

JULY 10, 2012

WSCF Laboratory

PO Box 650 S3-30
Richland, WA 99352



July 10, 2012

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

Dear Scot Fitzgerald,

FINAL RESULT FOR SAMPLE DELIVERY GROUP WSCF120823

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 WSCF120823

- * 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 written over a horizontal 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

JULY 10, 2012

ATTACHMENT 1

COVER SHEET

Consisting of 2 pages
Including cover page

WSCF SAF Number Cross Reference

Group # WSCF120823
Data Deliverable Date 08/06/12

SAF #	Sample ID	Sample #	Matrix	Sampled	Received
I12-021	B2KJK1	120823001	WATER	06/22/12	06/22/12
I12-021	B2KJL7	120823002	WATER	06/22/12	06/22/12
I12-021	B2KH76	120823003	WATER	06/22/12	06/22/12
I12-021	B2KJM5	120823004	WATER	06/22/12	06/22/12

JULY 10, 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, D, U and J) 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.
- **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.
- **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

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

Attachment 2
Narrative
WSCF120823

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.

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ATTACHMENT 3

ANALYTICAL RESULTS

Consisting of 9 pages
Including cover page

JULY 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 # WSCF120823
Report Date July 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 # WSCF120823

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
204059	204059	1	BLANK	77698	BLANK		Hexavalent chromium Discrete Analyzer
204059	204059	3	LCS	77700	LCS		Hexavalent chromium Discrete Analyzer
204059	204059	4	DUP	77701	B2KJM5(120823004DUP)	120823004	Hexavalent chromium Discrete Analyzer
204059	204059	5	MS	77702	B2KJM5(120823004MS)	120823004	Hexavalent chromium Discrete Analyzer
204059	204059	6	SAMPLE	120823001	B2KJK1		Hexavalent chromium Discrete Analyzer
204059	204059	7	SAMPLE	120823002	B2KJL7		Hexavalent chromium Discrete Analyzer
204059	204059	8	SAMPLE	120823003	B2KH76		Hexavalent chromium Discrete Analyzer
204059	204059	9	SAMPLE	120823004	B2KJM5		Hexavalent chromium Discrete Analyzer

Method Reference

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF120823

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-265-403	Hexavalent Chromium Analysis		
	EPA SW-846	7196A	Hexavalent Chromium
	HEIS	7196_CR6	Hexavalent Chromium

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 # WSCF120823

Sample # 120823001
 SAF# 112-021
 Sample ID B2KJK1

Matrix WATER
 Sampled 06/22/12
 Received 06/22/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										06/22/12
Hexavalent chromium Discrete Analyzer										
Hexavalent chromium	18540-29-9	LA-265-403	U	<0.0020		mg/L	1	0.0020	0.0050	06/22/12

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)

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF120823

Sample # 120823002
 SAF# 112-021
 Sample ID B2KJL7

Matrix WATER
 Sampled 06/22/12
 Received 06/22/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
06/22/12										
Hexavalent chromium Discrete Analyzer										
Hexavalent chromium	18540-29-9	LA-265-403		0.0175		mg/L	1	0.0020	0.0050	06/22/12

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)

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF120823

Sample # 120823003
 SAF# 112-021
 Sample ID B2KH76

Matrix WATER
 Sampled 06/22/12
 Received 06/22/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										06/22/12
Hexavalent chromium Discrete Analyzer										
Hexavalent chromium	18540-29-9	LA-265-403	U	<0.0020		mg/L	1	0.0020	0.0050	06/22/12

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)

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF120823

Sample # 120823004
 SAF# 112-021
 Sample ID B2KJM5

Matrix WATER
 Sampled 06/22/12
 Received 06/22/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										06/22/12
Hexavalent chromium Discrete Analyzer										
Hexavalent chromium	18540-29-9	LA-265-403		0.115		mg/L	1	0.0020	0.0050	06/22/12

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)

Quality Control Report

Attention Scot Fitzgerald
 Department Inorganic

Group # WSCF120823

Analytical Batch 204059 (QC Batch: 204059) Test Hexavalent chromium Discrete Analyzer
 Associated Samples 120823001, 120823002, 120823003, 120823004

