike - Matrix Spike Duplicate

**Sample:** 1423290001  
**Analyzed:** 08/25/2014 17:37  
**Dilution:** 1  
**Units:** ug/g

**MS:** 407913  
**Analyzed:** 08/25/2014 17:43  
**Dilution:** 1  
**Units:** ug/g

**MSD:** 407914  
**Analyzed:** 08/25/2014 17:49  
**Dilution:** 1  
**Units:** ug/g

Analyte	Result	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits
Thiodiglycol	ND	45.9	44.3	104	80.0   120.0	42.5	94.9	7.77	0.0   20.0

### QC Data Approved and Reviewed by

<u>Thomas T. McKay</u> <b>Analyst</b>	<u>Thomas Bosch</u> <b>Peer Review</b>	<u>9/3/2014</u> <b>Date</b>
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### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)  
 ND - Not Detected (U - Qualifier also flags analyte as not detected)  
 NA - Not Applicable  
 QC results are not adjusted for moisture correction, where applicable



## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance  
**Basis:** ALS Laboratory Group

**Preparation:** EPA 3550, Sonic Ext, SVOA Soil  
**Batch:** ENVX/19764 (HBN: 133665)  
**Prepared By:** Read A. Fritts

**Analysis:** Organosulfur Compounds, GC/MS  
**Batch:** ESVO/4625 (HBN: 133805)  
**Analyzed By:** Dustin Calder

### Blank

<b>MB:</b> 408394 <b>Analyzed:</b> 08/28/2014 11:09 <b>Units:</b> ug/Kg			
Analyte	Result	MDL	RL
1,4-Oxathiane	ND	50	167
1,4-Dithiane	ND	50	167

### Laboratory Control Sample - Laboratory Control Sample Duplicate

<b>LCS:</b> 408395 <b>Analyzed:</b> 08/28/2014 11:44 <b>Dilution:</b> 1 <b>Units:</b> ug/Kg					
Analyte	Result	Target	% Rec	QC Limits	
1,4-Oxathiane	730	1330	54.7	0.0	135.5
1,4-Dithiane	833	1330	62.5	0.0	159.6

### Matrix Spike - Matrix Spike Duplicate

<b>Sample:</b> 1423290001 <b>Analyzed:</b> 08/28/2014 12:52 <b>Dilution:</b> 20 <b>Units:</b> ug/Kg		<b>MS:</b> 408397 <b>Analyzed:</b> 08/28/2014 13:27 <b>Dilution:</b> 20 <b>Units:</b> ug/Kg				<b>MSD:</b> 408398 <b>Analyzed:</b> 08/28/2014 14:01 <b>Dilution:</b> 20 <b>Units:</b> ug/Kg			
Analyte	Result	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits
1,4-Oxathiane	ND	ND	1330	NA	0.0 135.5	ND	NA	NA	0.0 20.0
1,4-Dithiane	ND	ND	1330	NA	0.0 159.6	ND	NA	NA	0.0 20.0

### Surrogate Recoveries

Surrogate	2-Fluorophenol			Phenol-d5		
QC Limits	15.3	128.2		14.5	131.9	
Units	ug/Kg			ug/Kg		
Lab ID	Result	Target	% Recovery	Result	Target	% Recovery
408394-MB	982	1670	58.9	527	1670	31.6
408395-LCS	1020	1670	61.0	568	1670	34.1
1423290001	1460	1660	88.5	1200	1660	72.7
408397-MS	1450	1660	87.3	1240	1660	74.6
408398-MSD	1120	1660	67.5	983	1660	59.2

### Comments

The MS/MSD samples show a ND for both compounds because the samples were diluted below the reporting limit. Dilutions were made at the extraction level and the analysis level due to sample viscosity and the darkness of the extract.



# Quality Control Sample Batch Report

## Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** EPA 3550, Sonic Ext, SVOA Soil

**Batch:** ENVX/19764 (HBN: 133665)

**Prepared By:** Read A. Fritts

**Analysis:** Organosulfur Compounds, GC/MS

**Batch:** ESVO/4625 (HBN: 133805)

**Analyzed By:** Dustin Calder

## QC Data Approved and Reviewed by

<u>Dustin Calder</u>	<u>Brett J. Murphy</u>	<u>8/29/2014</u>
Analyst	Peer Review	Date

## Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)  
 ND - Not Detected (U - Qualifier also flags analyte as not detected)  
 NA - Not Applicable  
 QC results are not adjusted for moisture correction, where applicable



## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** EPA 3550, Sonic Ext, SVOA Soil

**Batch:** ENVX/19811 (HBN: 134017)

**Prepared By:** Khoa Dang Tran

**Analysis:** SW 8270

**Batch:** ESVO/4627 (HBN: 134094)

**Analyzed By:** Dustin Calder

### Blank

**MB:** 409359

**Analyzed:** 09/03/2014 17:47

**Units:** ug/Kg

Analyte	Result	MDL	RL
Pyridine	ND	50	167
Phenol	ND	50	167
Bis(2-chloroethyl)ether	ND	50	167
2-Chlorophenol	ND	50	167
1,3-Dichlorobenzene	ND	50	167
1,4-Dichlorobenzene	ND	50	167
Benzyl alcohol	ND	62	167
1,2-Dichlorobenzene	ND	50	167
2-Methylphenol	ND	50	167
bis(2-Chloroisopropyl)ether	ND	54.1	167
4-Methylphenol	ND	50	167
N-Nitrosodi-n-propyl amine	ND	50	167
Hexachloroethane	ND	50	167
Nitrobenzene	ND	50	167
Isophorone	ND	50	167
2-Nitrophenol	ND	50	167
2,4-Dimethylphenol	ND	81.3	167
Benzoic acid	ND	316	667
Bis(2-Chloroethoxy)methane	ND	50	167
2,4-Dichlorophenol	ND	50	167
1,2,4-Trichlorobenzene	ND	50	167
Naphthalene	ND	50	167
4-Chloroaniline	ND	75.3	167
Hexachlorobutadiene	ND	50	167
4-Chloro-3-methylphenol	ND	50	167
2-Methylnaphthalene	ND	50	167
Hexachlorocyclopentadiene	ND	130	167
2,4,6-Trichlorophenol	ND	50	167
2,4,5-Trichlorophenol	ND	50	167
2-Chloronaphthalene	ND	50	167
2-Nitroaniline	ND	50	167
Dimethylphthalate	ND	50	167
2,6-Dinitrotoluene	ND	50	167
Acenaphthylene	ND	50	167
3-Nitroaniline	ND	102	167
Acenaphthene	ND	50	167
2,4-Dinitrophenol	ND	691	1170



## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** EPA 3550, Sonic Ext, SVOA Soil

**Batch:** ENVX/19811 (HBN: 134017)

**Prepared By:** Khoa Dang Tran

**Analysis:** SW 8270

**Batch:** ESVO/4627 (HBN: 134094)

**Analyzed By:** Dustin Calder

### Blank

**MB:** 409359

**Analyzed:** 09/03/2014 17:47

**Units:** ug/Kg

Analyte	Result	MDL	RL
4-Nitrophenol	ND	200	667
Dibenzofuran	ND	50	167
2,4-Dinitrotoluene	ND	50	167
Diethylphthalate	ND	50	167
4-Chlorophenyl phenyl ether	ND	50	167
Fluorene	ND	50	167
4-Nitroaniline	ND	63.7	167
4,6-Dinitro-2-methylphenol	ND	630	1170
N-Nitrosodiphenylamine	ND	50	167
4-Bromophenyl phenyl ether	ND	50	167
Hexachlorobenzene	ND	50	167
Pentachlorophenol	ND	200	667
Phenanthrene	ND	50	167
Anthracene	ND	50	167
Carbazole	ND	50	167
Di-n-butylphthalate	ND	50	167
Fluoranthene	ND	50	167
Pyrene	ND	50	167
Butylbenzylphthalate	ND	50	167
3,3'-Dichlorobenzidine	ND	67	167
Benzo(a)anthracene	ND	50	167
Chrysene	ND	50	167
Bis(2-ethylhexyl)phthalate	* 1720	50	167
Di-n-octylphthalate	ND	50	167
Benzo(b)fluoranthene	ND	50	167
Benzo(k)fluoranthene	ND	50	167
Benzo(a)pyrene	ND	50	167
Indeno(1,2,3-c,d)pyrene	ND	50	167
Dibenz(a,h)anthracene	ND	50	167
Benzo(g,h,i)perylene	ND	50	167

### Laboratory Control Sample - Laboratory Control Sample Duplicate

**LCS:** 409360

**Analyzed:** 09/03/2014 18:21

**Dilution:** 1

**Units:** ug/Kg

Analyte	Result	Target	% Rec	QC Limits
Pyridine	599	1330	44.9	21.5 60.0



## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** EPA 3550, Sonic Ext, SVOA Soil

