

DECEMBER 10, 2012

WSCF Laboratory

PO Box 650 S3-30
Richland, WA 99352



December 10, 2012

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

Dear Scot Fitzgerald,

FINAL RESULT FOR SAMPLE DELIVERY GROUP WSCF121436

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 WSCF121436

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

Very truly yours,

A handwritten signature in black ink, appearing to read "Joseph Hale", is positioned above the typed name.

Electronically signed by Joseph Hale

For Lab Manager, Dan T. Smith

WSCF Analytical Lab

(509) 373-4804

Attachments 4

CC: w/Attachments

File/LB

ATTACHMENT 1

COVER SHEET

Consisting of 2 pages
Including cover page

WSCF SAF Number Cross Reference

Group # WSCF121436
Data Deliverable Date 12/10/12

SAF #	Sample ID	Sample #	Matrix	Sampled	Received
W13-011	B2MNT0	121436001	WATER	11/07/12	11/07/12
W13-011	B2MNT1	121436002	WATER	11/07/12	11/07/12
W13-011	B2MNR6	121436003	WATER	11/07/12	11/07/12
W13-011	B2MNR7	121436004	WATER	11/07/12	11/07/12
W13-011	B2MNV7	121436005	WATER	11/07/12	11/07/12
W13-011	B2MNV5	121436006	WATER	11/07/12	11/07/12
W13-011	B2MNV6	121436007	WATER	11/07/12	11/07/12

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
WSCF121436

ICP-MS Metals – The hold time requirements for this analysis were 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.

Total Alkalinity – The hold time requirement for this analysis was met. A Duplicate and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- All applicable QC controls are within the established limits.

Total Organic Carbon – 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.

Total Organic Halides – 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.

ATTACHMENT 3

ANALYTICAL RESULTS

Consisting of 23 pages
Including cover page

DECEMBER 10, 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 # WSCF121436
Report Date December 10, 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 # WSCF121436

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
210514	210515	1	BLANK	85255	BLANK		Total Organic Halides
210514	210515	2	LCS	85256	LCS		Total Organic Halides
210514	210515	4	MS	85257	B2MDK0(121395004MS)	121395004	Total Organic Halides
210514	210515	5	MSD	85258	B2MDK0(121395004MSD)	121395004	Total Organic Halides
210514	210515	7	SAMPLE	121436004	B2MNR7		Total Organic Halides
210514	210515	8	SAMPLE	121436005	B2MNV7		Total Organic Halides
210514	210515	9	SAMPLE	121436006	B2MNV5		Total Organic Halides
210516	210517	1	BLANK	85260	BLANK		Total Organic Halides
210516	210517	2	LCS	85261	LCS		Total Organic Halides
210516	210517	10	MS	85265	B2MNV6(121436007MS)	121436007	Total Organic Halides
210516	210517	11	MSD	85266	B2MNV6(121436007MSD)	121436007	Total Organic Halides
210516	210517	12	SAMPLE	121436007	B2MNV6		Total Organic Halides
210827	211022	4	BLANK	85614	BLANK		ICP-2008 MS All possible metal
210827	211022	5	LCS	85615	LCS		ICP-2008 MS All possible metal
210827	211022	6	SAMPLE	121436001	B2MNT0		ICP-2008 MS All possible metal
210827	211022	7	MS	85616	B2MNT0(121436001MS)	121436001	ICP-2008 MS All possible metal
210827	211022	8	MSD	85617	B2MNT0(121436001MSD)	121436001	ICP-2008 MS All possible metal
210827	211022	9	SAMPLE	121436002	B2MNT1		ICP-2008 MS All possible metal
210827	211022	10	SAMPLE	121436003	B2MNR6		ICP-2008 MS All possible metal
210827	211022	11	SAMPLE	121436004	B2MNR7		ICP-2008 MS All possible metal

