

WSCF Laboratory

RECEIVED AUGUST 31, 2011

1214520

PO Box 650 S3-30
Richland, WA 99352



August 31, 2011

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

Dear Michael Neely,

FINAL RESULT FOR SAMPLE DELIVERY GROUP WSCF112985

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

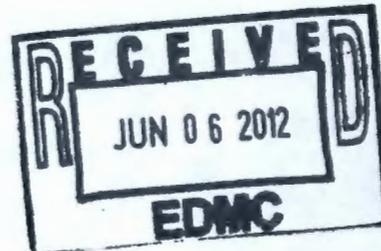
This letter contains the following information for sample delivery group WSCF112985

- * 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

Group # WSCF112985
Data Deliverable Date 08/29/11

SAF #	Sample ID	Sample #	Matrix	Sampled	Received
F11-141	B2H0F9	112985001	WATER	08/17/11	08/17/11

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), 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

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.

Radiochemistry Comments

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

Tracers are used to determine chemical yield. RPD is monitored in sample duplicate and is not required for tracer recovery per SOW.

- Isotopic Uranium analysis:
 - Uranium-234 and Uranium-238 – Duplicate Relative Percent Difference(s) (RPD) did not meet the established laboratory limits. Duplicate Relative Percent Difference (RPD) does not apply to results below 5X the minimum detectable activity. No flags issued.
 - All other 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 12 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 # WSCF112985
Report Date August 31, 2011

Analytical: Electronically signed by Joseph Hale

Client Services: Electronically signed by Richard Barker

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

Attention Michael Neely
Department Inorganic

Group # WSCF112985

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
188452	188453	4	BLANK	63405	BLANK		ICP-2008 MS All possible metal
188452	188453	5	LCS	63406	LCS		ICP-2008 MS All possible metal
188452	188453	6	MS	63407	B2FKH7(112935005MS)	112935005	ICP-2008 MS All possible metal
188452	188453	7	MSD	63408	B2FKH7(112935005MSD)	112935005	ICP-2008 MS All possible metal
188452	188453	30	SAMPLE	112985001	B2H0F9		ICP-2008 MS All possible metal

Batch QC List

Attention Michael Neely
Department Radiochemistry

Group # WSCF112985

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
188651	188884	1	BLANK	63571	BLANK		Uranium (AEA)
188651	188884	2	LCS	63572	LCS		Uranium (AEA)
188651	188884	3	SAMPLE	112985001	B2H0F9		Uranium (AEA)
188651	188884	4	DUP	63573	B2H0F9(112985001DUP)	112985001	Uranium (AEA)

Method Reference

Attention Michael Neely
Department Inorganic

Group # WSCF112985

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
	HEIS	200.8_METALS_ICPMS	Determination of Trace Elements in Waters and Waste by Inductively Coupled Plasma, Mass Spec.

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 Michael Neely
Department Radiochemistry

Group # WSCF112985

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-508-471	Determination Of Uranium, Plutonium, And Americium
	HEIS UISO_IE_PRECIP_AEA Uranium Iso, Alpha Spec

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

Attention Michael Neely
 Department Inorganic

Group # WSCF112985

Sample # 112985001
 SAF# F11-141
 Sample ID B2H0F9

Matrix WATER
 Sampled 08/17/11
 Received 08/17/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPMS Prep										08/21/11
ICP-MS										
Uranium	7440-61-1	LA-505-412	UD	<0.20		ug/L	2	0.20	0.40	08/25/11

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 Radiochemistry

Group # WSCF112985

Sample # 112985001
 SAF# F11-141
 Sample ID B2H0F9

Matrix WATER
 Sampled 08/17/11
 Received 08/17/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Np/Th/Pu/Am/U Prep										08/25/11
Uranium Iso										
Uranium-234	U-233/234	LA-508-471		0.076	.057	pCi/L	1	0.026		08/26/11
Uranium-235	15117-96-1	LA-508-471		0.062	.053	pCi/L	1	0.028		08/26/11
Uranium-238	U-238	LA-508-471	U	9.5E-3	.043	pCi/L	1	0.088		08/26/11

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

B - Analyte was detected in both the BLANK and SAMPLE
 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.

Quality Control Report

Attention Michael Neely
 Department Inorganic

Group # WSCF112985

QC Batch 188452
 Associated Samples 112985001

Test ICP-2008 MS All possible metal

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK										
			QC Sample #63405							
Uranium	7440-61-1	<0.10		ug/L					U	08/25/11
LCS			QC Sample #63406							
Uranium	7440-61-1	40.3		ug/L	100.8	85 - 115				08/25/11
MS			QC Sample #63407 Original 112935005							
Uranium	7440-61-1	42.3		ug/L	105.9	70 - 130				08/25/11
MSD			QC Sample #63408 Original 112935005							
Uranium	7440-61-1	42.2		ug/L	105.5	70 - 130	0.40	20	Paired 63407	08/25/11

