

DECEMBER 11, 2012

**WSCF Laboratory**

PO Box 650 S3-30  
Richland, WA 99352



December 11, 2012

Scot Fitzgerald  
CH2M-HILL PRC  
PO Box 1600  
Richland, WA 99352

Dear Scot Fitzgerald,

**FINAL RESULT FOR SAMPLE DELIVERY GROUP WSCF121518**

Reference: (1) SOW, Mod 2, #36587, Release 3  
(2) MSC-SD-CD-QAPP-017, current version, Waste Sampling & Characterization Facility Quality Assurance Program Plan

This letter contains the following information for sample delivery group WSCF121518

- \* Cover Sheet (Attachment 1)
- \* Narrative (Attachment 2)
- \* Analytical Results (Attachment 3)
- \* Sample Receipt Information (Attachment 4)

Very truly yours,

An electronic signature of Dan T. Smith, which appears as a stylized, handwritten line.

Electronically signed by Joseph Hale  
For Lab Manager, Dan T. Smith  
WSCF Analytical Lab  
(509) 373-4804

Attachments 4

CC: w/Attachments

File/LB

**DECEMBER 11, 2012**

**ATTACHMENT 1**

**COVER SHEET**

Consisting of 2 pages  
Including cover page

**WSCF SAF Number Cross Reference**

---

Group # WSCF121518  
Data Deliverable Date 12/31/12

SAF #	Sample ID	Sample #	Matrix	Sampled	Received
S13-010	B2M594	121518001	WATER	11/28/12	11/29/12
S13-010	B2M593	121518002	WATER	11/28/12	11/29/12

DECEMBER 11, 2012

ATTACHMENT 2

**NARRATIVE**

Consisting of 3 pages  
Including cover page

**Introduction**

Samples were received at the WSCF laboratory as referenced on the WSCF SAF Number Cross Reference table included in the final report. The samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Statement of Work (SOW), Master Contract 39818, Revision 3, "Laboratory Analytical Services to CHPRC Soil and Groundwater Remediation Project."*

The narrative (Attachment 2) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 3) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information as applicable. Copies of the chain of custody and sample receipt documentation are included as Attachment 4.

It should be noted that the attached chain of custody was not stamped "ICED" by the WSCF Laboratory Sample Custodian during sample receiving. However, based on procedure LO-090-403 form "NOTICE OF IMPROPER SAMPLE SUBMITTAL" was not submitted and was not stamped "NOT ICED". No anomaly was noted during sample receipt.

The following generic data qualifiers (i.e., B, C, D, J and U) may be applicable to this report, as appropriate.

- **B** – Sample results with a concentration greater than the MDL but less than the PQL are B flagged (applies to inorganic and wet chemical analyses), as appropriate.
- **C** – Analyte was detected in the blank and was evaluated. Affected sample results in the batch were C flagged (applies to inorganic and wet chemical analyses).
- **D** – Sample results are D flagged if dilution(s) were required, as appropriate.
- **J** – Sample results with a concentration greater than the MDL but less than the PQL are J flagged (applies to organic analyses), as appropriate.
- **B (organic analyses)** – Analyte was detected in the blank and was evaluated. Affected sample results in the batch were B flagged.
- **U** – Analyzed for but not detected above limiting criteria. Relative Percent Difference (RPD) values associated with an analyte qualified with a "U" are not applicable.

**Analytical Methodology for Requested Analyses**

Refer to *WSCF Method References Report* for a complete listing of approved analytical methods.

**Inorganic Comments**

Attachment 2  
**Narrative**  
WSCF121518

**Anions** – Hold time requirements for this analysis were met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group.  
Analytical Note(s):

- All applicable QC controls are within the established limits.

**Organic Comments**

**VOA** – The hold time requirement for this analysis was met. A Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group.  
Analytical Note(s):

- All applicable QC controls are within the established limits.

We certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package has been authorized by the Analytical Laboratory Manager (or designee) and the Client Services representative as verified by electronic signatures shown on the WSCF ANALYTICAL RESULTS REPORT.

