

PO Box 650 S3-30  
Richland, WA 99352



December 10, 2010

Michael Neely  
CH2M-HILL PRC  
PO Box 1600  
Richland, WA 99352

Dear Michael Neely,

**FINAL RESULT FOR SAMPLE DELIVERY GROUP WSCF103224**

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

This letter contains the following information for sample delivery group WSCF103224

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

Very truly yours,

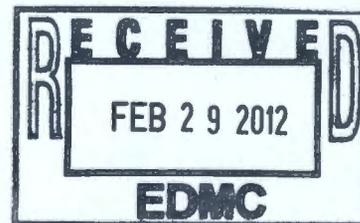


Electronically signed by Joseph Hale

For Lab Manager  
WSCF Analytical Lab  
(509) 373-7495

Attachments 4

CC: w/Attachments



File/LB

ATTACHMENT 1

**COVER SHEET**

Consisting of 2 pages  
Including cover page

**WSCF SAF Number Cross Reference**

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Group # WSCF103224  
Data Deliverable Date 01/04/11

SAF #	Sample ID	Sample #	Matrix	Sampled	Received
X11-005	B28K08	103224001	WATER	12/05/10	12/05/10
X11-005	B28K09	103224002	WATER	12/05/10	12/05/10
X11-005	B28K06	103224003	WATER	12/05/10	12/05/10
X11-005	B28K07	103224004	WATER	12/05/10	12/05/10

ATTACHMENT 2

**NARRATIVE**

Consisting of 3 pages  
Including cover page

### Introduction

Four (4) groundwater samples were received at the WSCF Laboratory on December 5, 2010. 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), Modification No. 2 to Agreement 36587, Release 3, "FH 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, 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):

- Batch QC 170683 analyzed on sample# B28K08 (103224001)

All applicable QC controls are within the established limits.

Attachment 2  
Narrative  
WSCF103224

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 9 pages  
Including cover page

## WSCF ANALYTICAL RESULTS REPORT

For

CH2M Hill Plateau Remediation

PO Box 1600  
Richland, WA 99352

Attention: Michael Neely

**Contract #** MOA-FH-CHPRC-2008  
**Group #** WSCF103224  
**Report Date** December 10, 2010

Analytical: Electronically signed by Joseph Hale

Client Services: Electronically signed by Heather Medley

*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) 373-7020 or (509) 531-8004. Information designation of this report is the responsibility of the customer.

**Batch QC List****Group #**

WSCF103224

**Attention** Michael Neely  
**Department** Inorganic

<b>QC Batch</b>	<b>Analytical Batch</b>	<b>S#</b>	<b>Type</b>	<b>Sample #</b>	<b>Client Sample#</b>	<b>Original</b>	<b>Test</b>
170683	170683	1	BLANK	43219	BLANK		Hexavalent chromium Discrete Analyzer
170683	170683	3	LCS	43221	LCS		Hexavalent chromium Discrete Analyzer
170683	170683	4	DUP	43222	B28K08(103224001DUP)	103224001	Hexavalent chromium Discrete Analyzer
170683	170683	5	MS	43223	B28K08(103224001MS)	103224001	Hexavalent chromium Discrete Analyzer
170683	170683	6	SAMPLE	103224001	B28K08		Hexavalent chromium Discrete Analyzer
170683	170683	7	SAMPLE	103224002	B28K09		Hexavalent chromium Discrete Analyzer
170683	170683	8	SAMPLE	103224003	B28K06		Hexavalent chromium Discrete Analyzer
170683	170683	9	SAMPLE	103224004	B28K07		Hexavalent chromium Discrete Analyzer

## Method Reference

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Attention Michael Neely  
Department Inorganic

Group # WSCF103224

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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.

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<b>LA-265-403</b>	Hexavalent Chromium Analysis		
	EPA SW-846	7196A	Hexavalent Chromium
	HEIS	7196_CR6	Hexavalent Chromium

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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>

**WSCF Analytical Results Report**

**Group #** WSCF103224

**Attention** Michael Neely  
**Department** Inorganic

**Sample #** 103224001  
**SAF#** X11-005  
**Sample ID** B28K08

**Matrix** WATER  
**Sampled** 12/05/10  
**Received** 12/05/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Cr(VI)										12/05/10
Cr(VI)										
Hexavalent chromium	18540-29-9	LA-265-403	B	0.00380		mg/L	1	0.0020	0.0050	12/05/10

