

May 14, 2014

WSCF Laboratory

PO Box 650 S3-30
Richland, WA 99352



May 14, 2014

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

Dear Scot Fitzgerald,

FINAL RESULT FOR SAMPLE DELIVERY GROUP WSCF140720

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 WSCF140720

- * 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

May 14, 2014

ATTACHMENT 1

COVER SHEET

Consisting of 2 pages
Including cover page

WSCF SAF Number Cross Reference

Group # WSCF140720
 Data Deliverable Date 05/22/14

SAF #	Sample ID	Sample #	Matrix	Sampled	Received
X14-028	B2W6H5	140720001	WATER	04/21/14	04/21/14
X14-028	B2W6J7	140720002	WATER	04/21/14	04/21/14
X14-028	B2W6H6	140720003	WATER	04/21/14	04/21/14
X14-028	B2W6H8	140720004	WATER	04/21/14	04/21/14
X14-028	B2W6K0	140720005	WATER	04/21/14	04/21/14
X14-028	B2W6J8	140720006	WATER	04/21/14	04/21/14
X14-028	B2W6F4	140720007	WATER	04/21/14	04/21/14
X14-028	B2W6F6	140720008	WATER	04/21/14	04/21/14
X14-028	B2W6M6	140720009	WATER	04/21/14	04/21/14
X14-028	B2W6M7	140720010	WATER	04/21/14	04/21/14
X14-028	B2W6N0	140720011	WATER	04/21/14	04/21/14
X14-028	B2W6N1	140720012	WATER	04/21/14	04/21/14

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)*, to Contract 39818, Revision 4, "WSCF ANALYTICAL SERVICES FOR GROUNDWATER."

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.
- **o** – LCS recovery outside established laboratory acceptance limits.

Analytical Methodology for Requested Analyses

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

Inorganic Comments

Attachment 2
Narrative
WSCF140720

Anions – 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.

Hexavalent Chromium – The hold time requirement for this analysis was met. A Duplicate, Matrix Spike, 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.

May 14, 2014

ATTACHMENT 3

ANALYTICAL RESULTS

Consisting of 19 pages
Including cover page

May 14, 2014

WSCF ANALYTICAL RESULTS REPORT

For

CH2M Hill Plateau Remediation

PO Box 1600
Richland, WA 99352

Attention: Scot Fitzgerald

Contract # MOA-FH-CHPRC-2008
Group # WSCF140720
Report Date May 14, 2014

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 # WSCF140720

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
232151	232151	2	BLANK	109256	BLANK		Anions by Ion Chromatography (Water)
232151	232151	3	LCS	109257	LCS		Anions by Ion Chromatography (Water)
232151	232151	4	MS	109258	B2W6L5(140719007MS)	140719007	Anions by Ion Chromatography (Water)
232151	232151	5	MSD	109259	B2W6L5(140719007MSD)	140719007	Anions by Ion Chromatography (Water)
232151	232151	10	SAMPLE	140720001	B2W6H5		Anions by Ion Chromatography (Water)
232151	232151	11	SAMPLE	140720002	B2W6J7		Anions by Ion Chromatography (Water)
232155	232155	1	BLANK	109284	BLANK		Hexavalent chromium Discrete Analyzer
232155	232155	3	LCS	109286	LCS		Hexavalent chromium Discrete Analyzer
232155	232155	4	DUP	109287	B2W6N1(140720012DUP)	140720012	Hexavalent chromium Discrete Analyzer
232155	232155	5	MS	109288	B2W6N1(140720012MS)	140720012	Hexavalent chromium Discrete Analyzer
232155	232155	6	SAMPLE	140720012	B2W6N1		Hexavalent chromium Discrete Analyzer
232155	232155	7	SAMPLE	140720003	B2W6H6		Hexavalent chromium Discrete Analyzer
232155	232155	8	SAMPLE	140720004	B2W6H8		Hexavalent chromium Discrete Analyzer
232155	232155	9	SAMPLE	140720005	B2W6K0		Hexavalent chromium Discrete Analyzer
232155	232155	10	SAMPLE	140720006	B2W6J8		Hexavalent chromium Discrete Analyzer
232155	232155	11	SAMPLE	140720007	B2W6F4		Hexavalent chromium Discrete Analyzer
232155	232155	12	SAMPLE	140720008	B2W6F6		Hexavalent chromium Discrete Analyzer
232155	232155	13	SAMPLE	140720009	B2W6M6		Hexavalent chromium Discrete Analyzer
232155	232155	14	SAMPLE	140720010	B2W6M7		Hexavalent chromium Discrete Analyzer
232155	232155	15	SAMPLE	140720011	B2W6N0		Hexavalent chromium Discrete Analyzer

Method Reference

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF140720

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.