DECEMBER 11, 2012

ATTACHMENT 3

**ANALYTICAL RESULTS**

Consisting of 17 pages  
Including cover page

DECEMBER 11, 2012

## WSCF ANALYTICAL RESULTS REPORT

For

CH2M Hill Plateau Remediation

PO Box 1600  
Richland, WA 99352

Attention: Scot Fitzgerald

**Contract #** MOA-FH-CHPRC-2008  
**Group #** WSCF121518  
**Report Date** December 11, 2012

Analytical: Electronically signed by Joseph Hale

Client Services: Electronically signed by Marisol Avila

*Solid samples results that have a 'Percent Solid' test are reported on a "dry weight basis", except results of TCLP, Percent Solid, and Total Activity. If no 'Percent Solid' test is reported then the results are reported on an "as received" basis.*

This information is intended for the use of the addressee only. If the reader of this report is not the intended recipient or is not authorized by the recipient to receive the report, you are hereby notified that any dissemination, distribution or copying of this report is strictly prohibited. If you have received this report in error, please notify WSCF Laboratory immediately by telephone at (509) 373-7005. Information designation of this report is the responsibility of the customer.

## Batch QC List

Attention Scot Fitzgerald  
 Department Inorganic

Group # WSCF121518

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
211023	211023	2	BLANK	85805	BLANK		Anions by Ion Chromatography (Water)
211023	211023	3	LCS	85806	LCS		Anions by Ion Chromatography (Water)
211023	211023	4	DUP	85807	B2M5W6(121519002DUP	121519002	Anions by Ion Chromatography (Water)
211023	211023	5	MS	85808	B2M5W6(121519002MS)	121519002	Anions by Ion Chromatography (Water)
211023	211023	6	MSD	85809	B2M5W6(121519002MSD	121519002	Anions by Ion Chromatography (Water)
211023	211023	8	SAMPLE	121518001	B2M594		Anions by Ion Chromatography (Water)

# DECEMBER 11, 2012

## Batch QC List

Attention Scot Fitzgerald  
Department Organic, Volatiles

Group # WSCF121518

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
210935	210936	1	BLANK	85738	BLANK		SW-846 8260B Volatiles
210935	210936	2	LCS	85739	LCS		SW-846 8260B Volatiles
210935	210936	3	MS	85740	B2MYH9(121507003MS) 121507003		SW-846 8260B Volatiles
210935	210936	4	MSD	85741	B2MYH9(121507003MSD 121507003		SW-846 8260B Volatiles
210935	210936	13	SAMPLE	121518002	B2M593		SW-846 8260B Volatiles

Attention Scot Fitzgerald  
Department Inorganic

Group # WSCF121518

The results provided in this report were generated using the following WSCF Laboratory procedures. For your convenience, this table provides a listing of the regulatory, industry methods or HEIS methods that are referenced by each of these WSCF procedures. Please note that the most recent version of the regulatory or industry method is listed here even though WSCF procedure may reference an older version of the method. Also, a reference to a regulatory or industry method here does not necessarily indicate a verbatim implementation of that method.

LA-533-410	Anion Analysis by Ion Chromatography		
	EPA-600/R-94-111	300.0	Determination of Inorganic Anions by Ion Chromatography
	HEIS	300.0_ANIONS_IC	Determination of Inorganic Anions by Ion Chromatography

Note: A complete list of WSCF analytical procedures and reference regulatory or industry methods is available online at <http://www7.rl.gov/rapidweb/AS-DOL/index.cfm>

Attention Scot Fitzgerald  
Department Organic, Volatiles

Group # WSCF121518

The results provided in this report were generated using the following WSCF Laboratory procedures. For your convenience, this table provides a listing of the regulatory, industry methods or HEIS methods that are referenced by each of these WSCF procedures. Please note that the most recent version of the regulatory or industry method is listed here even though WSCF procedure may reference an older version of the method. Also, a reference to a regulatory or industry method here does not necessarily indicate a verbatim implementation of that method.

LA-523-455	Volatile Sample Analysis by SW-846 Method 8260B	
	EPA SW-846	8000B
	EPA SW-846	8260B
	HEIS	8260_VOA_GCMS
		Determinative Chromographic Separations
		Volatile Organic Compounds by Gas
		Chromatography/Mass Spectrometry (GC/MS)
		Volatile Organic Compounds by Gas
		Chromatography/Mass Spectrometry (GC/MS)

Note: A complete list of WSCF analytical procedures and reference regulatory or industry methods is available online at <http://www7.rl.gov/rapidweb/AS-DOL/index.cfm>

**Attention** Scot Fitzgerald  
**Department** Inorganic

**Group #** WSCF121518

**Sample #** 121518001  
**SAF#** S13-010  
**Sample ID** B2M594

**Matrix** WATER  
**Sampled** 11/28/12  
**Received** 11/29/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
11/29/12										
<b>Anions by Ion Chromatography (Water)</b>										
Fluoride	16984-48-8	LA-533-410	D	0.550		ug/mL	2	0.046	0.14	11/29/12
Chloride	16887-00-6	LA-533-410	D	20.7		ug/mL	2	0.12	0.81	11/29/12
Nitrite-N	NO2-N	LA-533-410	BD	0.0459		ug/mL	2	0.038	0.20	11/29/12
Nitrate-N	NO3-N	LA-533-410	D	7.42		ug/mL	2	0.038	0.20	11/29/12
Sulfate	14808-79-8	LA-533-410	D	70.8		ug/mL	2	0.22	2.1	11/29/12

