

DECEMBER 31, 2013

**WSCF Laboratory**

PO Box 650 S3-30  
Richland, WA 99352



December 31, 2013

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

Dear Scot Fitzgerald,

**FINAL RESULT FOR SAMPLE DELIVERY GROUP WSCF131592**

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 WSCF131592

- \* 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, 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 # WSCF131592  
Data Deliverable Date 01/10/14

---

<b>SAF #</b>	<b>Sample ID</b>	<b>Sample #</b>	<b>Matrix</b>	<b>Sampled</b>	<b>Received</b>
F13-051	B2RW94	131592001	WATER	12/26/13	12/26/13

---

ATTACHMENT 2

**NARRATIVE**

Consisting of 3 pages  
Including cover page

### Introduction

A sample was received at the WSCF laboratory as referenced on the WSCF SAF Number Cross Reference table included in the final report. The sample was 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**  
WSCF131592

**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.

ATTACHMENT 3

**ANALYTICAL RESULTS**

Consisting of 6 pages  
Including cover page

DECEMBER 31, 2013

**WSCF ANALYTICAL RESULTS REPORT**

For

CH2M Hill Plateau Remediation

PO Box 1600  
Richland, WA 99352

Attention: Scot Fitzgerald

**Contract #** MOA-FH-CHPRC-2008  
**Group #** WSCF131592  
**Report Date** December 31, 2013

Analytical: Electronically signed by Joseph Hale

Client Services: Electronically signed by Bruce Buchanan

*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 # WSCF131592

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
225455	225455	1	BLANK	103155	BLANK		Hexavalent chromium Discrete Analyzer
225455	225455	3	LCS	103157	LCS		Hexavalent chromium Discrete Analyzer
225455	225455	4	DUP	103158	B2RW94(131592001DUP)	131592001	Hexavalent chromium Discrete Analyzer
225455	225455	5	MS	103159	B2RW94(131592001MS)	131592001	Hexavalent chromium Discrete Analyzer
225455	225455	6	SAMPLE	131592001	B2RW94		Hexavalent chromium Discrete Analyzer

Method Reference

Attention Scot Fitzgerald  
Department Inorganic

Group # WSCF131592

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 # WSCF131592

Sample # 131592001  
 SAF# F13-051  
 Sample ID B2RW94

Matrix WATER  
 Sampled 12/26/13  
 Received 12/26/13

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										12/26/13
<b>Hexavalent chromium Discrete Analyzer</b>										
Hexavalent chromium	18540-29-9	LA-265-403	U	<0.0020		mg/L	1	0.0020	0.0050	12/26/13

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.

**Quality Control Report**

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

**Group #** WSCF131592

**Analytical Batch** 225455 (QC Batch: 225455)      **Test** Hexavalent chromium Discrete Analyzer  
**Associated Samples** 131592001

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
<b>BLANK</b>										
			<b>QC Sample #103155</b>							
Hexavalent chromium	18540-29-9		<0.0020	mg/L					U	12/26/13
<b>LCS</b>			<b>QC Sample #103157</b>							
Hexavalent chromium	18540-29-9		0.0511	mg/L	102.2	90 - 110				12/26/13
<b>DUP</b>			<b>QC Sample #103158</b>							
			<b>Original 131592001</b>							
Hexavalent chromium	18540-29-9	<0.0020	<0.0020	mg/L			1000.00	20	* U	12/26/13
<b>MS</b>			<b>QC Sample #103159</b>							
			<b>Original 131592001</b>							
Hexavalent chromium	18540-29-9	<0.0020	0.0435	mg/L	108.8	85 - 115				12/26/13

\* - QC result out of range

n/a - Not Applicable

ATTACHMENT4

**SAMPLE RECEIPT**

Consisting of 3 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:** 404401  
**Work Order #:** 131592  
**Customer Work ID:** F13-051-195  
**Due Date:** 01/10/2014

The following samples were received from you on 12/26/2013 1:40:00 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
131592001	B2RW94	WATER	12/26/2013 12:41	12/26/2013 13:40
Procedure	Compound List			
Hexavalent chromium Discrete Analyzer	Cr6			

Chain of Custody

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F33 051-195	PAGE 1 OF 1
COLLECTOR <i>Brotherton Kauce</i>	COMPANY CONTACT TODAK, D	TELEPHONE NO. 370-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 1A	DATA TURNAROUND 24 Hours / 15 Days
SAMPLING LOCATION CB701, 1008	PROJECT DESIGNATION Sampling and Analysis of New Wells in 100-8C Area - Water	FIELD LOGBOOK NO. HNP-N-507-28/5	ACTUAL SAMPLE DEPTH 160.3 FT	ABR QUALITY <input type="checkbox"/>	METHOD OF SHIPMENT GOVERNMENT VEHICLE <b>ORIGINAL</b>
ICE CHEST NO.	OFFSITE PROPERTY NO. N/A	COA 30328ES10	BILL OF LADING/AIR BILL NO. N/A		
Waste Sampling & Characterization					

MATRIX* A-Air DL-Drum L-Liquid DS-Drum S-Solids L-Liquid C-Oil S-Soil SE-Sediment T-Tissue V-Vegetation W-Water WI-Wipe X-Other	SPECIAL HANDLING AND/OR STORAGE  <b>131592</b>	PRESERVATION Cool-dk	HOLDING TIME 24 Hour	TYPE OF CONTAINER 6G	NO. OF CONTAINER(S) 1	VOLUME 500mL	SAMPLE ANALYSIS 7196, 086, COMMON	SAMPLE DATE 12-26-13	SAMPLE TIME 1241	DATE/TIME 12-26-13 1340											
											**Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR/1ATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.**										
											WATER										
											BZRW94										

**FILTER**

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM <i>SAKRA</i>	RECEIVED BY/STORED IN <i>K. F. R. 12-26-13 1340</i>	** The CACU for WSCF Analytical is 404401. □ ** The 100 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. TRVL-13-105  <b>FILTER</b>
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	TRVL-13-105

LABORATORY SECTION	RECEIVED BY	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DATE/TIME