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK										
			QC Sample #77698							
Hexavalent chromium	18540-29-9		<0.0020	mg/L					U	06/22/12
LCS			QC Sample #77700							
Hexavalent chromium	18540-29-9		0.0531	mg/L	106.2	90 - 110				06/22/12
DUP			QC Sample #77701							
			Original 120823004							
Hexavalent chromium	18540-29-9	0.115	0.114	mg/L			0.90	20		06/22/12
MS			QC Sample #77702							
			Original 120823004							
Hexavalent chromium	18540-29-9	0.115	0.0457	mg/L	114.2	85 - 115				06/22/12

ATTACHMENT4

SAMPLE RECEIPT

Consisting of 6 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 #: 120823

Profile #: 112-021-363

Proj. Mgr.:

Phone:

The following samples were received from you on 6/22/2012 1:35:00 PM. 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
Tests scheduled				
120823001	B2KJK1	WATER	6/22/2012 11:18	6/22/2012 13:35
		CR6DA-W		
120823002	B2KJL7	WATER	6/22/2012 10:42	6/22/2012 13:35
		CR6DA-W		
120823003	B2KH76	WATER	6/22/2012 12:54	6/22/2012 13:35
		CR6DA-W		
120823004	B2KJM5	WATER	6/22/2012 08:57	6/22/2012 13:35
		CR6DA-W		

Test Acronym Description

Test Acronym	Description
CR6DA-W	Cr6 (W Discrete analyzer)

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C.# 112-021-363 Page 1 of 1	
Collector	D.J. Woehle CHPRC 112-021	Contact/Requester	Karen Waters-Husted	Telephone No.	376-4650
SAF No.	112-021	Sampling Origin	Hanford Site	Purchase Order/Charge Code	300071ES20
Project Title	100KR4, APRIL 2012	Logbook No.	HNF-N-506 4829	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:	45 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) 593.			SPECIAL INSTRUCTIONS Hold Time 100 Area Generator Knowledge Information Form applies. The CACN for all analytical work at WSCF is 401647.		
Sample No.	120823	Filter	N	Time	W 6/22/12 1118
		No/Type Container	1x500-mL aG	7186 CR6: Hexavalent Chromium (1)	
B2KJK1 001				Sample Analysis	Preservative
				Holding Time	24 Hours
					Cool-4C

Relinquished By	Print: <i>D. Woehle</i> D.J. Woehle CHPRC	Sign	<i>[Signature]</i>	Date/Time	JUN 22 2012 1335
Received By	Print: <i>T.A. Frazim</i> T.A. Frazim	Sign	<i>[Signature]</i>	Date/Time	JUN 22 2012 1335
Relinquished By		Received By		Date/Time	
Relinquished By		Received By		Date/Time	
Relinquished By		Received By		Date/Time	
FINAL SAMPLE DISPOSITION				Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Date/Time
				Disposed By	

A-6004-842 (REV 2)

PRINTED ON 3/5/2012

Chain of Custody

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C. # 112-021-371			
				Page 1 of 1			
Collector D.J. Woehle CHPRC	Contact/Requester Karen Waters-Husted	Telephone No. 376-4650					
SAF No. 112-021	Sampling Origin Hanford Site	Purchase Order/Charge Code 300071ES20					
Project Title 100KR4, APRIL, 2012	Logbook No. HNF-N-506 48129	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: 45 Days	Offsite Property No. N/A					
SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> I00 Area 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 5400.5 (1960) (93)							
Sample No. B2KJL7 002	Filter N	Date 6/22/12	Time 1042	No/Type Container 1x500-ml. aG	Sample Analysis 7196_CR6: Hexavalent Chromium (1)	Holding Time 24 Hours	Preservative Cool-4C

Relinquished By D.J. Woehle CHPRC	Date/Time JUN 22 2012 1335	Received By J.A. Frazar	Date/Time JUN 22 2012 1335	Matrix * S = Soil DS = Drum Solids SE = Sediment DL = Drum Liquids SO = Solid T = Tissue SL = Sludge WI = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By [Signature]	Date/Time JUN 22 2012 1042	Received By [Signature]	Date/Time JUN 22 2012 1042	
Relinquished By [Signature]	Date/Time JUN 22 2012 1042	Received By [Signature]	Date/Time JUN 22 2012 1042	
Relinquished By [Signature]	Date/Time JUN 22 2012 1042	Received By [Signature]	Date/Time JUN 22 2012 1042	
FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process)				Date/Time A-6004-842 (REV 2)

