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

May 15, 2014

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

Dear Scot Fitzgerald,

FINAL RESULT FOR SAMPLE DELIVERY GROUP WSCF140725

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 WSCF140725

* 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 # WSCF140725
Data Deliverable Date 05/22/14

SAF #	Sample ID	Sample #	Matrix	Sampled	Received
X14-028	B2W6D4	140725001	WATER	04/21/14	04/21/14
X14-028	B2W6D1	140725002	WATER	04/21/14	04/21/14
X14-028	B2W6D5	140725003	WATER	04/21/14	04/21/14
X14-028	B2W6D3	140725004	WATER	04/21/14	04/21/14
X14-028	B2W6D2	140725005	WATER	04/21/14	04/21/14

ATTACHMENT 2

NARRATIVE

Consisting of 4 pages
Including cover page

Attachment 2
Narrative
WSCF140725

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), 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
WSCF140725

Anions – 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.

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.

ICP-AES 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):

- Calcium – Exceeded spiking levels by a factor of 4. Spike recoveries and associated RPDs are not valid.
- All other applicable QC controls are within the established limits.

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.

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):

- All applicable QC controls are within the established limits.

Total Organic Carbon – The hold time requirement for this analysis was 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.

Dissolved Organic Carbon – The hold time requirement for this analysis was 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

Attachment 2
Narrative
WSCF140725

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

Tritium:

- 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 33 pages
Including cover page

WSCF ANALYTICAL RESULTS REPORT

For

CH2M Hill Plateau Remediation

PO Box 1600
Richland, WA 99352

Attention: Scot Fitzgerald

Contract #	MOA-FH-CHPRC-2008
Group #	WSCF140725
Report Date	May 15, 2014

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 # WSCF140725

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
232151	232151	2	BLANK	109256	BLANK		Anions by Ion Chromatography (Water)
232151	232151	3	LCS	109257	LCS		Anions by Ion Chromatography (Water)
232151	232151	4	MS	109258	B2W6L5(140719007MS)	140719007	Anions by Ion Chromatography (Water)
232151	232151	5	MSD	109259	B2W6L5(140719007MSD	140719007	Anions by Ion Chromatography (Water)
232151	232151	12	SAMPLE	140725005	B2W6D2		Anions by Ion Chromatography (Water)
232154	232154	1	BLANK	109277	BLANK		Hexavalent chromium Discrete Analyzer
232154	232154	3	LCS	109279	LCS		Hexavalent chromium Discrete Analyzer
232154	232154	4	DUP	109280	B2W6D3(140725004DUP	140725004	Hexavalent chromium Discrete Analyzer
232154	232154	5	MS	109281	B2W6D3(140725004MS)	140725004	Hexavalent chromium Discrete Analyzer
232154	232154	6	SAMPLE	140725004	B2W6D3		Hexavalent chromium Discrete Analyzer
232154	232154	7	SAMPLE	140725003	B2W6D5		Hexavalent chromium Discrete Analyzer
232163	232784	5	BLANK	109326	BLANK		ICP-6010 - All possible metals
232163	232784	7	LCS	109328	LCS		ICP-6010 - All possible metals
232163	232784	9	MS	109329	B2V2Y7(140723001MS)	140723001	ICP-6010 - All possible metals
232163	232784	10	MSD	109330	B2V2Y7(140723001MSD)	140723001	ICP-6010 - All possible metals
232163	232784	16	SAMPLE	140725001	B2W6D4		ICP-6010 - All possible metals
232163	232784	17	SAMPLE	140725002	B2W6D1		ICP-6010 - All possible metals
233468	233469	4	BLANK	110063	BLANK		ICP-2008 MS All possible metal
233468	233469	5	LCS	110064	LCS		ICP-2008 MS All possible metal
233468	233469	7	MS	110065	B2W6M0(140718005MS)	140718005	ICP-2008 MS All possible metal
233468	233469	8	MSD	110066	B2W6M0(140718005MSD	140718005	ICP-2008 MS All possible metal
233468	233469	22	SAMPLE	140725001	B2W6D4		ICP-2008 MS All possible metal
233468	233469	23	SAMPLE	140725002	B2W6D1		ICP-2008 MS All possible metal