MDL = Minimum Detection Limit

RQ = Result Qualifier

TP Err = Total Propagated Error

DF = Dilution Factor

+ - Indicates more than nine qualifier

B - Analyte < the PQL(or EQL)but >= the IDL/MDL(Inorganic)

C - Analyte was found in the Associated Blank. (Inorganic)

D - Analyte was reported at a secondary dilution factor.

E - Analyte is an estimate, see comment section.

N - MS and/or MSD recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.

X,Y or Z - See comment detail and/or narrative.

PQL is equivalent to Estimated Quantitation Limit (EQL)

o - LCS recovery outside established laboratory acceptance limits.

o - LCS recovery outside established laboratory acceptance limits.

**Attention** Scot Fitzgerald  
**Department** Organic, Volatiles

**Group #** WSCF121518

**Sample #** 121518002  
**SAF#** S13-010  
**Sample ID** B2M593

**Matrix** WATER  
**Sampled** 11/28/12  
**Received** 11/29/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
<b>Preparation for 8260B (W)</b>										11/29/12
<b>SW-846 8260B Volatiles</b>										
1,1-Dichloroethene	75-35-4	LA-523-455	U	<1		ug/L	1	1	5	11/29/12
Trichloroethene	79-01-6	LA-523-455		12		ug/L	1	1	5	11/29/12
Benzene	71-43-2	LA-523-455	U	<1		ug/L	1	1	5	11/29/12
Toluene	108-88-3	LA-523-455	U	<1		ug/L	1	1	5	11/29/12
Chlorobenzene	108-90-7	LA-523-455	U	<1		ug/L	1	1	5	11/29/12
1,1-Dichloroethane	75-34-3	LA-523-455	U	<1		ug/L	1	1	5	11/29/12
Ethylbenzene	100-41-4	LA-523-455	U	<1		ug/L	1	1	5	11/29/12
1,2-Dichloroethane	107-06-2	LA-523-455	U	<1		ug/L	1	1	5	11/29/12
Methyl isobutyl ketone	108-10-1	LA-523-455	U	<1		ug/L	1	1	5	11/29/12
Tetrachloroethene	127-18-4	LA-523-455	U	<1		ug/L	1	1	5	11/29/12
Total Xylenes	1330-20-7	LA-523-455	U	<1		ug/L	1	1	5	11/29/12
Carbon tetrachloride	56-23-5	LA-523-455	U	<1		ug/L	1	1	5	11/29/12
Acetone	67-64-1	LA-523-455	U	<1		ug/L	1	1	5	11/29/12
Chloroform	67-66-3	LA-523-455	U	<1		ug/L	1	1	5	11/29/12
1,1,1-Trichloroethane	71-55-6	LA-523-455	U	<1		ug/L	1	1	5	11/29/12
Vinyl chloride	75-01-4	LA-523-455	U	<1		ug/L	1	1	5	11/29/12
Methylene chloride	75-09-2	LA-523-455	U	<1		ug/L	1	1	5	11/29/12

MDL = Minimum Detection Limit

RQ = Result Qualifier

TP Err = Total Propagated Error

DF = Dilution Factor

+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE

D - Analyte was reported at a secondary dilution factor.

E - The calibration exceeds the calibration range (GC/MS).

J - Analyte < PQL (or EQL) >= MDL.

N - Presumed evidence based on MS library search(GC/MS only)

T - GC/MS or N - Non GC/MS - MS/MSD recovery outside control limits

U - Analyzed for but not detected above limiting criteria.

X,Y or Z - See comment detail and/or narrative.

PQL is equivalent to Estimated Quantitation Limit (EQL)

o - LCS recovery outside established laboratory acceptance limits.

