OCTOBER 25, 2011

1213303

WSCF Laboratory

PO Box 650 S3-30
Richland, WA 99352

October 25, 2011

Scot Fitzgerald
WSCF Laboratory
PO Box 650 S3-30
Richland, WA 99352

Dear Scot Fitzgerald,

FINAL RESULT FOR SAMPLE DELIVERY GROUP WSCF113250

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 WSCF113250

* 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

RECEIVED
APR 18 2012
EDMC

Attachments 4

CC: w/Attachments

File/LB

ATTACHMENT 1

COVER SHEET

Consisting of 2 pages
Including cover page

WSCF SAF Number Cross Reference

Group # WSCF113250
Data Deliverable Date 10/24/11

SAF #	Sample ID	Sample #	Matrix	Sampled	Received
F11-149	B2FPH5	113250001	WATER	09/22/11	09/22/11

ATTACHMENT 2

NARRATIVE

Consisting of 3 pages
Including cover page

Attachment 2
Narrative
WSCF113250

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

Anions – Hold time requirements for this analysis were met. A Duplicate, 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.

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

Attachment 2
Narrative
WSCF113250

- 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 11 pages
Including cover page

WSCF ANALYTICAL RESULTS REPORT

For

CH2M Hill Plateau Remediation

PO Box 650 S3-30
Richland, WA 99352

Attention: Scot Fitzgerald

Contract #	MOA-FH-CHPRC-2008
Group #	WSCF113250
Report Date	October 25, 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 Scot Fitzgerald
Department Inorganic

Group # WSCF113250

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
189902	189902	2	BLANK	65227	BLANK		Anions by Ion Chromatography (Water)
189902	189902	3	LCS	65228	LCS		Anions by Ion Chromatography (Water)
189902	189902	4	DUP	65229	B2FD91(113258001DUP)	113258001	Anions by Ion Chromatography (Water)
189902	189902	5	MS	65230	B2FD91(113258001MS)	113258001	Anions by Ion Chromatography (Water)
189902	189902	6	MSD	65231	B2FD91(113258001MSD)	113258001	Anions by Ion Chromatography (Water)
189902	189902	9	SAMPLE	113250001	B2FPH5		Anions by Ion Chromatography (Water)
189902	189902	10	SAMPLE	113250001	B2FPH5		Anions by Ion Chromatography (Water)

Batch QC List

Attention Scot Fitzgerald
Department Wet Chemistry

Group # WSCF113250

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
190842	190842	1	LCS	65542	LCS		Total Alkalinity as mg/L CaCO3 (Water)
190842	190842	2	DUP	65543	B2F6M7(113226001DUP)	113226001	Total Alkalinity as mg/L CaCO3 (Water)
190842	190842	9	SAMPLE	113250001	B2FPH5		Total Alkalinity as mg/L CaCO3 (Water)
190842	190842	13	LCS	65544	LCS		Total Alkalinity as mg/L CaCO3 (Water)
190842	190842	24	LCS	65545	LCS		Total Alkalinity as mg/L CaCO3 (Water)

Method Reference

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF113250

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-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

Method Reference

Attention Scot Fitzgerald
Department Wet Chemistry

Group # WSCF113250

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-531-411	Alkalinity		
	EPA-600/4-79-020	310.1	Alkalinity
	HEIS	2320_ALKALINITY	Alkalinity

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 Scot Fitzgerald
Department Inorganic

Group # WSCF113250

Sample # 113250001
SAF# F11-149
Sample ID B2FPH5

Matrix WATER
Sampled 09/22/11
Received 09/22/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Anions by IC										**09/22/11**
Anions by IC										
Chloride	16887-00-6	LA-533-410	D	45.2		ug/mL	2	0.12	0.81	09/22/11
Nitrate-N	NO3-N	LA-533-410	D	9.90		ug/mL	2	0.038	0.20	09/22/11
Sulfate	14808-79-8	LA-533-410	D	144		ug/mL	10	0.72	10	09/22/11

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 diltution 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 Scot Fitzgerald
Department Wet Chemistry

Group # WSCF113250

Sample # 113250001
SAF# F11-149
Sample ID B2FPH5

Matrix WATER
Sampled 09/22/11
Received 09/22/11

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Alkalinity										**09/29/11**
Alkalinity										
Total Alkalinity as CaCO3	ALKALINITY	LA-531-411		94		mg/L	1	1	10	09/29/11

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

B - Analyte < the RDL but >= the IDL/MDL.
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
N - MS and/or MSD sample recovery outside control limits.
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.
PQL is equivalent to Estimated Quantitation Limit (EQL)

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF113250

QC Batch 189902
Associated Samples 113250001

Test Anions by Ion Chromatography (Water)