Batch QC List

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF140725

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
232167	232254	1	BLANK	109342	BLANK		Tritium by LSC
232167	232254	2	LCS	109343	LCS		Tritium by LSC
232167	232254	4	DUP	109344	B2W6L3(140718001DUP)	140718001	Tritium by LSC
232167	232254	5	MSPK	109345	B2W6L3(140718001MSP		Tritium by LSC
232167	232254	11	SAMPLE	140725002	B2W6D1		Tritium by LSC

Batch QC List

Attention Scot Fitzgerald
Department Wet Chemistry

Group # WSCF140725

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
232160	232160	1	LCS	109303	LCS		Total Alkalinity as mg/L CaCO3 (Water)
232160	232160	2	DUP	109304	B2W6L3(140718001DUP)	140718001	Total Alkalinity as mg/L CaCO3 (Water)
232160	232160	8	SAMPLE	140725002	B2W6D1		Total Alkalinity as mg/L CaCO3 (Water)
232160	232160	12	LCS	109305	LCS		Total Alkalinity as mg/L CaCO3 (Water)
233273	233273	2	BLANK	110042	BLANK		Total Organic Carbon
233273	233273	3	LCS	110043	LCS		Total Organic Carbon
233273	233273	4	MS	110044	B2W6D1(140725002MS)	140725002	Total Organic Carbon
233273	233273	5	MSD	110045	B2W6D1(140725002MSD	140725002	Total Organic Carbon
233273	233273	6	SAMPLE	140725002	B2W6D1		Total Organic Carbon
233275	233275	2	BLANK	110058	BLANK		Dissolved Organic Carbon
233275	233275	3	LCS	110059	LCS		Dissolved Organic Carbon
233275	233275	4	MS	110060	B2W6L9(140718004MS)	140718004	Dissolved Organic Carbon
233275	233275	5	MSD	110061	B2W6L9(140718004MSD	140718004	Dissolved Organic Carbon
233275	233275	12	SAMPLE	140725001	B2W6D4		Dissolved Organic Carbon

Method Reference

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF140725

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
LA-505-411	Elemental Analysis by ICP Atomic Emission Spectroscopy (ICP AES)		
	EPA SW-846	6010C	Inductively Coupled Plasma-Atomic Emmision Spectrometry
	HEIS	6010_METALS_ICP	Inductively Coupled Plasma-Atomic Emmision Spectrometry
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.
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 Radiochemistry

Group # WSCF140725

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-218-413	Tritium By Ion Removal Using Eichrom Resin Columns (Prep)		
	N/A	PREP METHOD	
LA-508-421	Operation of the Tri-Carb Model 2500TR Liquid Scintillation Analyzer		
	HEIS	ALPHA_LSC	A/B Liquid Scintillation
	HEIS	BETA_LSC	A/B Liquid Scintillation
	HEIS	TC99_3MDSK_LSC	TC99 by Liquid Scintillation
	HEIS	TRITIUM_EIE_LSC	Tritium, by Eichrome ion exchange, LSC

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 # WSCF140725

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		
	SM	2320	Alkalinity
	HEIS	2320_ALKALINITY	Alkalinity
LA-344-406	Total Organic Carbon (TOC) Based on SW-846		
	EPA SW-846	9060	Total Organic Carbon
	HEIS	9060_TOC	Total Organic Carbon