Batch QC List

Attention Scot Fitzgerald
 Department Wet Chemistry

Group # WSCF121436

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
210122	210122	1	LCS	84826	LCS		Total Alkalinity as mg/L CaCO3 (Water)
210122	210122	5	DUP	84827	B2LLT4(121422001DUP)	121422001	Total Alkalinity as mg/L CaCO3 (Water)
210122	210122	8	SAMPLE	121436003	B2MNR6		Total Alkalinity as mg/L CaCO3 (Water)
210122	210122	9	SAMPLE	121436004	B2MNR7		Total Alkalinity as mg/L CaCO3 (Water)
210122	210122	13	LCS	84828	LCS		Total Alkalinity as mg/L CaCO3 (Water)
210122	210122	19	LCS	84829	LCS		Total Alkalinity as mg/L CaCO3 (Water)
210417	210417	2	BLANK	85225	BLANK		Total Organic Carbon
210417	210417	3	LCS	85226	LCS		Total Organic Carbon
210417	210417	4	MS	85227	B2MNR7(121436004MS)	121436004	Total Organic Carbon
210417	210417	5	MSD	85228	B2MNR7(121436004MSD)	121436004	Total Organic Carbon
210417	210417	6	SAMPLE	121436004	B2MNR7		Total Organic Carbon
210417	210417	7	SAMPLE	121436005	B2MNV7		Total Organic Carbon
210417	210417	8	SAMPLE	121436006	B2MNV5		Total Organic Carbon
210417	210417	9	SAMPLE	121436007	B2MNV6		Total Organic Carbon

Method Reference

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121436

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-505-412	Determination of Trace Elements in Waters & Wastes by ICP Mass Spectrometry		
	EPA-600/R-94-111	200.8	Determination of Trace Elements in Waters and Waste by Inductively Coupled Plasma
LA-523-444	HEIS	200.8_METALS_ICPMS	Determination of Trace Elements in Waters and Waste by Inductively Coupled Plasma, Mass Spec.
	Total Organic Halides Based on SW-846 Method 9020B		
	EPA SW-846	9020B	Total Organic Halides (TOX)
	HEIS	9020_TOX	Total Organic Halides (TOX)

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>

Method Reference

Attention Scot Fitzgerald
 Department Wet Chemistry

Group # WSCF121436

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-531-411	Alkalinity		
	SM	2320	Alkalinity
	HEIS	2320_ALKALINITY	Alkalinity
LA-344-406	Total Organic Carbon (TOC) Based on SW-846		
	EPA SW-846	9060	Total Organic Carbon
	HEIS	9060_TOC	Total Organic Carbon

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 # WSCF121436

Sample # 121436001
 SAF# W13-011
 Sample ID B2MNT0

Matrix WATER
 Sampled 11/07/12
 Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPMS Prep (W)										11/29/12
ICP-2008 MS All possible metal										
Mercury	7439-97-6	LA-505-412	U	<0.050		ug/L	1	0.050	0.20	11/30/12

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 Inorganic

Group # WSCF121436

Sample # 121436002
 SAF# W13-011
 Sample ID B2MNT1

Matrix WATER
 Sampled 11/07/12
 Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPMS Prep (W)										11/29/12
ICP-2008 MS All possible metal										
Mercury	7439-97-6	LA-505-412	UD	<0.10		ug/L	2	0.10	0.40	11/30/12

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 Inorganic

Group # WSCF121436

Sample # 121436003
 SAF# W13-011
 Sample ID B2MNR6

Matrix WATER
 Sampled 11/07/12
 Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPMS Prep (W)										11/29/12
ICP-2008 MS All possible metal										
Mercury	7439-97-6	LA-505-412	UD	<0.10		ug/L	2	0.10	0.40	11/30/12

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 Inorganic

Group # WSCF121436

Sample # 121436004
 SAF# W13-011
 Sample ID B2MNR7

Matrix WATER
 Sampled 11/07/12
 Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPMS Prep (W)										11/29/12
ICP-2008 MS All possible metal										
Mercury	7439-97-6	LA-505-412	UD	<0.10		ug/L	2	0.10	0.40	11/30/12
Preparation for TOX (W)										11/13/12
Total Organic Halides										
Total Organic Halides	59473-04-0	LA-523-444		19.2		ug/L	1	5.0	15	11/13/12

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 Inorganic

Group # WSCF121436

Sample # 121436005
 SAF# W13-011
 Sample ID B2MNV7

Matrix WATER
 Sampled 11/07/12
 Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Preparation for TOX (W)										11/13/12
Total Organic Halides										
Total Organic Halides	59473-04-0	LA-523-444		17.2		ug/L	1	5.0	15	11/13/12