**Attention** Scot Fitzgerald  
**Department** Organic, Volatiles

**Group #** WSCF121518

<b>Sample #</b>	121518002	<b>Matrix</b>	WATER
<b>SAF#</b>	S13-010	<b>Sampled</b>	11/28/12
<b>Sample ID</b>	B2M593	<b>Received</b>	11/29/12

<b>Test Performed</b>	<b>CAS #</b>	<b>Method</b>	<b>RQ</b>	<b>Result</b>	<b>TP Err</b>	<b>Units</b>	<b>DF</b>	<b>MDL</b>	<b>PQL</b>	<b>Analyzed</b>
Carbon disulfide	75-15-0	LA-523-455	U	<1		ug/L	1	1	5	11/29/12
Methyl ethyl ketone	78-93-3	LA-523-455	U	<1		ug/L	1	1	5	11/29/12
1,1,2-Trichloroethane	79-00-5	LA-523-455	U	<1		ug/L	1	1	5	11/29/12
1-Butanol	71-36-3	LA-523-455	U	<100		ug/L	1	100	500	11/29/12
Tetrahydrofuran	109-99-9	LA-523-455	U	<2		ug/L	1	2	10	11/29/12
trans-1,2-Dichloroethene	156-60-5	LA-523-455	U	<1		ug/L	1	1	5	11/29/12
cis-1,2-Dichloroethene	156-59-2	LA-523-455	U	<1		ug/L	1	1	5	11/29/12
Propionitrile	107-12-0	LA-523-455	U	<2		ug/L	1	2	10	11/29/12
1,4-Dichlorobenzene	106-46-7	LA-523-455	U	<1		ug/L	1	1	5	11/29/12

MDL = Minimum Detection Limit

RQ = Result Qualifier

TP Err = Total Propagated Error

DF = Dilution Factor

+ - Indicates more than nine qualifier

B - Analyte was detected in both the BLANK and SAMPLE

D - Analyte was reported at a secondary dilution factor.

E - The calibration exceeds the calibration range (GC/MS).

J - Analyte < PQL (or EQL) >= MDL.

N - Presumed evidence based on MS library search(GC/MS only)

T - GC/MS or N - Non GC/MS - MS/MSD recovery outside control limits

U - Analyzed for but not detected above limiting criteria.

X,Y or Z - See comment detail and/or narrative.

PQL is equivalent to Estimated Quantitation Limit (EQL)

o - LCS recovery outside established laboratory acceptance limits.

## Quality Control Report

DECEMBER 11, 2012

**Attention** Scot Fitzgerald  
**Department** Organic, Volatiles

**Group #**

WSCF121518

**Analytical Batch** 210936 (QC Batch: 210935)      **Test** SW-846 8260B Volatiles  
**Associated Samples** 121518002

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
<b>BLANK</b>										<b>QC Sample #85738</b>
1,1-Dichloroethene	75-35-4		<1	ug/L				U		11/29/12
Trichloroethene	79-01-6		<1	ug/L				U		11/29/12
Benzene	71-43-2		<1	ug/L				U		11/29/12
Toluene	108-88-3		<1	ug/L				U		11/29/12
Chlorobenzene	108-90-7		<1	ug/L				U		11/29/12
1,1-Dichloroethane	75-34-3		<1	ug/L				U		11/29/12
Ethylbenzene	100-41-4		<1	ug/L				U		11/29/12
1,2-Dichloroethane	107-06-2		<1	ug/L				U		11/29/12
Methyl isobutyl ketone	108-10-1		<1	ug/L				U		11/29/12
Tetrachloroethene	127-18-4		<1	ug/L				U		11/29/12
Total Xylenes	1330-20-7		<1	ug/L				U		11/29/12
Carbon tetrachloride	56-23-5		<1	ug/L				U		11/29/12
Acetone	67-64-1		<1	ug/L				U		11/29/12
Chloroform	67-66-3		<1	ug/L				U		11/29/12
1,1,1-Trichloroethane	71-55-6		<1	ug/L				U		11/29/12
Vinyl chloride	75-01-4		<1	ug/L				U		11/29/12
Methylene chloride	75-09-2		<1	ug/L				U		11/29/12