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

May 15, 2014

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF140725

Sample # 140725001
SAF# X14-028
Sample ID B2W6D4

Matrix WATER
Sampled 04/21/14
Received 04/21/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPAES Prep (W)										**05/05/14**
ICP-6010 - All possible metals										
Iron	7439-89-6	LA-505-411	U	<40		ug/L	1	40	50	05/05/14
Magnesium	7439-95-4	LA-505-411		8610		ug/L	1	60	750	05/05/14
Potassium	7440-09-7	LA-505-411		4950		ug/L	1	250	4000	05/05/14
Sodium	7440-23-5	LA-505-411		13000		ug/L	1	100	500	05/05/14
Calcium	7440-70-2	LA-505-411		40400		ug/L	1	50	1000	05/05/14
ICPMS Prep (W)										**05/14/14**
ICP-2008 MS All possible metal										
Aluminum	7429-90-5	LA-505-412	BD	24.1		ug/L	2	20	100	05/14/14
Manganese	7439-96-5	LA-505-412	D	2.79		ug/L	2	0.20	2.0	05/14/14
Nickel	7440-02-0	LA-505-412	BD	0.516		ug/L	2	0.20	2.0	05/14/14
Silver	7440-22-4	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	05/14/14
Antimony	7440-36-0	LA-505-412	UD	<0.60		ug/L	2	0.60	6.0	05/14/14
Barium	7440-39-3	LA-505-412	D	14.3		ug/L	2	0.40	4.0	05/14/14
Beryllium	7440-41-7	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	05/14/14
Cadmium	7440-43-9	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	05/14/14
Chromium	7440-47-3	LA-505-412	D	17.1		ug/L	2	0.20	2.0	05/14/14
Cobalt	7440-48-4	LA-505-412	UD	<0.10		ug/L	2	0.10	0.50	05/14/14

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.

WSCF Analytical Results Report

May 15, 2014

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF140725

Sample # 140725001
SAF# X14-028
Sample ID B2W6D4

Matrix WATER
Sampled 04/21/14
Received 04/21/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Copper	7440-50-8	LA-505-412	BD	0.314		ug/L	2	0.20	2.0	05/14/14
Zinc	7440-66-6	LA-505-412	UD	<4.0		ug/L	2	4.0	20	05/14/14
Lead	7439-92-1	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	05/14/14
Molybdenum	7439-98-7	LA-505-412	D	4.74		ug/L	2	0.10	1.0	05/14/14
Strontium	7440-24-6	LA-505-412	D	147		ug/L	2	0.40	2.0	05/14/14
Thallium	7440-28-0	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	05/14/14
Tin	7440-31-5	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	05/14/14
Uranium	7440-61-1	LA-505-412	D	1.51		ug/L	2	0.10	0.50	05/14/14
Arsenic	7440-38-2	LA-505-412	BD	3.15		ug/L	2	0.40	4.0	05/14/14
Selenium	7782-49-2	LA-505-412	UD	<2.0		ug/L	2	2.0	20	05/14/14
Thorium	7440-29-1	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	05/14/14
Boron	7440-42-8	LA-505-412	D	13.2		ug/L	2	4.0	10	05/14/14

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.