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 Inorganic

Group # WSCF121436

Sample # 121436006
 SAF# W13-011
 Sample ID B2MNV5

Matrix WATER
 Sampled 11/07/12
 Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Preparation for TOX (W)										11/13/12
Total Organic Halides										
Total Organic Halides	59473-04-0	LA-523-444		17.9		ug/L	1	5.0	15	11/13/12

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 Inorganic

Group # WSCF121436

Sample # 121436007
 SAF# W13-011
 Sample ID B2MNV6

Matrix WATER
 Sampled 11/07/12
 Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Preparation for TOX (W)										11/13/12
Total Organic Halides										
Total Organic Halides	59473-04-0	LA-523-444		19.6		ug/L	1	5.0	15	11/13/12

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 Wet Chemistry

Group # WSCF121436

Sample # 121436003
 SAF# W13-011
 Sample ID B2MNR6

Matrix WATER
 Sampled 11/07/12
 Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
11/12/12										
Total Alkalinity as mg/L CaCO3 (Water)										
Total Alkalinity as CaCO3	ALKALINITY	LA-531-411		100		mg/L	1	1	10	11/12/12
Carbonate	CO3ALKALINI	LA-531-411	U	<1		mg/L	1	1		11/12/12
Bicarbonate	71-52-3	LA-531-411		100		mg/L	1	1		11/12/12
Hydroxyl ion	84625-61-6	LA-531-411	U	<1		mg/L	1	1		11/12/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL.
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 N - MS and/or MSD sample recovery outside control limits.
 U - Analyzed for but not detected above limiting criteria.

N - Spike Recovery is Outside Control Limits.
 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 Wet Chemistry

Group # WSCF121436

Sample # 121436004
 SAF# W13-011
 Sample ID B2MNR7

Matrix WATER
 Sampled 11/07/12
 Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
11/12/12										
Total Alkalinity as mg/L CaCO3 (Water)										
Total Alkalinity as CaCO3	ALKALINITY	LA-531-411		99		mg/L	1	1	10	11/12/12
Carbonate	CO3ALKALINI	LA-531-411	U	<1		mg/L	1	1		11/12/12
Bicarbonate	71-52-3	LA-531-411		99		mg/L	1	1		11/12/12
Hydroxyl ion	84625-61-6	LA-531-411	U	<1		mg/L	1	1		11/12/12
11/15/12										
Total Organic Carbon										
Total Organic Carbon	TOC	LA-344-406	B	0.179		mg/L	1	0.10	0.30	11/15/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL.
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 N - MS and/or MSD sample recovery outside control limits.
 U - Analyzed for but not detected above limiting criteria.

N - Spike Recovery is Outside Control Limits.
 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 Wet Chemistry

Group # WSCF121436

Sample # 121436005
 SAF# W13-011
 Sample ID B2MNV7

Matrix WATER
 Sampled 11/07/12
 Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										11/15/12
Total Organic Carbon										
Total Organic Carbon	TOC	LA-344-406	B	0.187		mg/L	1	0.10	0.30	11/15/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL.
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 N - MS and/or MSD sample recovery outside control limits.
 U - Analyzed for but not detected above limiting criteria.

N - Spike Recovery is Outside Control Limits.
 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 Wet Chemistry

Group # WSCF121436

Sample # 121436006
 SAF# W13-011
 Sample ID B2MNV5

Matrix WATER
 Sampled 11/07/12
 Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										11/15/12
Total Organic Carbon										
Total Organic Carbon	TOC	LA-344-406	B	0.164		mg/L	1	0.10	0.30	11/15/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL.
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 N - MS and/or MSD sample recovery outside control limits.
 U - Analyzed for but not detected above limiting criteria.