Method ID	Method Name	Regulatory/Industry Method	HEIS Method
LA-265-403	Hexavalent Chromium Analysis		
	EPA SW-846	7196A	Hexavalent Chromium
	HEIS	7196_CR6	Hexavalent Chromium
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 Inorganic

Group # WSCF140720

Sample # 140720001
 SAF# X14-028
 Sample ID B2W6H5

Matrix WATER
 Sampled 04/21/14
 Received 04/21/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
04/21/14										
Anions by Ion Chromatography (Water)										
Fluoride	16984-48-8	LA-533-410	BD	0.219		ug/mL	2	0.050	1.0	04/21/14
Chloride	16887-00-6	LA-533-410	D	1.61		ug/mL	2	0.12	0.80	04/21/14
Nitrite-N	NO2-N	LA-533-410	UD	<0.040		ug/mL	2	0.040	0.20	04/21/14
Nitrate-N	NO3-N	LA-533-410	BD	0.0718		ug/mL	2	0.040	0.20	04/21/14
Sulfate	14808-79-8	LA-533-410	D	12.5		ug/mL	2	0.22	1.1	04/21/14

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.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF140720

Sample # 140720002
 SAF# X14-028
 Sample ID B2W6J7

Matrix WATER
 Sampled 04/21/14
 Received 04/21/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
04/21/14										
Anions by Ion Chromatography (Water)										
Fluoride	16984-48-8	LA-533-410	BD	0.0995		ug/mL	2	0.050	1.0	04/21/14
Chloride	16887-00-6	LA-533-410	D	6.82		ug/mL	2	0.12	0.80	04/21/14
Nitrite-N	NO2-N	LA-533-410	UD	<0.040		ug/mL	2	0.040	0.20	04/21/14
Nitrate-N	NO3-N	LA-533-410	D	1.45		ug/mL	2	0.040	0.20	04/21/14
Sulfate	14808-79-8	LA-533-410	D	31.3		ug/mL	2	0.22	1.1	04/21/14

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.
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Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF140720

Sample # 140720003
 SAF# X14-028
 Sample ID B2W6H6

Matrix WATER
 Sampled 04/21/14
 Received 04/21/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										04/21/14
Hexavalent chromium Discrete Analyzer										
Hexavalent chromium	18540-29-9	LA-265-403	B	0.00340		mg/L	1	0.0020	0.0050	04/21/14

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.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF140720

Sample # 140720004
 SAF# X14-028
 Sample ID B2W6H8

Matrix WATER
 Sampled 04/21/14
 Received 04/21/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
04/21/14										
Hexavalent chromium Discrete Analyzer										
Hexavalent chromium	18540-29-9	LA-265-403	B	0.00330		mg/L	1	0.0020	0.0050	04/21/14

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.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF140720

Sample # 140720005
 SAF# X14-028
 Sample ID B2W6K0

Matrix WATER
 Sampled 04/21/14
 Received 04/21/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										04/21/14
Hexavalent chromium Discrete Analyzer										
Hexavalent chromium	18540-29-9	LA-265-403		0.0161		mg/L	1	0.0020	0.0050	04/21/14

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.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF140720

Sample # 140720006
 SAF# X14-028
 Sample ID B2W6J8

Matrix WATER
 Sampled 04/21/14
 Received 04/21/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										04/21/14
Hexavalent chromium Discrete Analyzer										
Hexavalent chromium	18540-29-9	LA-265-403		0.0154		mg/L	1	0.0020	0.0050	04/21/14

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.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF140720

Sample # 140720007
 SAF# X14-028
 Sample ID B2W6F4

Matrix WATER
 Sampled 04/21/14
 Received 04/21/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										04/21/14
Hexavalent chromium Discrete Analyzer										
Hexavalent chromium	18540-29-9	LA-265-403		0.0522		mg/L	1	0.0020	0.0050	04/21/14

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.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF140720

Sample # 140720008
 SAF# X14-028
 Sample ID B2W6F6

Matrix WATER
 Sampled 04/21/14
 Received 04/21/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										04/21/14
Hexavalent chromium Discrete Analyzer										
Hexavalent chromium	18540-29-9	LA-265-403		0.0520		mg/L	1	0.0020	0.0050	04/21/14