WSCF Analytical Results Report

May 15, 2014

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF140725

Sample # 140725002
SAF# X14-028
Sample ID B2W6D1

Matrix WATER
Sampled 04/21/14
Received 04/21/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPAES Prep (W)										**05/05/14**
ICP-6010 - All possible metals										
Iron	7439-89-6	LA-505-411		60.3		ug/L	1	40	50	05/05/14
Magnesium	7439-95-4	LA-505-411		8590		ug/L	1	60	750	05/05/14
Potassium	7440-09-7	LA-505-411		4940		ug/L	1	250	4000	05/05/14
Sodium	7440-23-5	LA-505-411		13000		ug/L	1	100	500	05/05/14
Calcium	7440-70-2	LA-505-411		40500		ug/L	1	50	1000	05/05/14
ICPMS Prep (W)										**05/14/14**
ICP-2008 MS All possible metal										
Aluminum	7429-90-5	LA-505-412	BD	51.9		ug/L	2	20	100	05/14/14
Manganese	7439-96-5	LA-505-412	D	5.15		ug/L	2	0.20	2.0	05/14/14
Nickel	7440-02-0	LA-505-412	BD	0.790		ug/L	2	0.20	2.0	05/14/14
Silver	7440-22-4	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	05/14/14
Antimony	7440-36-0	LA-505-412	UD	<0.60		ug/L	2	0.60	6.0	05/14/14
Barium	7440-39-3	LA-505-412	D	14.3		ug/L	2	0.40	4.0	05/14/14
Beryllium	7440-41-7	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	05/14/14
Cadmium	7440-43-9	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	05/14/14
Chromium	7440-47-3	LA-505-412	D	18.9		ug/L	2	0.20	2.0	05/14/14
Cobalt	7440-48-4	LA-505-412	UD	<0.10		ug/L	2	0.10	0.50	05/14/14

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.

WSCF Analytical Results Report

May 15, 2014

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF140725

Sample # 140725002
SAF# X14-028
Sample ID B2W6D1

Matrix WATER
Sampled 04/21/14
Received 04/21/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Copper	7440-50-8	LA-505-412	BD	0.784		ug/L	2	0.20	2.0	05/14/14
Zinc	7440-66-6	LA-505-412	UD	<4.0		ug/L	2	4.0	20	05/14/14
Lead	7439-92-1	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	05/14/14
Molybdenum	7439-98-7	LA-505-412	D	4.76		ug/L	2	0.10	1.0	05/14/14
Strontium	7440-24-6	LA-505-412	D	150		ug/L	2	0.40	2.0	05/14/14
Thallium	7440-28-0	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	05/14/14
Tin	7440-31-5	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	05/14/14
Uranium	7440-61-1	LA-505-412	D	1.54		ug/L	2	0.10	0.50	05/14/14
Arsenic	7440-38-2	LA-505-412	BD	3.34		ug/L	2	0.40	4.0	05/14/14
Selenium	7782-49-2	LA-505-412	UD	<2.0		ug/L	2	2.0	20	05/14/14
Thorium	7440-29-1	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	05/14/14
Boron	7440-42-8	LA-505-412	D	13.0		ug/L	2	4.0	10	05/14/14

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.

WSCF Analytical Results Report

May 15, 2014

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF140725

Sample # 140725003
SAF# X14-028
Sample ID B2W6D5

Matrix WATER
Sampled 04/21/14
Received 04/21/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										04/21/14
Hexavalent chromium Discrete Analyzer										
Hexavalent chromium	18540-29-9	LA-265-403		0.0168		mg/L	1	0.0020	0.0050	04/21/14

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.

WSCF Analytical Results Report

May 15, 2014

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF140725

Sample # 140725004
SAF# X14-028
Sample ID B2W6D3

Matrix WATER
Sampled 04/21/14
Received 04/21/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										04/21/14
Hexavalent chromium Discrete Analyzer										
Hexavalent chromium	18540-29-9	LA-265-403		0.0155		mg/L	1	0.0020	0.0050	04/21/14

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.

WSCF Analytical Results Report

May 15, 2014

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF140725

Sample # 140725005
SAF# X14-028
Sample ID B2W6D2

Matrix WATER
Sampled 04/21/14
Received 04/21/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										04/21/14
Anions by Ion Chromatography (Water)										
Fluoride	16984-48-8	LA-533-410	BD	0.195		ug/mL	2	0.050	1.0	04/21/14
Chloride	16887-00-6	LA-533-410	D	6.24		ug/mL	2	0.12	0.80	04/21/14
Nitrite-N	NO2-N	LA-533-410	UD	<0.040		ug/mL	2	0.040	0.20	04/21/14
Nitrate-N	NO3-N	LA-533-410	D	1.33		ug/mL	2	0.040	0.20	04/21/14
Sulfate	14808-79-8	LA-533-410	D	33.1		ug/mL	2	0.22	1.1	04/21/14

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.