N - Spike Recovery is Outside Control Limits.
 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 Wet Chemistry

Group # WSCF121436

Sample # 121436007
 SAF# W13-011
 Sample ID B2MNV6

Matrix WATER
 Sampled 11/07/12
 Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										11/15/12
Total Organic Carbon										
Total Organic Carbon	TOC	LA-344-406	B	0.172		mg/L	1	0.10	0.30	11/15/12

MDL = Minimum Detection Limit
 RQ = Result Qualifier
 TP Err = Total Propagated Error
 DF = Dilution Factor
 + - Indicates more than nine qualifier

B - Analyte < the RDL but >= the IDL/MDL.
 C - Analyte was found in the Associated Blank. (Inorganic)
 D - Analyte was reported at a secondary dilution factor.
 N - MS and/or MSD sample recovery outside control limits.
 U - Analyzed for but not detected above limiting criteria.

N - Spike Recovery is Outside Control Limits.
 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

Attention Scot Fitzgerald
Department Wet Chemistry

Group # WSCF121436

Analytical Batch 210122 (QC Batch: 210122) **Test** Total Alkalinity as mg/L CaCO3 (Water)
Associated Samples 121436003, 121436004

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
LCS			QC Sample #84826							
Total Alkalinity as CaCO3	ALKALINITY	97		mg/L	97.4	80 - 120				11/12/12
DUP			QC Sample #84827							
			Original 121422001							
Total Alkalinity as CaCO3	ALKALINITY	200		mg/L			0.00	20		11/12/12
LCS			QC Sample #84828							
Total Alkalinity as CaCO3	ALKALINITY	97		mg/L	97.3	80 - 120				11/12/12
LCS			QC Sample #84829							
Total Alkalinity as CaCO3	ALKALINITY	97		mg/L	97.2	80 - 120				11/12/12

* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
 Department Wet Chemistry

Group # WSCF121436

Analytical Batch 210417 (QC Batch: 210417) Test Total Organic Carbon
 Associated Samples 121436004, 121436005, 121436006, 121436007

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK		QC Sample #85225								
Total Organic Carbon	TOC		<0.045	mg/L					U	11/15/12
LCS		QC Sample #85226								
Total Organic Carbon	TOC		2.18	mg/L	108.8	80 - 120				11/15/12
MS		QC Sample #85227								
		Original 121436004								
Total Organic Carbon	TOC	0.179	2.18	mg/L	109	75 - 125				11/15/12
MSD		QC Sample #85228								
		Original 121436004								
		Paired 85227								
Total Organic Carbon	TOC	0.179	2.19	mg/L	109.6	75 - 125	0.50	20		11/15/12

* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121436

Analytical Batch 210515 (QC Batch: 210514) Test Total Organic Halides
 Associated Samples 121436004, 121436005, 121436006

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK										
			QC Sample #85255							
Total Organic Halides	59473-04-0		<5.0	ug/L					U	11/13/12
LCS										
			QC Sample #85256							
Total Organic Halides	59473-04-0		413	mg/L	103.1	80 - 120				11/13/12
MS										
			QC Sample #85257							
			Original 121395004							
Total Organic Halides	59473-04-0		39.5	ug/L	98.7	75 - 125				11/13/12
MSD										
			QC Sample #85258							
			Original 121395004							
Total Organic Halides	59473-04-0		43.7	ug/L	109.2	75 - 125	8.30	20	Paired 85257	11/13/12

* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF121436

Analytical Batch 210517 (QC Batch: 210516) Test Total Organic Halides
 Associated Samples 121436007

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK										
			QC Sample #85260							
Total Organic Halides	59473-04-0		<5.0	ug/L					U	11/13/12
LCS										
			QC Sample #85261							
Total Organic Halides	59473-04-0		395	mg/L	98.8	80 - 120				11/13/12
MS										
			QC Sample #85265							
			Original 121436007							
Total Organic Halides	59473-04-0	19.6	40.8	ug/L	101.9	75 - 125				11/13/12
MSD										
			QC Sample #85266							
			Original 121436007							
									Paired 85265	
Total Organic Halides	59473-04-0	19.6	45.9	ug/L	114.6	75 - 125	8.10	20		11/13/12

* - QC result out of range n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121436

Analytical Batch 211022 (QC Batch: 210827) **Test** ICP-2008 MS All possible metal
Associated Samples 121436001, 121436002, 121436003, 121436004