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.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF140720

Sample # 140720009
 SAF# X14-028
 Sample ID B2W6M6

Matrix WATER
 Sampled 04/21/14
 Received 04/21/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										04/21/14
Hexavalent chromium Discrete Analyzer										
Hexavalent chromium	18540-29-9	LA-265-403	U	<0.0020		mg/L	1	0.0020	0.0050	04/21/14

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.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF140720

Sample # 140720010
 SAF# X14-028
 Sample ID B2W6M7

Matrix WATER
 Sampled 04/21/14
 Received 04/21/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										04/21/14
Hexavalent chromium Discrete Analyzer										
Hexavalent chromium	18540-29-9	LA-265-403		0.0145		mg/L	1	0.0020	0.0050	04/21/14

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.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF140720

Sample # 140720011
 SAF# X14-028
 Sample ID B2W6N0

Matrix WATER
 Sampled 04/21/14
 Received 04/21/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
04/21/14										
Hexavalent chromium Discrete Analyzer										
Hexavalent chromium	18540-29-9	LA-265-403	U	<0.0020		mg/L	1	0.0020	0.0050	04/21/14

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.

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF140720

Sample # 140720012
 SAF# X14-028
 Sample ID B2W6N1

Matrix WATER
 Sampled 04/21/14
 Received 04/21/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										04/21/14
Hexavalent chromium Discrete Analyzer										
Hexavalent chromium	18540-29-9	LA-265-403		0.0146		mg/L	1	0.0020	0.0050	04/21/14

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.

Quality Control Report

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF140720

Analytical Batch 232151 (QC Batch: 232151) Test Anions by Ion Chromatography (Water)
 Associated Samples 140720001, 140720002

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK		QC Sample #109256								
Fluoride	16984-48-8	<0.025		ug/mL					U	04/21/14
Chloride	16887-00-6	<0.060		ug/mL					U	04/21/14
Nitrite-N	NO2-N	<0.020		ug/mL					U	04/21/14
Nitrate-N	NO3-N	<0.020		ug/mL					U	04/21/14
Sulfate	14808-79-8	<0.11		ug/mL					U	04/21/14
LCS		QC Sample #109257								
Fluoride	16984-48-8	0.931		ug/mL	94.1	90 - 110				04/21/14
Chloride	16887-00-6	1.92		ug/mL	97.1	90 - 110				04/21/14
Nitrite-N	NO2-N	1.04		ug/mL	106.4	90 - 110				04/21/14
Nitrate-N	NO3-N	0.871		ug/mL	98.4	90 - 110				04/21/14
Sulfate	14808-79-8	3.97		ug/mL	101.3	90 - 110				04/21/14
MS		QC Sample #109258								
		Original 140719007								
Fluoride	16984-48-8	0.898		ug/mL	89.8	80 - 120			D	04/21/14
Chloride	16887-00-6	1.88		ug/mL	93.8	80 - 120			D	04/21/14
Nitrite-N	NO2-N	0.982		ug/mL	99.4	80 - 120			D	04/21/14
Nitrate-N	NO3-N	0.880		ug/mL	98.4	80 - 120			D	04/21/14

* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF140720

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Sulfate	14808-79-8		3.93	ug/mL	99.2	80 - 120			D	04/21/14
MSD			QC Sample #109259							
			Original	140719007				Paired	109258	
Fluoride	16984-48-8		0.894	ug/mL	89.4	80 - 120	0.40	20	D	04/21/14
Chloride	16887-00-6		1.94	ug/mL	97	80 - 120	1.10	20	D	04/21/14
Nitrite-N	NO2-N		1.01	ug/mL	102.7	80 - 120	3.30	20	D	04/21/14
Nitrate-N	NO3-N		0.872	ug/mL	97.6	80 - 120	0.60	20	D	04/21/14
Sulfate	14808-79-8		4.18	ug/mL	105.7	80 - 120	0.80	20	D	04/21/14

* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF140720

Analytical Batch 232155 (QC Batch: 232155) Test Hexavalent chromium Discrete Analyzer
 Associated Samples 140720003, 140720004, 140720005, 140720006, 140720007, 140720008, 140720009, 140720010, 140720011, 140720012