**Batch:** ENVX/19811 (HBN: 134017)

**Prepared By:** Khoa Dang Tran

**Analysis:** SW 8270

**Batch:** ESVO/4627 (HBN: 134094)

**Analyzed By:** Dustin Calder

### Laboratory Control Sample - Laboratory Control Sample Duplicate

**LCS:** 409360

**Analyzed:** 09/03/2014 18:21

**Dilution:** 1

**Units:** ug/Kg

Analyte	Result	Target	% Rec	QC Limits	
Phenol	847	1330	63.5	29.8	110.1
Bis(2-chloroethyl)ether	852	1330	63.9	21.0	98.9
2-Chlorophenol	840	1330	63.0	23.7	107.6
1,3-Dichlorobenzene	819	1330	61.4	9.1	102.5
1,4-Dichlorobenzene	825	1330	61.9	12.9	102.4
Benzyl alcohol	928	1330	69.6	13.7	140.8
1,2-Dichlorobenzene	844	1330	63.3	12.7	104.4
2-Methylphenol	871	1330	65.4	27.3	105.5
bis(2-Chloroisopropyl)ether	830	1330	62.3	25.8	102.4
4-Methylphenol	904	1330	67.8	33.9	110.8
N-Nitrosodi-n-propyl amine	956	1330	71.7	31.6	108.9
Hexachloroethane	828	1330	62.1	11.5	99.3
Nitrobenzene	849	1330	63.6	15.7	111.8
Isophorone	901	1330	67.5	0.0	118.2
2-Nitrophenol	864	1330	64.8	0.0	150.4
2,4-Dimethylphenol	824	1330	61.8	21.0	113.5
Benzoic acid	1030	1330	77.0	0.0	184.3
Bis(2-Chloroethoxy)methane	901	1330	67.6	25.8	110.4
2,4-Dichlorophenol	876	1330	65.7	22.1	115.7
1,2,4-Trichlorobenzene	851	1330	63.8	14.5	111.3
Naphthalene	896	1330	67.2	22.7	105.0
4-Chloroaniline	504	1330	37.8	5.0	71.4
Hexachlorobutadiene	860	1330	64.5	10.2	111.2
4-Chloro-3-methylphenol	947	1330	71.0	30.8	113.9
2-Methylnaphthalene	924	1330	69.3	28.1	110.3
Hexachlorocyclopentadiene	874	1330	65.5	0.0	126.4
2,4,6-Trichlorophenol	936	1330	70.2	24.1	120.2
2,4,5-Trichlorophenol	938	1330	70.4	52.9	106.0
2-Chloronaphthalene	897	1330	67.3	24.2	115.4
2-Nitroaniline	921	1330	69.1	32.7	112.9
Dimethylphthalate	953	1330	71.5	37.4	116.6
2,6-Dinitrotoluene	963	1330	72.2	35.5	116.4
Acenaphthylene	933	1330	70.0	26.6	112.5
3-Nitroaniline	659	1330	49.4	0.0	120.1
Acenaphthene	942	1330	70.7	29.0	111.5
2,4-Dinitrophenol	984	1330	73.8	0.0	221.9
4-Nitrophenol	1020	1330	76.7	16.6	129.7



## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** EPA 3550, Sonic Ext, SVOA Soil

**Batch:** ENVX/19811 (HBN: 134017)

**Prepared By:** Khoa Dang Tran

**Analysis:** SW 8270

**Batch:** ESVO/4627 (HBN: 134094)

**Analyzed By:** Dustin Calder

### Laboratory Control Sample - Laboratory Control Sample Duplicate

<b>LCS:</b> 409360 <b>Analyzed:</b> 09/03/2014 18:21 <b>Dilution:</b> 1 <b>Units:</b> ug/Kg					
Analyte	Result	Target	% Rec	QC Limits	
Dibenzofuran	950	1330	71.2	24.3	124.9
2,4-Dinitrotoluene	930	1330	69.7	36.1	123.3
Diethylphthalate	975	1330	73.2	38.2	119.3
4-Chlorophenyl phenyl ether	965	1330	72.4	33.5	125.5
Fluorene	986	1330	73.9	27.8	121.3
4-Nitroaniline	849	1330	63.7	12.4	158.6
4,6-Dinitro-2-methylphenol	973	1330	73.0	5.7	157.9
N-Nitrosodiphenylamine	969	1330	72.7	39.2	116.9
4-Bromophenyl phenyl ether	979	1330	73.4	37.3	113.7
Hexachlorobenzene	961	1330	72.1	30.8	117.7
Pentachlorophenol	951	1330	71.4	18.9	117.6
Phenanthrene	979	1330	73.4	33.5	115.4
Anthracene	983	1330	73.7	32.4	115.6
Carbazole	971	1330	72.9	29.6	142.8
Di-n-butylphthalate	992	1330	74.4	41.9	119.5
Fluoranthene	996	1330	74.7	37.0	116.4
Pyrene	995	1330	74.6	36.7	113.5
Butylbenzylphthalate	1010	1330	75.9	44.5	121.6
3,3'-Dichlorobenzidine	804	1330	60.3	0.0	173.2
Benzo(a)anthracene	1010	1330	75.9	34.7	117.3
Chrysene	1000	1330	75.1	35.7	119.8
Bis(2-ethylhexyl)phthalate	1150	1330	86.1	49.7	122.6
Di-n-octylphthalate	1040	1330	77.9	44.1	127.3
Benzo(b)fluoranthene	979	1330	73.4	38.5	113.5
Benzo(k)fluoranthene	974	1330	73.1	38.1	113.9
Benzo(a)pyrene	987	1330	74.0	34.5	116.0
Indeno(1,2,3-c,d)pyrene	1030	1330	77.6	25.2	127.4
Dibenz(a,h)anthracene	1040	1330	78.2	25.9	131.2
Benzo(g,h,i)perylene	999	1330	74.9	22.7	128.8

### Matrix Spike - Matrix Spike Duplicate

<b>Sample:</b> 1423602001 <b>Analyzed:</b> 09/03/2014 19:28 <b>Dilution:</b> 5 <b>Units:</b> ug/Kg		<b>MS:</b> 409362 <b>Analyzed:</b> 09/03/2014 20:03 <b>Dilution:</b> 5 <b>Units:</b> ug/Kg				<b>MSD:</b> 409363 <b>Analyzed:</b> 09/03/2014 20:36 <b>Dilution:</b> 5 <b>Units:</b> ug/Kg					
Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
Pyridine	ND	524	1320	39.7	21.5	60.0	554	42.2	5.41	0.0	40.0
Phenol	ND	737	1320	55.8	29.8	110.1	772	58.9	4.62	0.0	20.0





## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** EPA 3550, Sonic Ext, SVOA Soil

**Batch:** ENVX/19811 (HBN: 134017)

**Prepared By:** Khoa Dang Tran

**Analysis:** SW 8270

**Batch:** ESVO/4627 (HBN: 134094)

**Analyzed By:** Dustin Calder

### Matrix Spike - Matrix Spike Duplicate

Sample: 1423602001 Analyzed: 09/03/2014 19:28 Dilution: 5 Units: ug/Kg		MS: 409362 Analyzed: 09/03/2014 20:03 Dilution: 5 Units: ug/Kg					MSD: 409363 Analyzed: 09/03/2014 20:36 Dilution: 5 Units: ug/Kg				
Analyte	Result	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits		
Bis(2-chloroethyl)ether	ND	693	1320	52.5	21.0 98.9	721	55.0	3.86	0.0 40.0		
2-Chlorophenol	ND	702	1320	53.2	23.7 107.6	739	56.4	5.16	0.0 20.0		
1,3-Dichlorobenzene	ND	651	1320	49.3	9.1 102.5	685	52.3	5.09	0.0 20.0		
1,4-Dichlorobenzene	ND	663	1320	50.2	12.9 102.4	699	53.3	5.27	0.0 20.0		
Benzyl alcohol	ND	764	1320	57.9	13.7 140.8	808	61.6	5.6	0.0 40.0		
1,2-Dichlorobenzene	ND	679	1320	51.4	12.7 104.4	706	53.9	3.98	0.0 20.0		
2-Methylphenol	ND	756	1320	57.3	27.3 105.5	785	59.9	3.84	0.0 20.0		
bis(2-Chloroisopropyl)ether	ND	728	1320	55.1	25.8 102.4	736	56.2	1.15	0.0 20.0		
4-Methylphenol	ND	798	1320	60.5	33.9 110.8	821	62.7	2.9	0.0 20.0		
N-Nitrosodi-n-propyl amine	ND	811	1320	61.5	31.6 108.9	840	64.1	3.5	0.0 20.0		
Hexachloroethane	ND	691	1320	52.3	11.5 99.3	715	54.6	3.47	0.0 20.0		
Nitrobenzene	ND	741	1320	56.1	15.7 111.8	792	60.4	6.74	0.0 20.0		
Isophorone	ND	837	1320	63.5	0.0 118.2	883	67.4	5.34	0.0 20.0		
2-Nitrophenol	ND	733	1320	55.6	0.0 150.4	778	59.4	5.94	0.0 20.0		
2,4-Dimethylphenol	ND	857	1320	65.0	21.0 113.5	914	69.8	6.45	0.0 20.0		
Benzoic acid	ND	ND	1320	NA	0.0 184.3	ND	NA	NA	0.0 40.0		
Bis(2-Chloroethoxy)methane	ND	806	1320	61.1	25.8 110.4	836	63.8	3.66	0.0 20.0		
2,4-Dichlorophenol	ND	771	1320	58.4	22.1 115.7	825	62.9	6.67	0.0 20.0		
1,2,4-Trichlorobenzene	ND	769	1320	58.3	14.5 111.3	816	62.3	5.88	0.0 20.0		
Naphthalene	ND	914	1320	69.3	22.7 105.0	979	74.7	6.87	0.0 20.0		
4-Chloroaniline	ND	743	1320	56.3	5.0 71.4	774	59.0	4.07	0.0 40.0		
Hexachlorobutadiene	ND	751	1320	56.9	10.2 111.2	801	61.1	6.46	0.0 40.0		
4-Chloro-3-methylphenol	ND	813	1320	61.6	30.8 113.9	862	65.8	5.85	0.0 20.0		
2-Methylnaphthalene	ND	1250	1320	94.7	28.1 110.3	1310	100	4.99	0.0 20.0		
Hexachlorocyclopentadiene	ND	ND	1320	NA	0.0 126.4	ND	NA	NA	0.0 40.0		
2,4,6-Trichlorophenol	ND	855	1320	64.8	24.1 120.2	888	67.8	3.81	0.0 20.0		
2,4,5-Trichlorophenol	ND	761	1320	57.7	52.9 106.0	775	59.1	1.75	0.0 20.0		
2-Chloronaphthalene	ND	837	1320	63.4	24.2 115.4	875	66.8	4.49	0.0 20.0		
2-Nitroaniline	ND	869	1320	65.9	32.7 112.9	907	69.2	4.22	0.0 40.0		
Dimethylphthalate	ND	918	1320	69.5	37.4 116.6	953	72.7	3.75	0.0 30.0		
2,6-Dinitrotoluene	ND	833	1320	63.1	35.5 116.4	859	65.5	3.02	0.0 20.0		
Acenaphthylene	390	1420	1320	77.7	26.6 112.5	1470	82.0	3.46	0.0 20.0		
3-Nitroaniline	ND	732	1320	55.5	0.0 120.1	757	57.8	3.35	0.0 40.0		
Acenaphthene	600	1700	1320	83.2	29.0 111.5	1770	89.2	4.14	0.0 20.0		
2,4-Dinitrophenol	ND	ND	1320	NA	0.0 221.9	ND	NA	NA	0.0 40.0		
4-Nitrophenol	ND	1070	1320	81.2	16.6 129.7	1040	79.5	2.73	0.0 40.0		
Dibenzofuran	ND	1060	1320	80.1	24.3 124.9	1090	83.3	3.15	0.0 20.0		



## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance  
**Basis:** ALS Laboratory Group

**Preparation:** EPA 3550, Sonic Ext, SVOA Soil  
**Batch:** ENVX/19811 (HBN: 134017)  
**Prepared By:** Khoa Dang Tran

**Analysis:** SW 8270  
**Batch:** ESVO/4627 (HBN: 134094)  
**Analyzed By:** Dustin Calder

### Matrix Spike - Matrix Spike Duplicate

Sample: 1423602001 Analyzed: 09/03/2014 19:28 Dilution: 5 Units: ug/Kg		MS: 409362 Analyzed: 09/03/2014 20:03 Dilution: 5 Units: ug/Kg					MSD: 409363 Analyzed: 09/03/2014 20:36 Dilution: 5 Units: ug/Kg				
Analyte	Result	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits		
2,4-Dinitrotoluene	ND	644	1320	48.8	36.1 123.3	689	52.6	6.81	0.0 20.0		
Diethylphthalate	ND	887	1320	67.2	38.2 119.3	927	70.7	4.38	0.0 30.0		
4-Chlorophenyl phenyl ether	ND	923	1320	70.0	33.5 125.5	947	72.3	2.59	0.0 20.0		
Fluorene	410	1770	1320	103	27.8 121.3	1830	108	3.29	0.0 20.0		
4-Nitroaniline	ND	764	1320	57.9	12.4 158.6	793	60.5	3.71	0.0 40.0		
4,6-Dinitro-2-methylphenol	ND	ND	1320	NA	5.7 157.9	ND	NA	NA	0.0 40.0		
N-Nitrosodiphenylamine	ND	1600	1320	* 121	39.2 116.9	1670	127	4.19	0.0 40.0		
4-Bromophenyl phenyl ether	ND	902	1320	68.4	37.3 113.7	943	71.9	4.35	0.0 20.0		
Hexachlorobenzene	ND	855	1320	64.8	30.8 117.7	906	69.1	5.83	0.0 20.0		
Pentachlorophenol	ND	ND	1320	NA	18.9 117.6	ND	NA	NA	0.0 40.0		
Phenanthrene	1900	4130	1320	* 172	33.5 115.4	4310	187	4.28	0.0 20.0		
Anthracene	1100	2490	1320	105	32.4 115.6	2580	112	3.48	0.0 20.0		
Carbazole	ND	916	1320	69.4	29.6 142.8	959	73.2	4.66	0.0 40.0		
Di-n-butylphthalate	ND	928	1320	70.3	41.9 119.5	967	73.7	4.03	0.0 30.0		
Fluoranthene	1800	2910	1320	84.4	37.0 116.4	3000	91.3	2.78	0.0 20.0		
Pyrene	3300	4290	1320	74.9	36.7 113.5	4530	93.6	5.39	0.0 20.0		
Butylbenzylphthalate	ND	871	1320	66.0	44.5 121.6	905	69.0	3.75	0.0 30.0		
3,3'-Dichlorobenzidine	ND	877	1320	66.4	0.0 173.2	897	68.4	2.23	0.0 40.0		
Benzo(a)anthracene	990	1920	1320	70.3	34.7 117.3	2020	78.7	5.25	0.0 20.0		
Chrysene	860	1830	1320	74.0	35.7 119.8	1900	80.0	3.81	0.0 20.0		
Bis(2-ethylhexyl)phthalate	ND	4930	1320	* 374	49.7 122.6	5070	387	2.79	0.0 30.0		
Di-n-octylphthalate	ND	844	1320	63.9	44.1 127.3	870	66.4	3.03	0.0 30.0		
Benzo(b)fluoranthene	610	1490	1320	66.7	38.5 113.5	1480	66.4	0.681	0.0 20.0		
Benzo(k)fluoranthene	ND	1140	1320	86.7	38.1 113.9	1240	94.7	8.21	0.0 20.0		
Benzo(a)pyrene	760	1660	1320	68.5	34.5 116.0	1770	76.9	6.1	0.0 20.0		
Indeno(1,2,3-c,d)pyrene	300	1180	1320	66.3	25.2 127.4	1210	69.5	2.95	0.0 20.0		
Dibenz(a,h)anthracene	ND	882	1320	66.9	25.9 131.2	981	74.9	10.6	0.0 20.0		
Benzo(g,h,i)perylene	320	1170	1320	65.0	22.7 128.8	1210	68.4	3.23	0.0 20.0		

### Surrogate Recoveries

Surrogate	2-Fluorophenol			Phenol-d5			Nitrobenzene-d5		
QC Limits	15.3	128.2		14.5	131.9		17.4	135.5	
Units	ug/Kg			ug/Kg			ug/Kg		
Lab ID	Result	Target	% Recovery	Result	Target	% Recovery	Result	Target	% Recovery
409359-MB	875	1670	52.5	849	1670	50.9	913	1670	54.8
409360-LCS	969	1670	58.1	914	1670	54.8	1060	1670	63.6
1423602001	970	1660	58.5	922	1660	55.5	998	1660	60.1



## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** EPA 3550, Sonic Ext, SVOA Soil

**Batch:** ENVX/19811 (HBN: 134017)

**Prepared By:** Khoa Dang Tran

**Analysis:** SW 8270

**Batch:** ESVO/4627 (HBN: 134094)

**Analyzed By:** Dustin Calder

### Surrogate Recoveries

Surrogate	2-Fluorophenol			Phenol-d5			Nitrobenzene-d5		
QC Limits	15.3	128.2		14.5	131.9		17.4	135.5	
Units	ug/Kg			ug/Kg			ug/Kg		
Lab ID	Result	Target	% Recovery	Result	Target	% Recovery	Result	Target	% Recovery
409362-MS	816	1650	49.5	768	1650	46.5	934	1650	56.6
409363-MSD	855	1640	52.2	809	1640	49.4	997	1640	60.8
1423602002	962	1640	58.8	920	1640	56.2	973	1640	59.4
1423602004	1080	1640	65.6	980	1640	59.7	1060	1640	64.7
1423290001	1020	1640	62.5	963	1640	58.9	1010	1640	61.9
1423811002	0.00	2600 *	0.00	0.00	2600 *	0.00	0.00	2600 *	0.00

Surrogate	2-Fluorobiphenyl			2,4,6-Tribromophenol			Terphenyl-d14		
QC Limits	38.1	125.1		22.1	146.8		17.7	171.2	
Units	ug/Kg			ug/Kg			ug/Kg		
Lab ID	Result	Target	% Recovery	Result	Target	% Recovery	Result	Target	% Recovery
409359-MB	979	1670	58.8	1160	1670	69.8	1140	1670	68.7
409360-LCS	1090	1670	65.2	1300	1670	78.3	1270	1670	76.4
1423602001	1160	1660	70.1	1130	1660	68.3	1270	1660	76.2
409362-MS	1050	1650	63.9	1080	1650	65.6	1160	1650	70.2
409363-MSD	1100	1640	67.0	1140	1640	69.7	1200	1640	73.5
1423602002	1130	1640	69.1	1190	1640	72.9	1320	1640	80.8
1423602004	1300	1640	79.4	1230	1640	75.1	1330	1640	81.1
1423290001	1180	1640	71.9	1220	1640	74.8	1280	1640	78.5
1423811002	0.00	2600 *	0.00	0.00	2600 *	0.00	0.00	2600 *	0.00

### Comments

Three compounds in the MS/MSD samples, (N-Nitrosodiphenylamine, Bis-(2-ethylhexyl)phthalate, and Phenanthrene), were outside recovery limits. The QC criteria still passes method requirements.