MDL = Minimum Detection  
 RQ = Result Qualifier  
 TP Err = Total Propagated  
 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)

# WSCF Analytical Results Report

Attention Michael Neely  
 Department Inorganic

Group # WSCF103224

Sample # 103224002  
 SAF# X11-005  
 Sample ID B28K09

Matrix WATER  
 Sampled 12/05/10  
 Received 12/05/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Cr(VI)										12/05/10
Cr(VI)										
Hexavalent chromium	18540-29-9	LA-265-403	B	0.00330		mg/L	1	0.0020	0.0050	12/05/10

MDL = Minimum Detection  
 RQ = Result Qualifier  
 TP Err = Total Propagated  
 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)

# WSCF Analytical Results Report

Group # WSCF103224

Attention Michael Neely  
 Department Inorganic

Sample # 103224003  
 SAF# X11-005  
 Sample ID B28K06

Matrix WATER  
 Sampled 12/05/10  
 Received 12/05/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Cr(VI)										12/05/10
Cr(VI)										
Hexavalent chromium	18540-29-9	LA-265-403	B	0.00350		mg/L	1	0.0020	0.0050	12/05/10

MDL = Minimum Detection  
 RQ = Result Qualifier  
 TP Err = Total Propagated  
 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)

# WSCF Analytical Results Report

Group # WSCF103224

Attention Michael Neely  
 Department Inorganic

Sample # 103224004  
 SAF# X11-005  
 Sample ID B28K07

Matrix WATER  
 Sampled 12/05/10  
 Received 12/05/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Cr(VI)										12/05/10
Cr(VI)										
Hexavalent chromium	18540-29-9	LA-265-403	B	0.00320		mg/L	1	0.0020	0.0050	12/05/10

MDL = Minimum Detection  
 RQ = Result Qualifier  
 TP Err = Total Propagated  
 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 Michael Neely  
 Department Inorganic

Group # WSCF103224

QC Batch 170683 Test Hexavalent chromium Discrete Analyzer  
 Associated Samples 103224001, 103224002, 103224003, 103224004

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
<b>BLANK</b>										
			<b>QC Sample #43219</b>							
Hexavalent chromium	18540-29-9		<0.0020	mg/L					U	12/05/10
<b>LCS</b>			<b>QC Sample #43221</b>							
Hexavalent chromium	18540-29-9		0.0498	mg/L	99.6	90 - 110				12/05/10
<b>DUP</b>			<b>QC Sample #43222</b>							
			<b>Original 103224001</b>							
Hexavalent chromium	18540-29-9	0.00380	0.00330	mg/L			14.10	20	B	12/05/10
<b>MS</b>			<b>QC Sample #43223</b>							
			<b>Original 103224001</b>							
Hexavalent chromium	18540-29-9	0.00380	0.0401	mg/L	100.2	85 - 115				12/05/10

ATTACHMENT4

**SAMPLE RECEIPT**

Consisting of 4 pages  
Including cover page

# Sample Receipt

**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: Michael Neely

Customer Code: CHPRC  
PO #: 401922  
Work Order #: 103224  
Profile #: X11-005-342  
Proj. Mgr.:  
Phone:

The following samples were received from you on 12/5/2010 9:50:00 AM. They have been scheduled for the tests listed beside each sample. If this information is incorrect, please contact your service representative. Thank you for using Waste Sampling and Characterization Facility.

Sample #	Sample ID	Matrix	Collected	Received
		<b>Tests scheduled</b>		
103224001	B28K08	WATER	12/5/2010 08:45	12/5/2010 09:50
		CR6DA-W		
103224002	B28K09	WATER	12/5/2010 08:45	12/5/2010 09:50
		CR6DA-W		
103224003	B28K06	WATER	12/5/2010 08:45	12/5/2010 09:50
		CR6DA-W		
103224004	B28K07	WATER	12/5/2010 08:45	12/5/2010 09:50
		CR6DA-W		