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK										
			QC Sample #109284							
Hexavalent chromium	18540-29-9		<0.0020	mg/L					U	04/21/14
LCS			QC Sample #109286							
Hexavalent chromium	18540-29-9		0.0524	mg/L	104.8	90 - 110				04/21/14
DUP			QC Sample #109287							
			Original 140720012							
Hexavalent chromium	18540-29-9	0.0146	0.0146	mg/L			0.00	20		04/21/14
MS			QC Sample #109288							
			Original 140720012							
Hexavalent chromium	18540-29-9	0.0146	0.0436	mg/L	109	85 - 115				04/21/14

* - QC result out of range

n/a - Not Applicable

ATTACHMENT4

SAMPLE RECEIPT

Consisting of 10 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
CA CN: 404438
Work Order #: 140720
Customer Work ID: X14-028-041
Due Date: 05/22/2014 **(R031)**

The following samples were received from you on 4/21/2014 1:30:00 PM. They have been scheduled for the tests listed below each sample. If this information is incorrect, please contact WSCF Client Services. Thank you for using Waste Sampling and Characterization Facility.

Sample #	Sample ID	Matrix	Collected	Received
140720001	B2W6H5	WATER	4/21/2014 11:17	4/21/2014 13:30
Procedure		Compound List		
Anions by Ion Chromatography (Water)		F,Cl,NO2,NO3,SO4		
Sample #	Sample ID	Matrix	Collected	Received
140720002	B2W6J7	WATER	4/21/2014 09:41	4/21/2014 13:30
Procedure		Compound List		
Anions by Ion Chromatography (Water)		F,Cl,NO2,NO3,SO4		
Sample #	Sample ID	Matrix	Collected	Received
140720003	B2W6H6	WATER	4/21/2014 11:17	4/21/2014 13:30
Procedure		Compound List		
Hexavalent chromium Discrete Analyzer		Cr6		
Sample #	Sample ID	Matrix	Collected	Received
140720004	B2W6H8	WATER	4/21/2014 11:17	4/21/2014 13:30
Procedure		Compound List		
Hexavalent chromium Discrete Analyzer		Cr6		
Sample #	Sample ID	Matrix	Collected	Received
140720005	B2W6K0	WATER	4/21/2014 09:41	4/21/2014 13:30
Procedure		Compound List		
Hexavalent chromium Discrete Analyzer		Cr6		
Sample #	Sample ID	Matrix	Collected	Received
140720006	B2W6J8	WATER	4/21/2014 09:41	4/21/2014 13:30
Procedure		Compound List		
Hexavalent chromium Discrete Analyzer		Cr6		
Sample #	Sample ID	Matrix	Collected	Received
140720007	B2W6F4	WATER	4/21/2014 12:58	4/21/2014 13:30
Procedure		Compound List		
Hexavalent chromium Discrete Analyzer		Cr6		
Sample #	Sample ID	Matrix	Collected	Received
140720008	B2W6F6	WATER	4/21/2014 12:58	4/21/2014 13:30
Procedure		Compound List		
Hexavalent chromium Discrete Analyzer		Cr6		

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

Sample #	Sample ID	Matrix	Collected	Received
140720009	B2W6M6	WATER	4/21/2014 07:25	4/21/2014 13:30
Procedure		Compound List		
Hexavalent chromium Discrete Analyzer		C r6		
Sample #	Sample ID	Matrix	Collected	Received
140720010	B2W6M7	WATER	4/21/2014 12:19	4/21/2014 13:30
Procedure		Compound List		
Hexavalent chromium Discrete Analyzer		C r6		
Sample #	Sample ID	Matrix	Collected	Received
140720011	B2W6N0	WATER	4/21/2014 07:25	4/21/2014 13:30
Procedure		Compound List		
Hexavalent chromium Discrete Analyzer		C r6		
Sample #	Sample ID	Matrix	Collected	Received
140720012	B2W6N1	WATER	4/21/2014 12:19	4/21/2014 13:30
Procedure		Compound List		
Hexavalent chromium Discrete Analyzer		C r6		

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #

X14-028-047

Page 1 of 1

Collector	Frank Hill	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	X14-028	Sampling Origin	Hanford Site	Purchase Order/Charge Code	303271ESS20
Project Title	HCS-ADJ, APRIL 2014	Logbook No.	ENF-N-506 64 / 21	Ice Check No.	N/A
Shipped to (Lab)	Waste Sampling & Characterization	Method of Shipment	GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.	N/A
Protocol	CERCLA	Priority	31 Days	Offsite Property No.	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
 *** Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/ATA Dangerous Goods Regulations but are not releasable per DOE Order 438.1.