Dilutions were made on samples to protect the integrity of the instrument or to bring compound concentration within the range of the curve.

Surrogates in sample 1423811002 were diluted below reporting limit and don't show up on the surrogate report. Also for sample 1423811002, Bis(2-ethylhexyl)phthalate is reported above the reporting limit and this same compound is in the method blank, which could possibly denote contamination in the sample. Normally we would do a re-extraction for this sample, however, there is not enough sample to perform a re-extract.

### QC Data Approved and Reviewed by

Dustin Calder	Thomas J. Masoian	9/5/2014
<b>Analyst</b>	<b>Peer Review</b>	<b>Date</b>

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit

- RPD - Relative % Difference (Spike / Spike Duplicate)
- ND - Not Detected (U - Qualifier also flags analyte as not detected)
- NA - Not Applicable
- QC results are not adjusted for moisture correction, where applicable



# Quality Control Sample Batch Report

## Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** NA

**Batch:** NA

**Prepared By:** NA

**Analysis:** SW 8260

**Batch:** EVO/5198 (HBN: 133286)

**Analyzed By:** Christopher Q. Coleman

## Blank

**MB:** 407439

**Analyzed:** 08/21/2014 18:27

**Units:** ug/Kg

Analyte	Result	MDL	RL
Dichlorodifluoromethane	ND	1.5	5.00
Chloromethane	ND	1.5	5.00
Vinyl chloride	ND	1.5	5.00
Bromomethane	ND	1.5	5.00
Chloroethane	ND	1.5	5.00
Dichlorofluoromethane	ND	1.5	5.00
Trichlorofluoromethane	ND	1.5	5.00
Ethyl ether	ND	1.5	5.00
1,1-Dichloroethene	ND	1.5	5.00
Freon 113	ND	1.5	5.00
Acetone	ND	1.5	5.00
Iodomethane	ND	2	5.00
Carbon disulfide	ND	1.5	5.00
Methyl Acetate	ND	1.5	5.00
Allyl chloride	ND	1.5	5.00
Methylene chloride	ND	1.5	5.00
trans-1,2-Dichloroethene	ND	1.5	5.00
Methyl-t-butyl ether	ND	1.5	5.00
cis-1,2-Dichloroethene	ND	1.5	5.00
1,1-Dichloroethane	ND	1.5	5.00
2,2-Dichloropropane	ND	1.5	5.00
2-Butanone	ND	1.7	5.00
Ethyl acetate	ND	1.9	5.00
Bromochloromethane	ND	1.5	5.00
Tetrahydrofuran	ND	1.5	5.00
Chloroform	ND	1.5	5.00
1,1,1-Trichloroethane	ND	1.5	5.00
Cyclohexane	ND	1.5	5.00
1,1-Dichloropropene	ND	1.5	5.00
1,2-Dichloroethane	ND	1.5	5.00
Carbon tetrachloride	ND	1.5	5.00
Benzene	ND	1.5	5.00
Trichloroethene	ND	1.5	5.00
Methylcyclohexane	ND	1.5	5.00
1,2-Dichloropropane	ND	1.5	5.00
Dibromomethane	ND	1.5	5.00
Bromodichloromethane	ND	1.5	5.00



# Quality Control Sample Batch Report

## Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** NA

**Batch:** NA

**Prepared By:** NA

**Analysis:** SW 8260

**Batch:** EVO/5198 (HBN: 133286)

**Analyzed By:** Christopher Q. Coleman

## Blank

**MB:** 407439

**Analyzed:** 08/21/2014 18:27

**Units:** ug/Kg

Analyte	Result	MDL	RL
cis-1,3-Dichloropropene	ND	1.5	5.00
4-Methyl-2-pentanone	ND	1.5	5.00
trans-1,3-Dichloropropene	ND	1.5	5.00
Ethyl methacrylate	ND	1.5	5.00
1,1,2-Trichloroethane	ND	1.5	5.00
2-Hexanone	ND	1.5	5.00
1,2-Dibromoethane	ND	1.5	5.00
Toluene	ND	1.5	5.00
1,3-Dichloropropane	ND	1.5	5.00
Dibromochloromethane	ND	1.5	5.00
Bromoform	ND	1.5	5.00
Tetrachloroethene	ND	1.5	5.00
1-Chlorohexane	ND	1.5	5.00
Chlorobenzene	ND	1.5	5.00
1,1,1,2-Tetrachloroethane	ND	1.5	5.00
Ethylbenzene	ND	1.5	5.00
m,p-Xylene	ND	1.5	10.0
o-Xylene	ND	1.5	5.00
Styrene	ND	1.5	5.00
Isopropylbenzene	ND	1.5	5.00
1,1,1,2-Tetrachloroethane	ND	1.5	5.00
Bromobenzene	ND	1.5	5.00
1,2,3-Trichloropropane	ND	1.5	5.00
trans-1,4-Dichloro-2-butene	ND	1.5	5.00
Pentachloroethane	ND	1.5	5.00
n-Propylbenzene	ND	1.5	5.00
1,3,5-Trimethylbenzene	ND	1.5	5.00
2-Chlorotoluene	ND	1.5	5.00
4-Chlorotoluene	ND	1.5	5.00
tert-Butylbenzene	ND	1.5	5.00
1,2,4-Trimethylbenzene	ND	1.5	5.00
sec-Butylbenzene	ND	1.5	5.00
p-Isopropyltoluene	ND	1.5	5.00
1,3-Dichlorobenzene	ND	1.5	5.00
1,4-Dichlorobenzene	ND	1.5	5.00
n-Butylbenzene	ND	1.5	5.00
1,2-Dichlorobenzene	ND	1.5	5.00



## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** NA

**Batch:** NA

**Prepared By:** NA

**Analysis:** SW 8260

**Batch:** EVO/5198 (HBN: 133286)

**Analyzed By:** Christopher Q. Coleman

### Blank

**MB:** 407439

**Analyzed:** 08/21/2014 18:27

**Units:** ug/Kg

Analyte	Result	MDL	RL
1,2-Dibromo-3-Chloropropane	ND	1.5	5.00
1,2,4-Trichlorobenzene	ND	1.5	5.00
Hexachlorobutadiene	ND	1.5	5.00
Naphthalene	ND	1.5	5.00
1,2,3-Trichlorobenzene	ND	1.5	5.00

**MB:** 407440

**Analyzed:** 08/21/2014 18:57

**Units:** ug/Kg

Analyte	Result	MDL	RL
Dichlorodifluoromethane	ND	75	250
Chloromethane	ND	75	250
Vinyl chloride	ND	75	250
Bromomethane	ND	75	250
Chloroethane	ND	75	250
Dichlorofluoromethane	ND	75	250
Trichlorofluoromethane	ND	75	250
Ethyl ether	ND	75	250
1,1-Dichloroethene	ND	75	250
Freon 113	ND	75	250
Acetone	ND	75	250
Iodomethane	ND	100	250
Carbon disulfide	ND	75	250
Methyl Acetate	ND	75	250
Allyl chloride	ND	75	250
Methylene chloride	ND	75	250
trans-1,2-Dichloroethene	ND	75	250
Methyl-t-butyl ether	ND	75	250
cis-1,2-Dichloroethene	ND	75	250
1,1-Dichloroethane	ND	75	250
2,2-Dichloropropane	ND	75	250
2-Butanone	ND	85	250
Ethyl acetate	ND	95	250
Bromochloromethane	ND	75	250
Tetrahydrofuran	ND	75	250
Chloroform	ND	75	250
1,1,1-Trichloroethane	ND	75	250



# Quality Control Sample Batch Report

## Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** NA

**Batch:** NA

**Prepared By:** NA

**Analysis:** SW 8260

**Batch:** EVO/5198 (HBN: 133286)

**Analyzed By:** Christopher Q. Coleman

## Blank

**MB:** 407440

**Analyzed:** 08/21/2014 18:57

**Units:** ug/Kg

Analyte	Result	MDL	RL
Cyclohexane	ND	75	250
1,1-Dichloropropene	ND	75	250
1,2-Dichloroethane	ND	75	250
Carbon tetrachloride	ND	75	250
Benzene	ND	75	250
Trichloroethene	ND	75	250
Methylcyclohexane	ND	75	250
1,2-Dichloropropane	ND	75	250
Dibromomethane	ND	75	250
Bromodichloromethane	ND	75	250
cis-1,3-Dichloropropene	ND	75	250
4-Methyl-2-pentanone	ND	75	250
trans-1,3-Dichloropropene	ND	75	250
Ethyl methacrylate	ND	75	250
1,1,2-Trichloroethane	ND	75	250
2-Hexanone	ND	75	250
1,2-Dibromoethane	ND	75	250
Toluene	ND	75	250
1,3-Dichloropropane	ND	75	250
Dibromochloromethane	ND	75	250
Bromoform	ND	75	250
Tetrachloroethene	ND	75	250
1-Chlorohexane	ND	75	250
Chlorobenzene	ND	75	250
1,1,1,2-Tetrachloroethane	ND	75	250
Ethylbenzene	ND	75	250
m,p-Xylene	ND	75	500
o-Xylene	ND	75	250
Styrene	ND	75	250
Isopropylbenzene	ND	75	250
1,1,1,2,2-Pentachloroethane	ND	75	250
Bromobenzene	ND	75	250
1,2,3-Trichloropropane	ND	75	250
trans-1,4-Dichloro-2-butene	ND	75	250
Pentachloroethane	ND	75	250
n-Propylbenzene	ND	75	250
1,3,5-Trimethylbenzene	ND	75	250



## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** NA

**Batch:** NA

**Prepared By:** NA

**Analysis:** SW 8260

**Batch:** EVO/5198 (HBN: 133286)

**Analyzed By:** Christopher Q. Coleman

### Blank

<b>MB:</b> 407440 <b>Analyzed:</b> 08/21/2014 18:57 <b>Units:</b> ug/Kg			
Analyte	Result	MDL	RL
2-Chlorotoluene	ND	75	250
4-Chlorotoluene	ND	75	250
tert-Butylbenzene	ND	75	250
1,2,4-Trimethylbenzene	ND	75	250
sec-Butylbenzene	ND	75	250
p-Isopropyltoluene	ND	75	250
1,3-Dichlorobenzene	ND	75	250
1,4-Dichlorobenzene	ND	75	250
n-Butylbenzene	ND	75	250
1,2-Dichlorobenzene	ND	75	250
1,2-Dibromo-3-Chloropropane	ND	75	250
1,2,4-Trichlorobenzene	ND	75	250
Hexachlorobutadiene	ND	75	250
Naphthalene	ND	75	250
1,2,3-Trichlorobenzene	ND	75	250

<b>MB:</b> 407654 <b>Analyzed:</b> 08/22/2014 18:55 <b>Units:</b> ug/Kg			
Analyte	Result	MDL	RL
Dichlorodifluoromethane	ND	1.5	5.00
Chloromethane	ND	1.5	5.00
Vinyl chloride	ND	1.5	5.00
Bromomethane	ND	1.5	5.00
Chloroethane	ND	1.5	5.00
Dichlorofluoromethane	ND	1.5	5.00
Trichlorofluoromethane	ND	1.5	5.00
Ethyl ether	ND	1.5	5.00
1,1-Dichloroethene	ND	1.5	5.00
Freon 113	ND	1.5	5.00
Acetone	ND	1.5	5.00
Iodomethane	ND	2	5.00
Carbon disulfide	ND	1.5	5.00
Methyl Acetate	ND	1.5	5.00
Allyl chloride	ND	1.5	5.00
Methylene chloride	ND	1.5	5.00
trans-1,2-Dichloroethene	ND	1.5	5.00





# Quality Control Sample Batch Report

## Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** NA

**Batch:** NA

**Prepared By:** NA

**Analysis:** SW 8260

**Batch:** EVO/5198 (HBN: 133286)

**Analyzed By:** Christopher Q. Coleman

## Blank

**MB:** 407654

**Analyzed:** 08/22/2014 18:55

**Units:** ug/Kg

Analyte	Result	MDL	RL
Methyl-t-butyl ether	ND	1.5	5.00
cis-1,2-Dichloroethene	ND	1.5	5.00
1,1-Dichloroethane	ND	1.5	5.00
2,2-Dichloropropane	ND	1.5	5.00
2-Butanone	ND	1.7	5.00
Ethyl acetate	ND	1.9	5.00
Bromochloromethane	ND	1.5	5.00
Tetrahydrofuran	ND	1.5	5.00
Chloroform	ND	1.5	5.00
1,1,1-Trichloroethane	ND	1.5	5.00
Cyclohexane	ND	1.5	5.00
1,1-Dichloropropene	ND	1.5	5.00
1,2-Dichloroethane	ND	1.5	5.00
Carbon tetrachloride	ND	1.5	5.00
Benzene	ND	1.5	5.00
Trichloroethene	ND	1.5	5.00
Methylcyclohexane	ND	1.5	5.00
1,2-Dichloropropane	ND	1.5	5.00
Dibromomethane	ND	1.5	5.00
Bromodichloromethane	ND	1.5	5.00
cis-1,3-Dichloropropene	ND	1.5	5.00
4-Methyl-2-pentanone	ND	1.5	5.00
trans-1,3-Dichloropropene	ND	1.5	5.00
Ethyl methacrylate	ND	1.5	5.00
1,1,2-Trichloroethane	ND	1.5	5.00
2-Hexanone	ND	1.5	5.00
1,2-Dibromoethane	ND	1.5	5.00
Toluene	ND	1.5	5.00
1,3-Dichloropropane	ND	1.5	5.00
Dibromochloromethane	ND	1.5	5.00
Bromoform	ND	1.5	5.00
Tetrachloroethene	ND	1.5	5.00
1-Chlorohexane	ND	1.5	5.00
Chlorobenzene	ND	1.5	5.00
1,1,1,2-Tetrachloroethane	ND	1.5	5.00
Ethylbenzene	ND	1.5	5.00
m,p-Xylene	ND	1.5	10.0



## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** NA

**Batch:** NA

**Prepared By:** NA

**Analysis:** SW 8260

**Batch:** EVO/5198 (HBN: 133286)

**Analyzed By:** Christopher Q. Coleman

### Blank

**MB:** 407654

**Analyzed:** 08/22/2014 18:55

**Units:** ug/Kg

Analyte	Result	MDL	RL
o-Xylene	ND	1.5	5.00
Styrene	ND	1.5	5.00
Isopropylbenzene	ND	1.5	5.00
1,1,2,2-Tetrachloroethane	ND	1.5	5.00
Bromobenzene	ND	1.5	5.00
1,2,3-Trichloropropane	ND	1.5	5.00
trans-1,4-Dichloro-2-butene	ND	1.5	5.00
Pentachloroethane	ND	1.5	5.00
n-Propylbenzene	ND	1.5	5.00
1,3,5-Trimethylbenzene	ND	1.5	5.00
2-Chlorotoluene	ND	1.5	5.00
4-Chlorotoluene	ND	1.5	5.00
tert-Butylbenzene	ND	1.5	5.00
1,2,4-Trimethylbenzene	ND	1.5	5.00
sec-Butylbenzene	ND	1.5	5.00
p-Isopropyltoluene	ND	1.5	5.00
1,3-Dichlorobenzene	ND	1.5	5.00
1,4-Dichlorobenzene	ND	1.5	5.00
n-Butylbenzene	ND	1.5	5.00
1,2-Dichlorobenzene	ND	1.5	5.00
1,2-Dibromo-3-Chloropropane	ND	1.5	5.00
1,2,4-Trichlorobenzene	ND	1.5	5.00
Hexachlorobutadiene	ND	1.5	5.00
Naphthalene	ND	1.5	5.00
1,2,3-Trichlorobenzene	ND	1.5	5.00

### Laboratory Control Sample - Laboratory Control Sample Duplicate

**LCS:** 407441

**Analyzed:** 08/21/2014 16:25

**Dilution:** 1

**Units:** ug/Kg

Analyte	Result	Target	% Rec	QC Limits
Dichlorodifluoromethane	40.6	50.0	81.2	47.1 135.8
Chloromethane	48.1	50.0	96.3	54.7 134.3
Vinyl chloride	49.9	50.0	99.7	66.9 126.5
Bromomethane	55.3	50.0	111	58.1 140.4
Chloroethane	53.1	50.0	106	63.3 134.8
Dichlorofluoromethane	50.6	50.0	101	60.4 137.5



# Quality Control Sample Batch Report

## Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** NA

**Batch:** NA

**Prepared By:** NA

**Analysis:** SW 8260

**Batch:** EVO/5198 (HBN: 133286)

**Analyzed By:** Christopher Q. Coleman

## Laboratory Control Sample - Laboratory Control Sample Duplicate

**LCS:** 407441

**Analyzed:** 08/21/2014 16:25

**Dilution:** 1

**Units:** ug/Kg

Analyte	Result	Target	% Rec	QC Limits
Trichlorofluoromethane	54.4	50.0	109	75.5 115.6
Ethyl ether	52.7	50.0	105	59.6 134.8
1,1-Dichloroethene	53.3	50.0	107	80.7 137.3
Freon 113	52.7	50.0	105	67.1 131.9
Acetone	43.8	50.0	87.6	42.6 124.9
Iodomethane	49.8	50.0	99.7	62.8 141.1
Carbon disulfide	50.2	50.0	100	71.3 132.1
Methyl Acetate	47.2	50.0	94.3	48.5 111.6
Allyl chloride	48.3	50.0	96.6	68.0 125.0
Methylene chloride	55.2	50.0	111	72.5 125.5
trans-1,2-Dichloroethene	53.9	50.0	108	81.8 125.8
Methyl-t-butyl ether	52.1	50.0	104	61.7 132.2
cis-1,2-Dichloroethene	52.8	50.0	106	73.7 121.1
1,1-Dichloroethane	49.5	50.0	99.0	74.4 123.8
2,2-Dichloropropane	52.2	50.0	104	57.2 134.8
2-Butanone	45.7	50.0	91.3	44.3 119.7
Ethyl acetate	65.9	50.0	132	39.4 232.6
Bromochloromethane	53.9	50.0	108	72.5 129.3
Tetrahydrofuran	54.5	50.0	109	53.8 146.8
Chloroform	53.7	50.0	107	75.8 123.9
1,1,1-Trichloroethane	51.9	50.0	104	69.9 129.4
Cyclohexane	47.3	50.0	94.5	71.5 131.4
1,1-Dichloropropene	45.3	50.0	90.6	83.8 125.2
1,2-Dichloroethane	50.4	50.0	101	70.3 128.6
Carbon tetrachloride	52.3	50.0	105	60.1 138.3
Benzene	47.6	50.0	95.3	78.7 123.4
Trichloroethene	52.0	50.0	104	73.0 126.2
Methylcyclohexane	47.3	50.0	94.7	72.3 132.2
1,2-Dichloropropane	48.6	50.0	97.3	73.2 120.5
Dibromomethane	49.5	50.0	98.9	71.8 126.2
Bromodichloromethane	50.9	50.0	102	69.6 123.3
cis-1,3-Dichloropropene	50.0	50.0	100	65.7 134.0
4-Methyl-2-pentanone	45.4	50.0	90.8	53.0 143.9
trans-1,3-Dichloropropene	52.0	50.0	104	57.5 137.0
Ethyl methacrylate	50.1	50.0	100	52.1 133.8
1,1,2-Trichloroethane	50.8	50.0	102	67.7 121.4
2-Hexanone	39.2	50.0	78.5	28.3 124.6



## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance  
**Basis:** ALS Laboratory Group

**Preparation:** NA  
**Batch:** NA  
**Prepared By:** NA

**Analysis:** SW 8260  
**Batch:** EVO/5198 (HBN: 133286)  
**Analyzed By:** Christopher Q. Coleman

### Laboratory Control Sample - Laboratory Control Sample Duplicate

<b>LCS:</b> 407441 <b>Analyzed:</b> 08/21/2014 16:25 <b>Dilution:</b> 1 <b>Units:</b> ug/Kg					
Analyte	Result	Target	% Rec	QC Limits	
1,2-Dibromoethane	50.9	50.0	102	67.3	127.3
Toluene	47.9	50.0	95.8	76.1	122.5
1,3-Dichloropropane	50.2	50.0	100	68.3	121.7
Dibromochloromethane	55.8	50.0	112	64.2	129.0
Bromoform	55.3	50.0	111	56.0	140.1
Tetrachloroethene	51.1	50.0	102	65.1	128.8
1-Chlorohexane	48.7	50.0	97.5	64.6	130.4
Chlorobenzene	51.0	50.0	102	75.1	122.0
1,1,1,2-Tetrachloroethane	52.6	50.0	105	64.7	130.0
Ethylbenzene	49.7	50.0	99.4	76.3	125.0
m,p-Xylene	98.5	100	98.5	76.3	125.4
o-Xylene	51.1	50.0	102	73.9	123.2
Styrene	50.5	50.0	101	76.6	125.3
Isopropylbenzene	51.2	50.0	102	68.9	140.1
1,1,2,2-Tetrachloroethane	47.1	50.0	94.1	63.8	130.5
Bromobenzene	48.0	50.0	96.0	71.1	124.3
1,2,3-Trichloropropane	46.4	50.0	92.9	60.3	126.9
trans-1,4-Dichloro-2-butene	34.8	50.0	69.7	48.1	119.4
Pentachloroethane	52.8	50.0	106	51.2	155.5
n-Propylbenzene	46.6	50.0	93.1	69.4	131.5
1,3,5-Trimethylbenzene	45.6	50.0	91.1	70.3	128.6
2-Chlorotoluene	47.8	50.0	95.6	67.9	128.2
4-Chlorotoluene	46.6	50.0	93.2	70.3	127.3
tert-Butylbenzene	48.5	50.0	97.1	69.3	129.5
1,2,4-Trimethylbenzene	45.7	50.0	91.4	70.1	127.2
sec-Butylbenzene	47.3	50.0	94.6	67.5	128.9
p-Isopropyltoluene	46.4	50.0	92.9	65.4	128.2
1,3-Dichlorobenzene	47.7	50.0	95.3	71.0	122.0
1,4-Dichlorobenzene	48.9	50.0	97.8	73.2	122.1
n-Butylbenzene	45.4	50.0	90.8	64.4	133.7
1,2-Dichlorobenzene	48.8	50.0	97.5	71.8	120.8
1,2-Dibromo-3-Chloropropane	46.2	50.0	92.5	43.6	133.9
1,2,4-Trichlorobenzene	48.6	50.0	97.2	55.7	132.6
Hexachlorobutadiene	50.6	50.0	101	49.9	132.8
Naphthalene	44.5	50.0	88.9	45.2	137.4
1,2,3-Trichlorobenzene	47.8	50.0	95.7	53.3	130.4



## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance  
**Basis:** ALS Laboratory Group

**Preparation:** NA  
**Batch:** NA  
**Prepared By:** NA

**Analysis:** SW 8260  
**Batch:** EVO/5198 (HBN: 133286)  
**Analyzed By:** Christopher Q. Coleman

### Matrix Spike - Matrix Spike Duplicate

Sample: 1423042004 Analyzed: 08/21/2014 19:26 Dilution: 1 Units: ug/Kg		MS: 1423042005 Analyzed: 08/22/2014 02:29 Dilution: 1 Units: ug/Kg					MSD: 1423042006 Analyzed: 08/22/2014 02:58 Dilution: 1 Units: ug/Kg				
Analyte	Result	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits		
Dichlorodifluoromethane	ND	30.2	38.3	78.9	47.1 135.8	30.2	77.1	0.089	0.0 20.0		
Chloromethane	ND	32.2	38.3	84.1	54.7 134.3	33.1	84.5	2.79	0.0 20.0		
Vinyl chloride	ND	34.7	38.3	90.6	66.9 126.5	35.4	90.3	1.97	0.0 20.0		
Bromomethane	ND	34.4	38.3	90.0	58.1 140.4	36.4	92.8	5.4	0.0 20.0		
Chloroethane	ND	37	38.3	96.8	63.3 134.8	37.7	96.3	1.86	0.0 20.0		
Dichlorofluoromethane	ND	36.3	38.3	94.9	60.4 137.5	38.3	97.7	5.18	0.0 20.0		
Trichlorofluoromethane	ND	36.4	38.3	95.2	75.5 115.6	37.7	96.1	3.29	0.0 20.0		
Ethyl ether	ND	39.9	38.3	104	59.6 134.8	41.4	106	3.6	0.0 20.0		
1,1-Dichloroethene	ND	36.8	38.3	96.1	80.7 137.3	38.1	97.3	3.61	0.0 20.0		
Freon 113	ND	39.1	38.3	102	67.1 131.9	41.2	105	5.26	0.0 20.0		
Acetone	27.0	91.9	38.3	* 168	42.6 124.9	77.6	128	16.9	0.0 20.0		
Iodomethane	ND	34	38.3	88.9	62.8 141.1	39.4	101	14.6	0.0 20.0		
Carbon disulfide	ND	35.5	38.3	92.6	71.3 132.1	37.8	96.3	6.28	0.0 20.0		
Methyl Acetate	ND	51.9	38.3	* 136	48.5 111.6	45.6	116	13	0.0 20.0		
Allyl chloride	ND	31.3	38.3	81.8	68.0 125.0	33.2	84.7	5.81	0.0 20.0		
Methylene chloride	ND	39.5	38.3	103	72.5 125.5	41.8	107	5.5	0.0 20.0		
trans-1,2-Dichloroethene	ND	38.1	38.3	99.5	81.8 125.8	40.3	103	5.56	0.0 20.0		
Methyl-t-butyl ether	ND	41	38.3	107	61.7 132.2	42.6	109	3.69	0.0 20.0		
cis-1,2-Dichloroethene	ND	38.4	38.3	100	73.7 121.1	41	105	6.68	0.0 20.0		
1,1-Dichloroethane	ND	36	38.3	94.1	74.4 123.8	38.4	98.1	6.46	0.0 20.0		
2,2-Dichloropropane	ND	33.6	38.3	87.7	57.2 134.8	36.4	92.9	8.12	0.0 20.0		
2-Butanone	3.10	54.5	38.3	* 142	44.3 119.7	48.5	124	11.7	0.0 20.0		
Ethyl acetate	ND	40.6	38.3	106	39.4 232.6	40.7	104	0.364	0.0 20.0		
Bromochloromethane	ND	40.7	38.3	106	72.5 129.3	43.2	110	5.91	0.0 20.0		
Tetrahydrofuran	ND	51.5	38.3	135	53.8 146.8	48.3	123	6.57	0.0 20.0		
Chloroform	ND	38	38.3	99.2	75.8 123.9	41	105	7.6	0.0 20.0		
1,1,1-Trichloroethane	ND	36	38.3	94.1	69.9 129.4	38.7	98.7	7.11	0.0 20.0		
Cyclohexane	ND	35.2	38.3	91.9	71.5 131.4	37.5	95.6	6.26	0.0 20.0		
1,1-Dichloropropene	ND	35	38.3	91.3	83.8 125.2	37.6	95.8	7.16	0.0 20.0		
1,2-Dichloroethane	ND	36.3	38.3	94.8	70.3 128.6	38.6	98.5	6.23	0.0 20.0		
Carbon tetrachloride	ND	35.1	38.3	91.6	60.1 138.3	37.6	95.9	6.9	0.0 20.0		
Benzene	ND	35	38.3	91.4	78.7 123.4	37.2	94.9	6.17	0.0 20.0		
Trichloroethene	ND	36.9	38.3	96.3	73.0 126.2	38.6	98.6	4.64	0.0 20.0		
Methylcyclohexane	ND	32.6	38.3	85.1	72.3 132.2	37	94.4	12.7	0.0 20.0		
1,2-Dichloropropane	ND	35.2	38.3	92.0	73.2 120.5	36.3	92.6	2.93	0.0 20.0		
Dibromomethane	ND	40.5	38.3	106	71.8 126.2	40.8	104	0.893	0.0 20.0		
Bromodichloromethane	ND	35.6	38.3	92.9	69.6 123.3	38.3	97.8	7.5	0.0 20.0		