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #65227**							
Chloride	16887-00-6		<0.062	ug/mL					U	09/22/11
Nitrate-N	NO3-N		<0.019	ug/mL					U	09/22/11
Sulfate	14808-79-8		<0.072	ug/mL					U	09/22/11
LCS			**QC Sample #65228**							
Chloride	16887-00-6		2.02	ug/mL	102.2	90 - 110				09/22/11
Nitrate-N	NO3-N		0.918	ug/mL	103.7	90 - 110				09/22/11
Sulfate	14808-79-8		4.14	ug/mL	105.5	90 - 110				09/22/11
DUP			**QC Sample #65229**							
			Original 113258001							
Chloride	16887-00-6		7.66	ug/mL			0.70	20	D	09/22/11
Nitrate-N	NO3-N		2.16	ug/mL			0.00	20	D	09/22/11
Sulfate	14808-79-8		29.0	ug/mL			0.70	20	D	09/22/11
MS			**QC Sample #65230**							
			Original 113258001							
Chloride	16887-00-6		1.94	ug/mL	97	80 - 120			D	09/22/11
Nitrate-N	NO3-N		0.877	ug/mL	98.1	80 - 120			D	09/22/11
Sulfate	14808-79-8		3.87	ug/mL	97.7	80 - 120			D	09/22/11
MSD			**QC Sample #65231**							
			Original 113258001					**Paired 65230**		

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF113250

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Chloride	16887-00-6		1.97	ug/mL	98.5	80 - 120	1.50	20	D	09/22/11
Nitrate-N	NO3-N		0.893	ug/mL	99.9	80 - 120	1.80	20	D	09/22/11
Sulfate	14808-79-8		3.71	ug/mL	93.8	80 - 120	4.10	20	D	09/22/11

Quality Control Report

Attention Scot Fitzgerald
Department Wet Chemistry

Group # WSCF113250

QC Batch 190842
Associated Samples 113250001

Test Total Alkalinity as mg/L CaCO3 (Water)

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
LCS			**QC Sample #65542**							
Total Alkalinity as CaCO3	ALKALINITY		100	mg/L	103.2	80 - 120				09/29/11
DUP			**QC Sample #65543**							
			Original 113226001							
Total Alkalinity as CaCO3	ALKALINITY		110	mg/L			0.00	20		09/29/11
LCS			**QC Sample #65544**							
Total Alkalinity as CaCO3	ALKALINITY		100	mg/L	103.3	80 - 120				09/29/11
LCS			**QC Sample #65545**							
Total Alkalinity as CaCO3	ALKALINITY		100	mg/L	101.5	80 - 120				09/29/11

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: Scot Fitzgerald

Customer Code:	CHPRC
PO #:	402089/ES20
Work Order #:	113250
Profile #:	F11-149-003
Proj. Mgr.:	
Phone:	

The following samples were received from you on 9/22/2011 9:30:00 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		
113250001	B2FPH5	WATER	9/22/2011 08:50	9/22/2011 09:30
		ALK-W; IC-W		

Test Acronym Description

Test Acronym	Description
ALK-W	Total Alkalinity (W)
IC-W	Anions by IC (W)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F11-149-003

PAGE 1 OF 1

COLLECTOR: Kayce Rust	COMPANY CONTACT: LUKE, SN	TELEPHONE NO.: 372-1667	PROJECT COORDINATOR: LUKE, SN
PRICE CODE: 7H	DATA TURNAROUND: 30 Days / 30 Days		
SAMPLING LOCATION: C8204-002	PROJECT DESIGNATION: Liquid Effluent Retention Facility (LERF) Replacement Well C8204 - Water	SAF NO.: F11-149	AIR QUALITY:
ICE CHEST NO.:	FIELD LOGBOOK NO.: 05131 HNF-N-576-3	ACTUAL SAMPLE DEPTH: 220.7 to 240.35 AT	COA: J02066ES10
METHOD OF SHIPMENT: GOVERNMENT VEHICLE	ORIGINAL		
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A	BILL OF LADING/AIR BILL NO.: N/A	

MATRIX*: A=Air, DI=Drum Liquids, DS=Drum Solids, L=Liquid, O=Oil, S=Soil, SE=Sediment, T=Tissue, V=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 (1990/1993)

113250

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	HNO3 to pH <2	Cool-4C	Cool-4C	None
HOLDING TIME	6 Months	48 Hours	14 Days	6 Months
TYPE OF CONTAINER	G/P	P	G/P	G/P
NO. OF CONTAINER(S)	1	1	1	1
VOLUME	500mL	500mL	250mL	250mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	1320_ALKALINITY (Alkalinity);	Tritium (H3) (Tritium);

DB 10/24/11 shipped

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B2FPH5	WATER	9-22-11	0850	✓	✓	✓	✓

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
Ed Kayce Rust	9-22-11 0930	K Brown	9/22/11 0930
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
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS

** The CACN for all analytical work at WSCF laboratory is 402089E520.

☐ ** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.

(1) ICP Metals - 6010 (TAL) {Calcium, Magnesium, Potassium, Sodium};

(2) IC Anions - 300.0 {Chloride, Nitrogen in Nitrate, Sulfate};

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

PRINTED ON 7/19/2011

A-6003-618 (REV 2)