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK										
			QC Sample #85614							
Mercury	7439-97-6		<0.050	ug/L					U	11/30/12
LCS										
			QC Sample #85615							
Mercury	7439-97-6		2.07	ug/L	103.6	85 - 115				11/30/12
MS										
			QC Sample #85616							
			Original 121436001							
Mercury	7439-97-6	<0.050	2.18	ug/L	109.2	70 - 130				11/30/12
MSD										
			QC Sample #85617							
			Original 121436001							
									Paired 85616	
Mercury	7439-97-6	<0.050	2.18	ug/L	108.8	70 - 130	0.40	20		11/30/12

* - QC result out of range n/a - Not Applicable

ATTACHMENT4

SAMPLE RECEIPT

Consisting of 5 pages
Including cover page

Waste Sampling and Characterization Facility
P.O. Box 650 S3-30, Richland WA 99352
Phone: (509) 373-7005/FAX: (509) 372-0456

ACKNOWLEDGEMENT OF SAMPLES RECEIVED**WSCF Laboratory**

PO Box 650 S3-30
 Richland, WA 99352

ATTN: Scot Fitzgerald

Customer Code: CHPRC
CACN: 401647
Work Order #: 121436
Customer Work ID: W13-011-201
Due Date: 12/10/2012

The following samples were received from you on 11/7/2012 2:05:00 PM. They have been scheduled for the tests listed below 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
121436001	B2MNT0	WATER	11/7/2012 13:24	11/7/2012 14:05
Procedure		Compound List		
ICP-2008 MS All possible metal		Hg		
Sample #	Sample ID	Matrix	Collected	Received
121436002	B2MNT1	WATER	11/7/2012 13:24	11/7/2012 14:05
Procedure		Compound List		
ICP-2008 MS All possible metal		Hg		
Sample #	Sample ID	Matrix	Collected	Received
121436003	B2MNR6	WATER	11/7/2012 13:24	11/7/2012 14:05
Procedure		Compound List		
ICP-2008 MS All possible metal		Hg		
Total Alkalinity as mg/L CaCO3 (Water)		Alkalinity,Carbonate,Bicarbonate,Hydroxyl Ion		
Sample #	Sample ID	Matrix	Collected	Received
121436004	B2MNR7	WATER	11/7/2012 13:24	11/7/2012 14:05
Procedure		Compound List		
ICP-2008 MS All possible metal		Hg		
Total Alkalinity as mg/L CaCO3 (Water)		Alkalinity,Carbonate,Bicarbonate,Hydroxyl Ion		
Total Organic Carbon		TOC		
Total Organic Halides		TOX		
Sample #	Sample ID	Matrix	Collected	Received
121436005	B2MNV7	WATER	11/7/2012 13:24	11/7/2012 14:05
Procedure		Compound List		
Total Organic Carbon		TOC		
Total Organic Halides		TOX		
Sample #	Sample ID	Matrix	Collected	Received
121436006	B2MNV5	WATER	11/7/2012 13:24	11/7/2012 14:05
Procedure		Compound List		
Total Organic Carbon		TOC		
Total Organic Halides		TOX		
Sample #	Sample ID	Matrix	Collected	Received
121436007	B2MNV6	WATER	11/7/2012 13:24	11/7/2012 14:05
Procedure		Compound List		

Waste Sampling and Characterization Facility
P.O. Box 650 S3-30, Richland WA 99352
Phone: (509) 373-7005/FAX: (509) 372-0456

Total Organic Carbon
Total Organic Halides

TOC
TOX

Chain of Custody

C.O.C.# **W13-011-201** Page 1 of 1

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

CH2M Hill Plateau Remediation Company

Collector: **F. M. Hill** Telephone No. **376-4650**
 SAF No. **W13-011** Purchase Order/Charge Code **300071ES20**
 Project Title: **RCRA, NOVEMBER 2012** Icc Chest No. **N/A**
 Shipped To (Lab): **Waste Sampling & Characterization** Method of Shipment: **GOVERNMENT VEHICLE** Bill of Lading/Air Bill No. **N/A**
 Protocol: **RCRA** Priority: **31 Days** Offsite Property No. **N/A**

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 5400.5 (1990/1993)

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes No
 FY12 and FY13 samples cannot be in the same SDG.
 Site Waste Generator Knowledge Information Form applies
 The CACN for all analytical work at WSCF is 401647.