## Quality Control Sample Batch Report

### Analysis Information

**Workorder: 1423290**

**Limits:** Historical/Performance  
**Basis:** ALS Laboratory Group

**Preparation:** NA  
**Batch:** NA  
**Prepared By:** NA

**Analysis:** SW 8260  
**Batch:** EVO/5198 (HBN: 133286)  
**Analyzed By:** Christopher Q. Coleman

### Matrix Spike - Matrix Spike Duplicate

Sample: 1423042004 Analyzed: 08/21/2014 19:26 Dilution: 1 Units: ug/Kg		MS: 1423042005 Analyzed: 08/22/2014 02:29 Dilution: 1 Units: ug/Kg					MSD: 1423042006 Analyzed: 08/22/2014 02:58 Dilution: 1 Units: ug/Kg				
Analyte	Result	Result	Target	% Rec	QC Limits		Result	% Rec	RPD	QC Limits	
cis-1,3-Dichloropropene	ND	32.5	38.3	84.8	65.7	134.0	35.5	90.7	9.1	0.0	20.0
4-Methyl-2-pentanone	ND	46.2	38.3	121	53.0	143.9	43.3	111	6.36	0.0	20.0
trans-1,3-Dichloropropene	ND	35.3	38.3	92.2	57.5	137.0	37.4	95.3	5.71	0.0	20.0
Ethyl methacrylate	ND	42.7	38.3	112	52.1	133.8	43	110	0.607	0.0	20.0
1,1,2-Trichloroethane	ND	40.4	38.3	106	67.7	121.4	41.6	106	2.76	0.0	20.0
2-Hexanone	ND	41	38.3	107	28.3	124.6	36.7	93.7	11	0.0	20.0
1,2-Dibromoethane	ND	41	38.3	107	67.3	127.3	42.6	109	3.86	0.0	20.0
Toluene	ND	36.6	38.3	95.6	76.1	122.5	37.3	95.1	1.81	0.0	20.0
1,3-Dichloropropane	ND	38.7	38.3	101	68.3	121.7	40	102	3.35	0.0	20.0
Dibromochloromethane	ND	40.9	38.3	107	64.2	129.0	42.7	109	4.47	0.0	20.0
Bromoform	ND	41.8	38.3	109	56.0	140.1	43.3	110	3.36	0.0	20.0
Tetrachloroethene	ND	36.5	38.3	95.3	65.1	128.8	39.6	101	8.24	0.0	20.0
1-Chlorohexane	ND	33.1	38.3	86.5	64.6	130.4	37.1	94.6	11.3	0.0	20.0
Chlorobenzene	ND	36.4	38.3	95.0	75.1	122.0	38.9	99.3	6.72	0.0	20.0
1,1,1,2-Tetrachloroethane	ND	37.4	38.3	97.6	64.7	130.0	40	102	6.79	0.0	20.0
Ethylbenzene	ND	35.8	38.3	93.5	76.3	125.0	37.8	96.4	5.32	0.0	20.0
m,p-Xylene	ND	72.9	76.6	95.2	76.3	125.4	75.3	96.0	3.19	0.0	20.0
o-Xylene	ND	37.2	38.3	97.3	73.9	123.2	38.7	98.9	3.94	0.0	20.0
Styrene	ND	34.6	38.3	90.3	76.6	125.3	37.5	95.8	8.16	0.0	20.0
Isopropylbenzene	ND	34.5	38.3	90.0	68.9	140.1	38.5	98.2	11	0.0	20.0
1,1,2,2-Tetrachloroethane	ND	44.2	38.3	115	63.8	130.5	41.9	107	5.41	0.0	20.0
Bromobenzene	ND	38.7	38.3	101	71.1	124.3	39.9	102	3.15	0.0	20.0
1,2,3-Trichloropropane	ND	47.3	38.3	124	60.3	126.9	43.4	111	8.67	0.0	20.0
trans-1,4-Dichloro-2-butene	ND	41.4	38.3	108	48.1	119.4	39.5	101	4.53	0.0	20.0
Pentachloroethane	ND	40.6	38.3	106	51.2	155.5	41.5	106	2.25	0.0	20.0
n-Propylbenzene	ND	35.1	38.3	91.7	69.4	131.5	37.7	96.3	7.12	0.0	20.0
1,3,5-Trimethylbenzene	ND	36.2	38.3	94.6	70.3	128.6	36.1	92.1	0.359	0.0	20.0
2-Chlorotoluene	ND	36.6	38.3	95.6	67.9	128.2	37.7	96.3	2.99	0.0	20.0
4-Chlorotoluene	ND	35.4	38.3	92.5	70.3	127.3	36.5	93.3	3.13	0.0	20.0
tert-Butylbenzene	ND	34.6	38.3	90.4	69.3	129.5	38.6	98.4	10.8	0.0	20.0
1,2,4-Trimethylbenzene	ND	41.3	38.3	108	70.1	127.2	36.9	94.0	11.3	0.0	20.0
sec-Butylbenzene	ND	30.7	38.3	80.1	67.5	128.9	35.7	91.0	15	0.0	20.0
p-Isopropyltoluene	ND	31	38.3	81.0	65.4	128.2	35.4	90.5	13.3	0.0	20.0
1,3-Dichlorobenzene	ND	34	38.3	88.9	71.0	122.0	38.3	97.8	11.8	0.0	20.0
1,4-Dichlorobenzene	ND	34.6	38.3	90.4	73.2	122.1	36.1	92.1	4.19	0.0	20.0
n-Butylbenzene	ND	26.8	38.3	70.0	64.4	133.7	32.2	82.2	18.3	0.0	20.0
1,2-Dichlorobenzene	ND	34.9	38.3	91.3	71.8	120.8	38.1	97.1	8.55	0.0	20.0



## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance  
**Basis:** ALS Laboratory Group

**Preparation:** NA  
**Batch:** NA  
**Prepared By:** NA

**Analysis:** SW 8260  
**Batch:** EVO/5198 (HBN: 133286)  
**Analyzed By:** Christopher Q. Coleman

### Matrix Spike - Matrix Spike Duplicate

Sample: 1423042004 Analyzed: 08/21/2014 19:26 Dilution: 1 Units: ug/Kg		MS: 1423042005 Analyzed: 08/22/2014 02:29 Dilution: 1 Units: ug/Kg					MSD: 1423042006 Analyzed: 08/22/2014 02:58 Dilution: 1 Units: ug/Kg				
Analyte	Result	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits		
1,2-Dibromo-3-Chloropropane	ND	45.7	38.3	119	43.6 133.9	43.2	110	5.71	0.0 20.0		
1,2,4-Trichlorobenzene	ND	23	38.3	60.2	55.7 132.6	31.4	80.2	* 30.8	0.0 20.0		
Hexachlorobutadiene	ND	16.7	38.3	* 43.5	49.9 132.8	27.1	69.1	* 47.7	0.0 20.0		
Naphthalene	ND	30.5	38.3	79.7	45.2 137.4	36.1	92.1	16.8	0.0 20.0		
1,2,3-Trichlorobenzene	ND	22.4	38.3	58.4	53.3 130.4	30.7	78.4	* 31.5	0.0 20.0		

### Surrogate Recoveries

Surrogate	1,2-Dichloroethane-d4			Toluene-d8			4-Bromofluorobenzene		
QC Limits	62.5		135.4	61.1		136.7	52.4		149.8
Units	ug/Kg			ug/Kg			ug/Kg		
Lab ID	Result	Target	% Recovery	Result	Target	% Recovery	Result	Target	% Recovery
407441-LCS	50.4	50.0	101	50.3	50.0	101	45.8	50.0	91.7
407439-MB	46.9	50.0	93.9	48.5	50.0	97.1	46.8	50.0	93.7
407440-MB	45.5	50.0	90.9	49.6	50.0	99.2	46.4	50.0	92.8
1423042004	51.5	50.0	103	48.3	50.0	96.6	47.9	50.0	95.8
1423042009	52.0	50.0	104	48.0	50.0	96.0	46.7	50.0	93.4
1423042011	53.7	50.0	107	60.9	50.0	122	67.2	50.0	134
1423042015	54.3	50.0	109	49.0	50.0	98.1	50.1	50.0	100
1423042016	52.1	50.0	104	52.9	50.0	106	58.3	50.0	117
1423042017	49.9	50.0	99.7	48.7	50.0	97.5	49.1	50.0	98.1
1423042023	50.6	50.0	101	48.8	50.0	97.7	49.0	50.0	98.0
1423042008	50.5	50.0	101	54.0	50.0	108	59.9	50.0	120
1423042001	41.6	50.0	83.1	48.8	50.0	97.6	47.9	50.0	95.8
1423042002	44.8	50.0	89.5	49.6	50.0	99.2	47.6	50.0	95.1
1423042003	43.6	50.0	87.2	49.9	50.0	99.8	47.5	50.0	95.1
1423042014	44.8	50.0	89.7	49.2	50.0	98.4	46.6	50.0	93.2
1423042021	45.4	50.0	90.7	48.4	50.0	96.8	46.1	50.0	92.2
1423042005-MS	52.0	50.0	104	51.3	50.0	103	49.9	50.0	99.8
1423042006-MSD	52.0	39.2	133	50.1	39.2	128	47.2	39.2	121
407654-MB	47.1	50.0	94.1	47.9	50.0	95.7	45.9	50.0	91.8
1423290001	46.4	50.0	92.7	48.6	50.0	97.3	50.8	50.0	102
1423042010	50.4	50.0	101	47.4	50.0	94.8	46.5	50.0	93.0