\* - QC result out of range

n/a - Not Applicable

## Quality Control Report

DECEMBER 11, 2012

Attention Scot Fitzgerald  
 Department Organic, Volatiles

Group # WSCF121518

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Carbon disulfide	75-15-0		<1	ug/L					U	11/29/12
Methyl ethyl ketone	78-93-3		<1	ug/L					U	11/29/12
1,1,2-Trichloroethane	79-00-5		<1	ug/L					U	11/29/12
1-Butanol	71-36-3		<100	ug/L					U	11/29/12
Tetrahydrofuran	109-99-9		<2	ug/L					U	11/29/12
trans-1,2-Dichloroethene	156-60-5		<1	ug/L					U	11/29/12
cis-1,2-Dichloroethene	156-59-2		<1	ug/L					U	11/29/12
Propionitrile	107-12-0		<2	ug/L					U	11/29/12
1,4-Dichlorobenzene	106-46-7		<1	ug/L					U	11/29/12
<b>LCS</b>			<b>QC Sample #85739</b>							
1,1-Dichloroethene	75-35-4		19	ug/L	75.4	75 - 125				11/29/12
Trichloroethene	79-01-6		25	ug/L	98.5	75 - 125				11/29/12
Benzene	71-43-2		25	ug/L	100.4	75 - 125				11/29/12
Toluene	108-88-3		26	ug/L	102.1	75 - 125				11/29/12
Chlorobenzene	108-90-7		25	ug/L	99.1	75 - 125				11/29/12
1,1-Dichloroethane	75-34-3		23	ug/L	90.5	75 - 125				11/29/12
Ethylbenzene	100-41-4		27	ug/L	107.5	75 - 125				11/29/12
1,2-Dichloroethane	107-06-2		25	ug/L	101.8	75 - 125				11/29/12
1,1,1-Trichloroethane	71-55-6		26	ug/L	103.9	75 - 125				11/29/12
Carbon disulfide	75-15-0		19	ug/L	76.6	75 - 125				11/29/12
1,1,2-Trichloroethane	79-00-5		23	ug/L	93	75 - 125				11/29/12

\* - QC result out of range

n/a - Not Applicable

**DECEMBER 11, 2012**

**Quality Control Report**

Attention Scot Fitzgerald  
 Department Organic, Volatiles

**Group #** WSCF121518

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
trans-1,2-Dichloroethene	156-60-5	23		ug/L	90.9	75 - 125				11/29/12
cis-1,2-Dichloroethene	156-59-2	24		ug/L	94.4	75 - 125				11/29/12
<b>MS</b>										
<b>QC Sample #85740</b>										
<b>Original 121507003</b>										
1,1-Dichloroethene	75-35-4	19		ug/L	76.4	75 - 125				11/29/12
Trichloroethene	79-01-6	25		ug/L	100.7	75 - 125				11/29/12
Benzene	71-43-2	26		ug/L	103.3	75 - 125				11/29/12
Toluene	108-88-3	26		ug/L	102.9	75 - 125				11/29/12
Chlorobenzene	108-90-7	25		ug/L	101.9	75 - 125				11/29/12
1,1-Dichloroethane	75-34-3	23		ug/L	91.6	75 - 125				11/29/12
Ethylbenzene	100-41-4	27		ug/L	109	75 - 125				11/29/12
1,2-Dichloroethane	107-06-2	26		ug/L	104.8	75 - 125				11/29/12
1,1,1-Trichloroethane	71-55-6	26		ug/L	104.8	75 - 125				11/29/12
Carbon disulfide	75-15-0	20		ug/L	78	75 - 125				11/29/12
1,1,2-Trichloroethane	79-00-5	24		ug/L	97.6	75 - 125				11/29/12
trans-1,2-Dichloroethene	156-60-5	23		ug/L	90.8	75 - 125				11/29/12
cis-1,2-Dichloroethene	156-59-2	24		ug/L	96.6	75 - 125				11/29/12
<b>MSD</b>										
<b>QC Sample #85741</b>										
<b>Original 121507003</b>										
<b>Paired 85740</b>										
1,1-Dichloroethene	75-35-4	20		ug/L	80.7	75 - 125	5.50	20		11/29/12
Trichloroethene	79-01-6	26		ug/L	102	75 - 125	1.30	20		11/29/12
Benzene	71-43-2	26		ug/L	104.8	75 - 125	1.50	20		11/29/12
Toluene	108-88-3	26		ug/L	104.9	75 - 125	1.90	20		11/29/12

\* - QC result out of range

n/a - Not Applicable

**Quality Control Report****DECEMBER 11, 2012**Attention Scot Fitzgerald  
Department Organic, Volatiles**Group #**

WSCF121518

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Chlorobenzene	108-90-7	26	ug/L	103	75 - 125	1.10	20			11/29/12
1,1-Dichloroethane	75-34-3	24	ug/L	95.7	75 - 125	4.40	20			11/29/12
Ethylbenzene	100-41-4	28	ug/L	110.6	75 - 125	1.40	20			11/29/12
1,2-Dichloroethane	107-06-2	26	ug/L	105	75 - 125	0.20	20			11/29/12
1,1,1-Trichloroethane	71-55-6	26	ug/L	106	75 - 125	1.10	20			11/29/12
Carbon disulfide	75-15-0	19	ug/L	77.9	75 - 125	0.10	20			11/29/12
1,1,2-Trichloroethane	79-00-5	25	ug/L	98.6	75 - 125	1.00	20			11/29/12
trans-1,2-Dichloroethene	156-60-5	24	ug/L	97.5	75 - 125	7.10	20			11/29/12
cis-1,2-Dichloroethene	156-59-2	25	ug/L	100	75 - 125	3.50	20			11/29/12