Quality Control Report

Attention Michael Neely
 Department Radiochemistry

Group # WSCF112985

QC Batch 188651 Test Uranium (AEA)
 Associated Samples 112985001

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK		QC Sample #63571								
Uranium-234	U-233/234		8.8E-3	pCi/L					U	08/26/11
Uranium-235	15117-96-1		0.029	pCi/L					U	08/26/11
Uranium-238	U-238		0.0	pCi/L					U	08/26/11
LCS		QC Sample #63572								
Uranium-238	U-238		9.7	pCi/sample	113.9	80 - 120				08/26/11
DUP		QC Sample #63573								
		Original 112985001								
Uranium-234	U-233/234	0.076	0.027	pCi/L			95.10	20	* X	08/26/11
Uranium-235	15117-96-1	0.062	9.9E-3	pCi/L			144.90	20	* U	08/26/11
Uranium-238	U-238	9.5E-3	0.027	pCi/L			95.90	20	* X	08/26/11
SAMPLE		Sample #112985001								
Uranium-232 Tracer	14158-29-3				87.1	25 - 105				08/26/11
BLANK		QC Sample #63571								
Uranium-232 Tracer	14158-29-3				92.5	25 - 105				08/26/11
LCS		QC Sample #63572								
Uranium-232 Tracer	14158-29-3				63.9	25 - 105				08/26/11

Quality Control Report

Attention Michael Neely
Department Radiochemistry

Group # WSCF112985

Analyte	CAS #	Original Found	QC Found	Units	% RecovLimits	RPD	RPD Limit	RQ	Analyzed
DUP									
Uranium-232 Tracer	14158-29-3				97.1	25 - 105	0.00		08/26/11

QC Sample #63573
Original 112985001

Analytical Comment Report

Attention: Michael Neely

Group # WSCF112985

Quality Control Comments

Department Radiochemistry

63573 B2H0F9(112985001DUP)

- Analyte** Uranium-234 - Uranium (AEA)
[1] Duplicate RPD out-of-limits. RPD limit does not apply to results near the Minimum Detectable Concentration.
- Analyte** Uranium-238 - Uranium (AEA)
[1] Duplicate RPD out-of-limits. RPD limit does not apply to results near the Minimum Detectable Concentration.

ATTACHMENT4

SAMPLE RECEIPT

Consisting of 3 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 #: 401352/ES20

Work Order #: 112985

Profile #: F11-141-003

Proj. Mgr.:

Phone:

The following samples were received from you on 8/17/2011 10:30:00 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
		Tests scheduled		
112985001	B2H0F9	WATER	8/17/2011 07:10	8/17/2011 10:30
		2008-W; AEA-U-W		

Test Acronym Description

Test Acronym	Description
2008-W	ICP-MS (W)
AEA-U-W	Uranium Isotopic (AEA) (W)

CH2MHill Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				#11-141-003	PAGE 1 OF 1
COLLECTOR KC Patterson CHPRC	COMPANY CONTACT BAUER, RG	TELEPHONE NO. 373-3931	PROJECT COORDINATOR BAUER, RG		PRICE CODE COL	DATA TURNAROUND 12 Days / 12 Days	
SAMPLING LOCATION 216-S-19 Verification Round 4 EB-1	PROJECT DESIGNATION ARRA 216-S-19 Pond Verification Sampling - QC Sampling	FIELD LOGBOOK NO. HNF-11807-11-38	ACTUAL SAMPLE DEPTH (N/A)		SAF NO. F11-141	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO.	OFFSITE PROPERTY NO. N/A	METHOD OF SHIPMENT GOVERNMENT VEHICLE		ORIGINAL			
SHIPPED TO Waste Sampling & Characterization	PRESERVATION	H2O2 to pH c2	H2O2 to pH c2	BELL OF LADING/AIR BILL NO. N/A			
MATRIX* A=Air DL=Drum L=Liquid DS=Drum S=Solid L=Liquid O=Oil S=Soil SE=Soilment T=Tap Y=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1950/1993)	6 Months	6 Months	SPECIAL HANDLING AND/OR STORAGE 112985			
		HOLDING TIME		NO. OF CONTAINER(S) 1			
		TYPE OF CONTAINER		VOLUME 250ml			
				SAMPLE ANALYSIS SEMI-QUANT (see note) <input checked="" type="checkbox"/> 11 QUANTITATIVE <input checked="" type="checkbox"/> 11			
SAMPLE NO. B2H0F9	MATRIX* 1 WATER	SAMPLE DATE AUG 17 2011	SAMPLE TIME 0710				

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		DATE/TIME		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM KC Patterson	DATE/TIME AUG 17 2011	RECEIVED BY/STORED IN <i>[Signature]</i>	DATE/TIME AUG 17 2011	** The CACN for all analytical work at WSCF Laboratory is 401352ES20.□** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.□□** The Laboratory has agreed to attempt to provide preliminary results within 7 days of receipt.□□** The laboratory shall report the requested constituents of concern only in all preliminary or final hardcopy data reports, or EDOs. All samples chosen for matrix spike, and all spike compounds shall be identified in the final data report narrative. (1) Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238);			
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME			
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME			

PRINTED ON 8/4/2011 A-000 610 (REV 2)

August 31, 2011 08:08:43

Wednesday, August 17, 2011 12:02:04 PM
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3004.1.1084.3
Report ID: 112985
Group # WSCF112985