SPECIAL INSTRUCTIONS
 UTELLS
 100-Area Generator Knowledge Information Form applies. The CACN for analytical work at WSCF is 405438.

Sample No.	B2W6.7 002	Filter	N	Date	WAPR 21 2014	Time	0941	No. Type Container	1X500-ML P	Sample Analysis	300 Q ANIONS_IC:COMMON	Holding Time	48 Hours	Preservative	Cool-4C
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Chain of Custody

Relinquished By	Frank Hill	Date/Time	APR 21 2014 1330	Received By	Vicki King	Date/Time	APR 21 2014 1530
Relinquished By		Date/Time		Received By		Date/Time	
Relinquished By		Date/Time		Received By		Date/Time	
Relinquished By		Date/Time		Received By		Date/Time	

S	=	Soil	DS	=	Drum Solids
SE	=	Sediment	DL	=	Drum Liquids
SO	=	Solid	T	=	Tissue
SL	=	Sludge	WT	=	Wipe
W	=	Water	L	=	Liquid
O	=	Oil	V	=	Vegetation
A	=	Air	X	=	Other

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A-6004-842 (REV 2)

Sample Receipt

CI2Mill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # X14-028-042
Page 1 of 1

Collector	Frank Hall	Contact/Requester	Karen Waters-Husted	Telephone No.	509-375-4650
SAT No.	X14-028	Sampling Origin	Hanford Site	Purchase Order/Charge Code	303271ESS20
Project Title	IRCS-ADID, APRIL 2014	Logbook No.	HNF-N-506 64/25	Ice Check No.	N/A
Shipped To (Lab)	Waste Sampling & Characterization	Method of Shipment	GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.	N/A
Project	CERCLA	Priority:	31 Days	Offsite Property No.	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
 *** Contains Radioactive Material it concentrations that may or may not be regulated for transportation per 19 CFR/ATA Dangerous Goods Regulations but are not releasable per DDE Order 4-38.1.

SPECIAL INSTRUCTIONS
 WELLS
 100-Acc Generator Knowledge Information Form applies.
 The CACN for analytical work at WSCF is 404438.

Sample No.	Filter	Date	Time	No./Type Container	Sample Analysis	Holding Time	Preservative
B2W6H6 002	N	W APR 21 2014	1117	1X500-ML BG	719E_CR6: COMMON	24 Hours	COOL-4C
B2W6H6 007	Y	W APR 21 2014	1111	1X500-ML BG	719E_CR6: COMMON	24 Hours	COOL-4C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	Matrix *
Relinquished By	Frank Hall		APR 21 2014 1330	Received By	V. Waters-Husted		APR 21 2014 1330	S = Soil SP = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air
Relinquished By				Received By				DS = Drum Solids DL = Drum Liquids T = Tissue WT = Waste L = Liquid V = Vegetation X = Other
Relinquished By				Received By				

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

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A-6004-842 (REV 2)

CH2MHill Parcrau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #
X14-028-048
Page 1 of 1

Collector	Frank Hill	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAP No	X14-078	Sampling Origin	Hanford Site	Purchase Order/Charge Code	303271ESS20
Project Title	IBC5-ADD, APRIL 2014	Logbook No.	HN5-N-506 <i>24/21</i>	Ice Check No.	N/A
Shipped To (Lab)	Waste Sampling & Characterization	Method of Shipment	GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.	N/A
Proced	CERCLA	Priority:	31 Days	Offsite Property No.	N/A
POSSIBLE SAMPLE HAZARDS/REMARKS *** Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/ATA Dangerous Goods Regulations but are not releasable per DOE Order 438.1.			SPECIAL INSTRUCTIONS **JUELLS** 100% Acc Generata Knowledge Information From applies The CACN for analytical work at WSCF is 40438.		
Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					

Sample No.	Filter	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2W6KU 05	Y	W APR 21 2014	0941	1X500-ML AG	7196_CR6: COMMON	24 HOURS	COOL-4C
B2W6J8 006	N	W	1	1X500-ML AG	7196_CR6: COMMON	24 HOURS	COOL-4C