\* - QC result out of range

n/a - Not Applicable

## Quality Control Report

DECEMBER 11, 2012

Attention Scot Fitzgerald  
 Department Inorganic

Group # WSCF121518

Analytical Batch 211023 (QC Batch: 211023) Test Anions by Ion Chromatography (Water)  
 Associated Samples 121518001

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
<b>BLANK</b>										
<b>QC Sample #85805</b>										
Fluoride	16984-48-8	<0.023	ug/mL					U		11/29/12
Chloride	16887-00-6	<0.058	ug/mL					U		11/29/12
Nitrite-N	NO2-N	<0.019	ug/mL					U		11/29/12
Nitrate-N	NO3-N	<0.019	ug/mL					U		11/29/12
Sulfate	14808-79-8	<0.11	ug/mL					U		11/29/12
<b>LCS</b>										
<b>QC Sample #85806</b>										
Fluoride	16984-48-8	0.966	ug/mL	97.5	90 - 110					11/29/12
Chloride	16887-00-6	1.84	ug/mL	92.7	90 - 110					11/29/12
Nitrite-N	NO2-N	1.00	ug/mL	102.5	90 - 110					11/29/12
Nitrate-N	NO3-N	0.912	ug/mL	103.1	90 - 110					11/29/12
Sulfate	14808-79-8	3.97	ug/mL	101.3	90 - 110					11/29/12
<b>DUP</b>										
<b>QC Sample #85807</b>										
<b>Original 121519002</b>										
Fluoride	16984-48-8	0.107	ug/mL			8.20	20	BD		11/29/12
Chloride	16887-00-6	0.599	ug/mL			2.30	20	BD		11/29/12
Nitrite-N	NO2-N	0.0617	ug/mL			8.80	20	BD		11/29/12
Nitrate-N	NO3-N	0.477	ug/mL			2.50	20	D		11/29/12

\* - QC result out of range

n/a - Not Applicable

## Quality Control Report

DECEMBER 11, 2012

Attention Scot Fitzgerald  
Department Inorganic

Group #

WSCF121518

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Sulfate	14808-79-8	25.4	ug/mL				1.40	20	D	11/29/12
<b>MS</b>										
<b>QC Sample #85808</b>										
<b>Original 121519002</b>										
Fluoride	16984-48-8	0.965	ug/mL	96.5	80 - 120				D	11/29/12
Chloride	16887-00-6	1.79	ug/mL	89.5	80 - 120				D	11/29/12
Nitrite-N	NO2-N	0.860	ug/mL	87	80 - 120				D	11/29/12
Nitrate-N	NO3-N	0.874	ug/mL	97.7	80 - 120				D	11/29/12
Sulfate	14808-79-8	3.42	ug/mL	86.4	80 - 120				D	11/29/12
<b>MSD</b>										
<b>QC Sample #85809</b>										
<b>Original 121519002</b>										
<b>Paired 85808</b>										
Fluoride	16984-48-8	0.964	ug/mL	96.4	80 - 120	0.20	20		D	11/29/12
Chloride	16887-00-6	1.80	ug/mL	90	80 - 120	0.40	20		D	11/29/12
Nitrite-N	NO2-N	0.864	ug/mL	87.4	80 - 120	0.40	20		D	11/29/12
Nitrate-N	NO3-N	0.873	ug/mL	97.6	80 - 120	0.10	20		D	11/29/12
Sulfate	14808-79-8	3.53	ug/mL	89.2	80 - 120	0.40	20		D	11/29/12

\* - QC result out of range

n/a - Not Applicable

## Quality Control Report

DECEMBER 11, 2012

Attention Scot Fitzgerald  
 Department Organic, Volatiles

Group # WSCF121518

Analytical Batch 210936 (QC Batch: 210935) Test SW-846 8260B Volatiles  
 Associated Samples 121518002