Sample No.	Filler	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2MNT0	Y	11-7-12	1330	1x500-mL G	200.8_HG - ICPMS	28 Days	HNO3 to pH <2
B2MNR6	N	W	↓	1x500-mL G	200.8_HG - ICPMS	28 Days	HNO3 to pH <2
B2MNR6	N	W	↓	1x250-mL GP	2320_ALKALINITY, List-1 (4)	14 Days	Cool-4C

121436

Relinquished By F. M. Hill	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time NOV 07 2012 1400	Received By Cynthia R Johnson	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time NOV 07 2012 1400
Relinquished By <i>[Signature]</i>	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time 11/12 1400	Received By <i>[Signature]</i>	Print <i>[Signature]</i>	Sign <i>[Signature]</i>	Date/Time 11/12 1400
Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) _____ Date/Time _____

PRINTED ON 10/10/2012 A-6004-842 (REV 2)

Chain of Custody

C.O.C.# **W13-011-204**

Page 1 of 1

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

Telephone No. 376-4650
 Purchase Order/Charge Code 300071ES20
 Ice Chest No. N/A
 Bill of Lading/Air Bill No. N/A
 Offsite Property No. N/A

Contact/Requester Karen Waters-Husted
 Sampling Origin Hanford Site
 Logbook No. IINF-N-506 49 / 74
 Method of Shipment GOVERNMENT VEHICLE
 Priority: 31 Days **PRIORITY**

Total Activity Exemption Yes No
 SPECIAL INSTRUCTIONS Hold Time
 FY12 and FY13 samples cannot be in the same SDC.
 Site Wide Generator Knowledge Information Form applies.
 The CACN for all analytical work at WSCF is 40167.

POSSIBLE SAMPLE HAZARDS/REMARKS
 ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR that are not
 releasable per DOE Order 460.5 (1990/1993).

Sample No.	Filter #	Date	Time	No/Type Container	Sample Analysis	Hold Time	Preservative
B2MNR7	N	11-7-12	1324	1x500 mL G	200.8_HG - ICPMS	28 Days	HNO3 to pH <2
B2MNR7	N			1x250-mL G/P	2320_ALKALINITY: List-1 (4)	14 Days	Cool-4C
B2MNR7	N			1x1-L aGs*	9020_TOX: TOX (1)	28 Days	H2SO4 to pH <2/Cool-4C
B2MNR7	N			1x250-mL aG	9060_TOX: TOC (1)	28 Days	HCl or H2SO4 to pH <2/Cool-4C
B2MNV7	N			1x1-L aGs*	9020_TOX: TOX (1)	28 Days	H2SO4 to pH <2/Cool-4C
B2MNV7	N			1x250-mL aG	9060_TOX: TOC (1)	28 Days	HCl or H2SO4 to pH <2/Cool-4C
B2MNT1	Y			1x500-mL G	200.8_HG - ICPMS	28 Days	HNO3 to pH <2
B2MNV5	N			1x1-L aGs*	9020_TOX: TOX (1)	28 Days	H2SO4 to pH <2/Cool-4C
B2MNV5	N			1x250-mL aG	9060_TOX: TOC (1)	28 Days	HCl or H2SO4 to pH <2/Cool-4C
B2MNV6	N			1x1-L aGs*	9020_TOX: TOX (1)	28 Days	H2SO4 to pH <2/Cool-4C
B2MNV6	N			1x250-mL aG	9060_TOX: TOC (1)	28 Days	HCl or H2SO4 to pH <2/Cool-4C

Redquisitioned By: F. M. Hall Date/Time: NOV 07 2012 1400
 Received By: CYNTHIA R. JOHNSON Date/Time: NOV 07 2012 1400
 Redquisitioned By: [Signature] Date/Time: 11/15/12
 Received By: [Signature] Date/Time: 11/15/12

Matrix *
 S = Soil DS = Drumm Solids
 SE = Sediment DL = Drumm Liquids
 NO = Solid T = Tissue
 SL = Sludge WT = Wipe
 W = Water L = Liquid
 O = Oil V = Vegetation
 A = Air X = Other

FINAL SAMPLE DISPOSITION
 Disposal Method (e.g., Return to customer, per lab procedure, used in process)
 Disposed By: [Signature] Date/Time: [Blank]

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