### Comments

8260 VOA Soil Comments: MS/MSD failures are likely the result of matrix effect.



# Quality Control Sample Batch Report

## Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** NA

**Batch:** NA

**Prepared By:** NA

**Analysis:** SW 8260

**Batch:** EVO/5198 (HBN: 133286)

**Analyzed By:** Christopher Q. Coleman

## QC Data Approved and Reviewed by

<u>Christopher Q. Coleman</u>	<u>Thomas J. Masoian</u>	<u>8/26/2014</u>
Analyst	Peer Review	Date

## Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)  
 ND - Not Detected (U - Qualifier also flags analyte as not detected)  
 NA - Not Applicable  
 QC results are not adjusted for moisture correction, where applicable





## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance

**Basis:** ALS Laboratory Group

**Preparation:** NA

**Batch:** NA

**Prepared By:** NA

**Analysis:** SW 9045

**Batch:** EWC/5243 (HBN: 133514)

**Analyzed By:** Brittney Austin

### Laboratory Control Sample - Laboratory Control Sample Duplicate

**LCS:** 407990

**Analyzed:** 08/26/2014 12:30

**Dilution:** 1

**Units:** pH

Analyte	Result	Target	% Rec	QC Limits	
pH	7.99	8.00	99.9	98.4	101.1

### QC Data Approved and Reviewed by

Brittney Austin	Whitney Redd	8/27/2014
Analyst	Peer Review	Date

### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)  
 ND - Not Detected (U - Qualifier also flags analyte as not detected)  
 NA - Not Applicable  
 QC results are not adjusted for moisture correction, where applicable



## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance  
**Basis:** ALS Laboratory Group

**Preparation:** NA  
**Batch:** NA  
**Prepared By:** NA

**Analysis:** SW 9012  
**Batch:** EWC/5249 (HBN: 133566)  
**Analyzed By:** Christopher R. Hansen

### Blank

**LMB:** 408141  
**Analyzed:** 08/26/2014 18:11  
**Units:** ug/L

Analyte	Result	MDL	RL
Cyanide	ND	3	10.0

### Laboratory Control Sample - Laboratory Control Sample Duplicate

**LCS:** 408142  
**Analyzed:** 08/26/2014 18:11  
**Dilution:** 1  
**Units:** ug/L

Analyte	Result	Target	% Rec	QC Limits
Cyanide	98.1	99.0	99.1	84.8   113.8

### Matrix Spike - Matrix Spike Duplicate

**Sample:** 1423602004  
**Analyzed:** 08/26/2014 18:19  
**Dilution:** 1  
**Units:** ug/g

**MS:** 408146  
**Analyzed:** 08/26/2014 18:20  
**Dilution:** 1  
**Units:** ug/g

**MSD:** 408147  
**Analyzed:** 08/26/2014 18:22  
**Dilution:** 1  
**Units:** ug/g

Analyte	Result	Result	Target	% Rec	QC Limits	Result	% Rec	RPD	QC Limits
Cyanide	2.00	3.52	1.1	* 138	84.8   113.8	3.15	108	11.1	0.0   20.0

### Comments

Cyanide recovery in the matrix spike is greater than the upper control limit. Matrix effects are suspected.

### QC Data Approved and Reviewed by

<u>Christopher R. Hansen</u> <b>Analyst</b>	<u>Whitney Redd</u> <b>Peer Review</b>	<u>8/28/2014</u> <b>Date</b>
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### Symbols and Definitions

- \* - Analyte above reporting limit or outside of control limits
- ▲ - Sample result is greater than 4 times the spike added
- - Sample and Matrix Duplicate less than 5 times the reporting limit

RPD - Relative % Difference (Spike / Spike Duplicate)  
 ND - Not Detected (U - Qualifier also flags analyte as not detected)  
 NA - Not Applicable  
 QC results are not adjusted for moisture correction, where applicable



## Quality Control Sample Batch Report

### Analysis Information

**Workorder:** 1423290

**Limits:** Historical/Performance  
**Basis:** ALS Laboratory Group

**Preparation:** NA  
**Batch:** NA  
**Prepared By:** NA

**Analysis:** SW 9034  
**Batch:** EWC/5257 (HBN: 133673)  
**Analyzed By:** Whitney Redd

### Blank

**LMB:** 408455  
**Analyzed:** 08/29/2014 08:00  
**Units:** ug/g

Analyte	Result	MDL	RL
Sulfide	ND	24	50.0

### Laboratory Control Sample - Laboratory Control Sample Duplicate

**LCS:** 408456  
**Analyzed:** 08/29/2014 08:00  
**Dilution:** 1  
**Units:** ug/g

Analyte	Result	Target	% Rec	QC Limits	
Sulfide	293	403	72.7	0.0	169.6

### QC Data Approved and Reviewed by

<u>Whitney Redd</u>	<u>Neil A. Edwards</u>	<u>8/29/2014</u>
<b>Analyst</b>	<b>Peer Review</b>	<b>Date</b>

### Symbols and Definitions

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**ALS LABORATORY GROUP SALT LAKE CITY-RELATED INFORMATION REPORT (CRIR)**

**COOLER OR CONTAINER INFORMATION CHECKLIST (Fill In or Circle)**

Client Name: Washington Closure

Project/Task/Site: 1423290

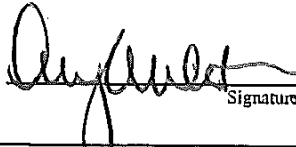
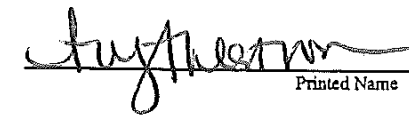
Date/Time of Receipt: 08/20/14 11:20

Number of Coolers Received: 1 BOX

Condition of Coolers:	Acceptable/Unacceptable	Temperature Control:	Present/Not Included
Cooler Custody Seals:	Present/Absent/NA	Location Temp Taken:	Control/ <u>Between Samples</u>
Container Custody Seals:	Intact/Broken/NA	Are all temperatures within project specific guidelines?	Yes/No/NA
Tamper Evident:	Present/Absent/NA	VOA Headspace Present?	Yes/No/NA
Ice Present:	Intact/Broken/NA		
	Yes/No/NA		
	Yes/No/NA		
	Frozen/Melted/NA		

pH Check Performed:	Metals	Yes/No/NA	Total Phenolics	Yes/No/NA	NO3/NO2	Yes/No/NA
	Cyanide	Yes/No/NA	TPH - 418.1	Yes/No/NA	Oil & Grease	Yes/No/NA
	Sulfide	Yes/No/NA	COD	Yes/No/NA	Total Phosphorous	Yes/No/NA
	Ammonia	Yes/No/NA	TKN	Yes/No/NA	TOC Preserved	Yes/No/NA

Cooler Received	ALS Cooler No.	Temp.	Cooler Received	ALS Cooler No.	Temp.	Cooler Received	ALS Cooler No.	Temp.
1	C14 <u>5450</u>	<u>21</u> °C	4	C14	°C	7	C14	°C
2	C14	°C	5	C14	°C	8	C14	°C
3	C14	°C	6	C14	°C	9	C14	°C

Taken By:   08/20/14  
Signature Printed Name Date

**CLIENT-RELATED INFORMATION**

- |  |   |  |   |
|--|---|--|---|
| <input type="checkbox"/> Missing Cooler                  | <input type="checkbox"/> Missing Samples/Bottles          | <input type="checkbox"/> Incorrect Preservation    | <input type="checkbox"/> Insufficient Sample Volume |
| <input type="checkbox"/> Cooler Conditions               | <input type="checkbox"/> Broken/Leaking Samples           | <input type="checkbox"/> pH Criteria Not Met       | <input type="checkbox"/> Chain of Custody Problems  |
| <input type="checkbox"/> Missing Paperwork               | <input type="checkbox"/> Incorrect Bottle Type            | <input type="checkbox"/> Residual Chlorine Present | <input type="checkbox"/> Other:                     |
| <input type="checkbox"/> Missing/Incorrect Bottle Labels | <input type="checkbox"/> Cooler Temperatures Out of Range | <input type="checkbox"/> Head Space in Bottles     |   |

**BRIEFLY DESCRIBE THE PROBLEM AND THE ACTION TAKEN:**

E-mailed to Client? YES  NO

**Response Required Within 24 Hours**

**PROJECT MANAGEMENT**

**PROJECT MANAGER COMMENTS:**

ALS Project Manager: \_\_\_\_\_ Returned to Sample Receipt by: \_\_\_\_\_ Date: \_\_\_\_\_  
Printed Name Signature