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
<b>SAMPLE</b>		<b>Sample #121518002</b>								
1,2-Dichloroethane-d4	17060-07-0				105.1	75 - 125				11/29/12
Toluene-d8	2037-26-5				93.2	75 - 125				11/29/12
4-Bromofluorobenzene	460-00-4				99.4	75 - 125				11/29/12
<b>BLANK</b>		<b>QC Sample #85738</b>								
1,2-Dichloroethane-d4	17060-07-0				99	75 - 125				11/29/12
Toluene-d8	2037-26-5				93.2	75 - 125				11/29/12
4-Bromofluorobenzene	460-00-4				97	75 - 125				11/29/12
<b>LCS</b>		<b>QC Sample #85739</b>								
1,2-Dichloroethane-d4	17060-07-0				98.6	75 - 125				11/29/12
Toluene-d8	2037-26-5				92.8	75 - 125				11/29/12
4-Bromofluorobenzene	460-00-4				93.8	75 - 125				11/29/12
<b>MS</b>		<b>QC Sample #85740</b> <b>Original 121507003</b>								
1,2-Dichloroethane-d4	17060-07-0				99.9	75 - 125				11/29/12

\* - QC result out of range

n/a - Not Applicable

**Quality Control Report****DECEMBER 11, 2012**Attention Scot Fitzgerald  
Department Organic, Volatiles**Group #** WSCF121518

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Toluene-d8	2037-26-5				92.5	75 - 125				11/29/12
4-Bromofluorobenzene	460-00-4				93.8	75 - 125				11/29/12
<b>MSD</b>										
<b>QC Sample #85741</b>										
<b>Original 121507003 Paired 85740</b>										
1,2-Dichloroethane-d4	17060-07-0				98.6	75 - 125	n/a			11/29/12
Toluene-d8	2037-26-5				93.1	75 - 125	n/a			11/29/12
4-Bromofluorobenzene	460-00-4				94.7	75 - 125	n/a			11/29/12

\* - QC result out of range

n/a - Not Applicable

**ATTACHMENT4**

**SAMPLE RECEIPT**

Consisting of 4 pages  
Including cover page

**Waste Sampling and Characterization Facility**  
P.O. Box 1970 S3-30, Richland WA 99352  
Phone: (509) 373-7004/FAX: (509) 373-7134

## ACKNOWLEDGEMENT OF SAMPLES RECEIVED

---

**WSCF Laboratory**

PO Box 650 S3-30  
Richland, WA 99352

ATTN: Scot Fitzgerald

Customer Code: CHPRC

PO #: 401647

Work Order #: 121518

Profile #: S13-010-532

Proj. Mgr.:

Phone:

The following samples were received from you on 11/29/2012 8:35:00 AM. They have been scheduled for the tests listed beside each sample. If this information is incorrect, please contact your service representative. Thank you for using Waste Sampling and Characterization Facility.

Sample #	Sample ID	Matrix	Collected	Received
<b>Tests scheduled</b>				
121518001	B2M594	WATER	11/28/2012 15:09	11/29/2012 08:35
		IC-W		
121518002	B2M593	WATER	11/28/2012 15:09	11/29/2012 08:35
		8260V-W		

**Test Acronym Description**

Test Acronym	Description
8260V-W	Volatiles by 8260B (W)
IC-W	Anions by IC (W)

<b>CH2MHill Plateau Remediation Company</b>											
<b>Collector</b>	LAW CHPRC			<b>Sampling Origin</b>	Hanford Site			<b>Contact/Requester</b>	Karen Waters-Husted		
<b>SAF No.</b>	S13-010			<b>Logbook No.</b>	HNF-N-50644 / <i>Slo</i>			<b>Purchase Order/Charge Code</b>	300071ES20		
<b>Project Title</b>	SURV, OCTOBER 2012			<b>GOVERNMENT VEHICLE</b>				<b>Fee Chest No.</b>	N/A		
<b>Shipped To (Lab)</b>	Waste Sampling & Characterization			<b>Method of Shipment</b>				<b>Bill of Lading/Air Bill No.</b>	N/A		
<b>Protocol</b>	SURV			<b>Priority:</b>	31 Days			<b>Offsite Property No.</b>	N/A		
<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b>											
*** Contains Radioactive Material or concentrations that are not replaced for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)											
121518											
<b>Sample No.</b>	<b>Filter</b>	<b>Date</b>	<b>Time</b>	<b>No./Type Container</b>	<b>Sample Analysis</b>	<b>Holding Time</b>	<b>Preservative</b>	<b>Hold Time</b>	<b>Disposal Method (e.g. Return to customer, per lab procedure, used in process)</b>	<b>Disposed By</b>	<b>Date/Time</b>
BZM594	I	N	W	11-29-12 1509	1x500-mL P	300.0 ANIONS IC List-1 (5)	Cool-4C	48 Hours			