Chain of Custody

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C. # 112-021-180 Page 1 of 1	
Collector D.J. Woehle CHPRC 112-021	Contact/Requester Karen Waters-Husted Telephone No. 376-4650	Sampling Origin Hanford Site Purchase Order/Charge Code 300071ES20	Logbook No. HNF-N-506 48/29 Ice Chest No. N/A	Method of Shipment GOVERNMENT VEHICLE Bill of Lading/Air Bill No. N/A	Offsite Property No. N/A
Project Title 100KR4, APRIL 2012	Priority: 45 Days	SPECIAL INSTRUCTIONS Hold Time 100 Area Generator Knowledge Information Form applies. The CAUN for all analytical work at WSCF is 40/647.			
Shipped To (Lab) WASTE SAMPLING & CHARACTERIZATION	POSSIBLE SAMPLE HAZARDS/REMARKS ** Contain Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)	Sample Analysis 7196_CR6: Hexavalent Chromium (1)	Holding Time 24 Hours	Preservative Cool-4C	Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Sample No. B2K176 003	Filter N	Date 6/22/12	Time 1254	No/Type Container 1x500-mL aG	Sample Analysis 7196_CR6: Hexavalent Chromium (1)

Reinquished By D.J. Woehle CHPRC	Sign <i>[Signature]</i>	Date/Time JUN 22 2012 1335	Received By TAFADZIAN	Sign <i>[Signature]</i>	Date/Time JUN 22 2012 1335	Matrix * S - Soil DS - Drum Solids SE - Sediment DL - Drum Liquids SO - Solid T - Tissue SL - Sludge WJ - Waste W - Water L - Liquid O - Oil V - Vegetation A - Air X - Other
Reinquished By	Sign	Date/Time	Received By	Sign	Date/Time	
Reinquished By	Sign	Date/Time	Received By	Sign	Date/Time	
Reinquished By	Sign	Date/Time	Received By	Sign	Date/Time	
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time	Disposed By	Date/Time	A-8004-842 (REV 2)

Chain of Custody

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		C.O.C. # 112-021-376
Collector D.J. Woehle CHPRC		Contact/Requester Karen Waters-Husted	Telephone No. 376-4650	Page 1 of 1
SAF No. 112-021	Sampling Origin Hamford Site	Loghook No. HNF-N-506-46/29	Purchase Order/Charge Code 300071ES20	
Project Title 100KK4, APRIL 2012	Method of Shipment GOVERNMENT VEHICLE	Priority 45 Days	Bill of Lading/Air Bill No. N/A	
Shipped To (Lab) Waste Sampling & Characterization	Offsite Property No. N/A	SPECIAL INSTRUCTIONS Hold Time 100 Area Generator Knowledge Information Form applies. The CACN for all analytical work at WSCF is 401647.		
Protocol CERCLA	POSSIBLE SAMPLE HAZARDS/REMARKS ** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 45 CFR but are not releasable per DOE Order 5400.5 (1/96/1993)	Total Activity Exemption: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		
Sample No. B2KJM5 004	Filter N	Time 0851	No/Type Container 1x500-ml. aG	Sample Analysis 7196_CR6: Hexavalent Chromium (1)
		Date JUN 22 2012	Holding Time 24 Hours	Preservative Cool-4C

Relinquished By D.J. Woehle CHPRC	Date/Time JUN 22 2012 1335	Received By T.A. Parris	Date/Time JUN 22 2012 1335	Matrix * S = Soil DS = Drum Solids SL = Sediment DL = Drum Liquids SO = Solid T = Tissue SL = Sludge W = Wipe W = Water L = Liquid O = Oil V = Vegetation A = Air X = Other
Relinquished By [Signature]	Date/Time JUN 22 2012 0851	Received By [Signature]	Date/Time JUN 22 2012 1335	
Relinquished By [Signature]	Date/Time JUN 22 2012 0851	Received By [Signature]	Date/Time JUN 22 2012 1335	
Relinquished By [Signature]	Date/Time JUN 22 2012 0851	Received By [Signature]	Date/Time JUN 22 2012 1335	
FINAL SAMPLE DISPOSITION	Disposal Method (e.g. Return to customer, per lab procedure, used in process)			Date/Time
PRINTED ON 3/5/2012				A-6004-842 (REV 2)