### Test Acronym Description

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

<b>CHPRC</b>	<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>		<b>C.O.C. #</b> <b>X11-005-342</b>				
			Page 1 of 1				
Collector: <b>CA Snyder</b> <b>CHPRC</b>	Contract/Requester: <b>Karen Watson-Hansen</b>	Telephone No. <b>176-8550</b>					
SAF No. <b>X11-005</b>	Sampling Origin:	Purchase Order/Charge Code <b>0001RCS20</b>					
Project Title: <b>IL2 ILGDURA OCTOBER 2010</b>	Logbook No.: <b>HNF-N-506 33179</b>	Ice Chest No. <b>N/A</b>					
Shipment To (Lab): <b>Waste Sampling &amp; Characterization</b>	Method of Shipment: <b>Government Vehicle</b>	Bill of Lading/Air Bill No. <b>N/A</b>					
Protocol: <b>CERCLA</b>	Priority: <b>30 Days PRIORITY</b>	Offsite Property No. <b>N/A</b>					
<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b> ** Contact Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 560.5 (1996/1997)		<b>SPECIAL INSTRUCTIONS</b> Site Wide Area Generator Knowledge Information Form applies. The CACH for all analytical work at WSCF is 401925. Please report all TICs.	<b>Hold Time</b> Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
<b>103224</b>							
Sample No.	Filter	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B28K08-001	Y	12-5-10	0845	1x500-mL aG	7198_CR6 Hexavalent Chromium (I)	24 Hours	Cool-4C
B28K09-002	N	12-5-10	0845	1x500-mL aG	7198_CR6 Hexavalent Chromium (I)	24 Hours	Cool-4C

Relinquished By: <b>CA Snyder</b>	Post: <b>CHPRC</b>	Sign: <i>CA Snyder</i>	Date/Time: <b>DEC 05 2010 0950</b>	Received By: <b>Victor Sims</b>	Date/Time: <b>DEC 05 2010 0950</b>	<b>Matrix *</b> C -- Acid      TN -- Nitrogen SF -- Sulfur    TP -- Phosphorus SO -- Sulfide    T -- Total ST -- Solids    UR -- Urea W -- Water      S -- Sulfide O -- Oil        V -- Volatiles A -- Air        Y -- Other
Relinquished to:			Date/Time:	Received by:	Date/Time:	
Relinquished by:			Date/Time:	Received by:	Date/Time:	
Relinquished by:			Date/Time:	Received by:	Date/Time:	
<b>FINAL SAMPLE DISPOSITION</b>	Disposal Method (e.g., Return to contractor, per lab procedure, used in process)		Disposed By:		Date/Time:	

A-6004-842 (REV 2)



CHPRC		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>		C.O.C. # <b>X11-005-341</b>					
Collector <b>CA Snyder</b> CHPRC		Contact/Resister Kara Waters/Justin	Telephone No 376-4650		Page 1 of 1				
SAF No. X11-005		Sampling Origin	Purchase Order/Charge Code 30R1181520						
Project Title R2 HBDURA OCTOBER 2010		Logbook No: HNF-N-506 33179	Ice Chest No. N/A						
Shipped In (Lab) (Waste Sampling & Characterization)		Method of Shipment Government Vehicle	Bill of Lading/Air Bill No. N/A						
Protocol CERCLA		Priority: 30 Days	<b>PRIORITY</b>		Offsite Priority No. N/A				
<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b> ** ** Common Radiative Material at concentration. This are not regulated for transportation per 49 CFR but are not reliable per D.W. Under 5400.5 (199199W)		<b>SPECIAL INSTRUCTIONS</b> Site Wide Area Generation Knowledge Information Form applies. For CALN for all analytical work at WSL. P is 401022. Please report all TR's.		Hold Time 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		
E28K06	003	W	12-5-10	0843	1x500-mL. wG	7196_CR6: Hexavalent Chromium (1)	24 Hours	Cool-4C	
E28K07	002	N	W	12-5-10	0845	1x500-mL. wG	7198_CR6: Hexavalent Chromium (1)	24 Hours	Cool-4C

Requisitioned By <b>CA Snyder</b> CHPRC	Date/Time <b>DEC 05 2010</b>	Received By <i>V. L. ...</i>	Date/Time <b>DEC 05 2010</b>	Matrix #
Requisitioned By	Date/Time	Received By	Date/Time	S = Soil SP = Spent SS = Solid SL = Sludge W = Waste ( ) = Oil A = Air LPS = Liquid DS = Dregs / sand Y = Yugo WI = Wood L = Liquid V = Vapour X = Other
Requisitioned By	Date/Time	Received By	Date/Time	
Requisitioned By	Date/Time	Received By	Date/Time	
<b>FINAL SAMPLE DISPOSITION</b>	Disposal Method (to e.g., Return to customer, per lab procedure, used in process)		Disposed By	Date/Time

A-6004-842 (REV 2)

Monday, December 06, 2010 8:26:21 AM  
Page 3 of 3

ChainReceipt