Relinquished By	Received By	Date/Time	Print	Sign	Date/Time	Print	Sign	Date/Time	Print	Sign	Matrix *
LAW CHPRC	NOV 28 2012 1000	NOV 28 2012 1000	<i>SL# 1</i>	<i>SL# 1</i>	NOV 28 2012 1100	<i>SL# 1</i>	<i>SL# 1</i>	S	Soil	DS	Drum Solids
<i>SL# 1</i>	<i>SL# 1</i>	11-29-12 0920	<i>Fm Hawaii</i>	<i>Fm Hawaii</i>	11-29-12 0920	<i>SL# 1</i>	<i>SL# 1</i>	SO	Sediment	DL	Drum Liquids
<i>Fm Hawaii</i>	<i>Fm Hawaii</i>	11-29-12 0935	<i>TA Frazin</i>	<i>TA Frazin</i>	11-29-12 0935	<i>TA Frazin</i>	<i>TA Frazin</i>	SL	Solid	T	Tissue
<i>TA Frazin</i>	<i>TA Frazin</i>	11-29-12 1000			11-29-12 1000			W	Sludge	WI	Wipe
								O	Water	L	Liquid
								A	Oil	V	Vegetation
								A	Air	X	Other

A-0004-842 (REV2)

## Chain of Custody

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST										C.O.C. # S13-010-531	
Page 1 of 1											
Collector	L.D. Wall CHPRC	Contact/Requester	Karen Waters-Husted	Telephone No.	376-4650						
SAF No.	S13-010	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071ES20						
Project Title	SURV, OCTOBER 2012	Logbook No.	HNF-N-506 <i>14 / 84</i>	Ice Chest No.	N/A						
Shipped To (Lab)	Waste Sampling & Characterization	Method of Shipment	GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.	N/A						
Protocol	SURV	Priority:	31 Days	PRIORITY	Offsite Property No.	N/A					
SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>											
FY12 and FY13 samples cannot be in the same STG. Site-Wide Generator Knowledge Information Form applies. The CACN for all analytical work at WSCF is 401647.											
POSSIBLE SAMPLE HAZARDS/REMARKS	*** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.2 (1999/1993).										
Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Hold Time	Preservative			
B2M593	2	N	W	<i>1/28/12</i>	<i>1509</i>	3x40-mL AgS*	14 Days	HCl or H <sub>2</sub> SO <sub>4</sub> to pH <2/Cool~4C			
B2M593	↓	N	W	<i>1/28/12</i>	<i>1509</i>	1x20-mL P	6 Months	None			
Activity Scan											

  

Relinquished By	Date/Time	Received By	Date/Time	Print	Sign	Date/Time	Received By	Date/Time	Print	Sign	Date/Time	Matrix *
<i>L.D. Wall CHPRC</i>	<i>Nov 28 2012 16:00</i>	<i>SSU #1</i>	<i>NOV 28 2012 16:00</i>	<i>SSU #1</i>	<i>NOV 28 2012 16:00</i>	<i>NOV 28 2012 16:00</i>	<i>SSU #1</i>	<i>NOV 28 2012 16:00</i>	<i>SSU #1</i>	<i>NOV 28 2012 16:00</i>	<i>SSU #1</i>	<i>Soil</i>
<i>SSU #1</i>	<i>1/29/12</i>	<i>F.M.</i>	<i>1/29/12</i>	<i>F.M.</i>	<i>1/29/12</i>	<i>1/29/12</i>	<i>F.M.</i>	<i>1/29/12</i>	<i>F.M.</i>	<i>1/29/12</i>	<i>F.M.</i>	<i>DS</i>
<i>F.M.</i>	<i>1/29/12</i>	<i>TA FNA 21 m Tencor FZ</i>	<i>1/29/12</i>	<i>TA FNA 21 m Tencor FZ</i>	<i>1/29/12</i>	<i>1/29/12</i>	<i>TA FNA 21 m Tencor FZ</i>	<i>1/29/12</i>	<i>TA FNA 21 m Tencor FZ</i>	<i>1/29/12</i>	<i>TA FNA 21 m Tencor FZ</i>	<i>Drum Solids</i>
<i>TA FNA 21 m Tencor FZ</i>	<i>1/29/12</i>		<i>1/29/12</i>		<i>1/29/12</i>	<i>1/29/12</i>		<i>1/29/12</i>		<i>1/29/12</i>		<i>DL</i>
												<i>Drum Liquids</i>
												<i>T</i>
												<i>Tissue</i>
												<i>W</i>
												<i>Liquid</i>
												<i>V</i>
												<i>Vaporation</i>
												<i>X</i>
												<i>Other</i>

  

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time
PRINTED ON	8/30/2012		