Chain of Custody

Relinquished By	Print Frank Hill	Sign 	Date/Time APR 21 2014 1330	Received By	Print V. C. Hill	Sign 	Date/Time APR 21 2014 1335	Matrix *
Relinquished By				Received By				DS = Soil
Relinquished By				Received By				DL = Drain Liquids
Relinquished By				Received By				SE = Sediment
Relinquished By				Received By				SL = Solid
Relinquished By				Received By				SI = Sludge
Relinquished By				Received By				W = Water
Relinquished By				Received By				O = Oil
Relinquished By				Received By				A = Air
Relinquished By				Received By				X = Other
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed By			Date/Time	

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CH2MHill Plateau Remediation Company
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST
 C.O.C. # **X14-028-036**
 Page 1 of 1

Collector	Frank Hill	Contact/Requester	Karen Walters-Husted	Telephone No.	509-376-4650
SAF No.	X144028	Sampling Origin	Hanford Site	Purchase Order/Charge Code	303271ES20
Project Title	IBCS-ADD, APRIL 2014	Logbook No.	HNF-N-506 <u>64/21</u>	Kit Chest No.	N/A
Shipped To (Lab)	Waste Sampling & Characterization	Method of Shipment	GOVERNMENT VEHICLE	Bill of Lading/Air Bill No.	N/A
Protocol	CERCLA	Priority:	31 Days	Offsite Property No.	N/A
POSSIBLE SAMPLE HAZARDS/REMARKS ** ** Contain Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/ATA Dangerous Goods Regulations but are not releasable per DOE Order 438.1. **WELLS** SPECIAL INSTRUCTIONS: 10k-Axis Generator Knowledge Information Form applies. The CACN for analytical work at WSCF is 404438.					
Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			Holding Time		

Sample No.	Filter	Date	Time	Nc/Type Container	Sample Analysis	Holding Time	Preservative
B2W6F4	N	WAPR 21 2014	1238	1x500-rL AG	7196_CRB: COMMON	24 Hours	COOL-4C
B2W6F6	Y	W		1x500-rL AG	7196_CRB: COMMON	24 Hours	COOL-4C

Relinquished By	Print Frank Hill	Sign 	Date/Time APR 21 2014 1330	Received By	Print Vicki King	Sign 	Date/Time APR 21 2014 1330
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time
FINAL SAMPLE DISPOSITION				Disposal Method (e.g. Return to customer, per lab procedure, used in process)			

MATRIX *

S = Soil	DS = Dura Solids
SL = Sediment	UL = Urban Liquids
SO = Solid	T = Tissue
SL = Sludge	WT = Waste
W = Water	L = Liquid
O = Oil	V = Vegetation
A = Air	X = Others

Chain of Custody

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A-6004-942 (REV 2)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. #
X14-028-063
Page 1 of 1

Collector	Frank Hill	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	X14-028	Sampling Origin	Hanford Site	Purchase Order/Charge Code	303271ESS20
Project Title	IBC5-ADD, APRIL 2014	Logbook No.	HNF-N-506 <i>44 / 91</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	CERCLA	Priority	31 Days	Offsite Property No.	N/A
POSSIBLE SAMPLE HAZARDS/REMARKS			SPECIAL INSTRUCTIONS		
*** Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/ATA Dangerous Goods Regulations but are not releasable per DOE Order 408.1.			**WPLS** 100-Area Generator Knowledge Information Form applies. The CACN for analytical work at WSCP is 404438.		
Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			Held Time		

Sample No	Filter	Date	Time	Net/Type Container	Sample Analysis	Holding Time	Preservative
B2W6MT 010	N	WAPR 21 2014	1219	1x500-mL aG	7196_CR6_COMMON	24 Hours	Cont-4G
B2W6MT 012	Y	W	1	1x500-mL aG	7196_CR6_COMMON	24 Hours	Cont-4G

Chain of Custody

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time	MATRIX*
Relinquished By	<i>Frank Hill</i>	<i>[Signature]</i>	APR 21 2014 1330	Received By	<i>Victoria King</i>	<i>[Signature]</i>	APR 21 2014 1330	S = Soil SL = Sediment SO = Solid ST = Sludge W = Water O = Oil A = Air DS = Dross Solids DL = Dross Liquids T = Tissue WT = Waste L = Liquid V = Vegetation X = Other
Relinquished By			Date/Time	Received By			Date/Time	
Relinquished By			Date/Time	Received By			Date/Time	
FINAL SAMPLE DISPOSITION				Disposal Method (e.g., Return to customer, per lab procedure, used in process)				Disposed By

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