WSCF Analytical Results Report

May 15, 2014

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF140725

Sample # 140725002
SAF# X14-028
Sample ID B2W6D1

Matrix WATER
Sampled 04/21/14
Received 04/21/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Tritium by LSC EICHROM WA/LIQ PREP										**04/23/14**
Tritium by LSC										
Tritium	10028-17-8	LA-508-421		3300	730	pCi/L	1	320		04/28/14

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

B - The associated QC sample Blank has a result > or = the MDA
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)

o - LCS recovery outside established laboratory acceptance limits.

WSCF Analytical Results Report

May 15, 2014

Attention Scot Fitzgerald
Department Wet Chemistry

Group # WSCF140725

Sample # 140725001
SAF# X14-028
Sample ID B2W6D4

Matrix WATER
Sampled 04/21/14
Received 04/21/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										05/12/14
Dissolved Organic Carbon										
Dissolved Organic Carbon	DOC	LA-344-406		0.352		mg/L	1	0.10	0.30	05/12/14

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
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 dilution 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)
o - LCS recovery outside established laboratory acceptance limits.
Ignitability: <20C listed in the result field indicates sample ignited at room temperature. Maximum temperature tested for ignitability is at 100C

WSCF Analytical Results Report

May 15, 2014

Attention Scot Fitzgerald
Department Wet Chemistry

Group # WSCF140725

Sample # 140725002
SAF# X14-028
Sample ID B2W6D1

Matrix WATER
Sampled 04/21/14
Received 04/21/14

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										04/22/14
Total Alkalinity as mg/L CaCO3 (Water)										
Total Alkalinity as CaCO3	ALKALINITY	LA-531-411		110		mg/L	1	1	10	04/22/14
Carbonate	CO3ALKALINI	LA-531-411	U	<1		mg/L	1	1		04/22/14
Bicarbonate	71-52-3	LA-531-411		110		mg/L	1	1		04/22/14
Hydroxyl ion	84625-61-6	LA-531-411	U	<1		mg/L	1	1		04/22/14
										05/12/14
Total Organic Carbon										
Total Organic Carbon	TOC	LA-344-406	B	0.178		mg/L	1	0.10	0.30	05/12/14

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
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 dilution 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)
o - LCS recovery outside established laboratory acceptance limits.
Ignitability: <20C listed in the result field indicates sample ignited at room temperature. Maximum temperature tested for ignitability is at 100C

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF140725

Analytical Batch 232151 (QC Batch: 232151)
Associated Samples 140725005

Test Anions by Ion Chromatography (Water)

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #109256**							
Fluoride	16984-48-8		<0.025	ug/mL					U	04/21/14
Chloride	16887-00-6		<0.060	ug/mL					U	04/21/14
Nitrite-N	NO2-N		<0.020	ug/mL					U	04/21/14
Nitrate-N	NO3-N		<0.020	ug/mL					U	04/21/14
Sulfate	14808-79-8		<0.11	ug/mL					U	04/21/14
LCS			**QC Sample #109257**							
Fluoride	16984-48-8		0.931	ug/mL	94.1	90 - 110				04/21/14
Chloride	16887-00-6		1.92	ug/mL	97.1	90 - 110				04/21/14
Nitrite-N	NO2-N		1.04	ug/mL	106.4	90 - 110				04/21/14
Nitrate-N	NO3-N		0.871	ug/mL	98.4	90 - 110				04/21/14
Sulfate	14808-79-8		3.97	ug/mL	101.3	90 - 110				04/21/14
MS			**QC Sample #109258**							
			Original 140719007							
Fluoride	16984-48-8		0.898	ug/mL	89.8	80 - 120			D	04/21/14
Chloride	16887-00-6		1.88	ug/mL	93.8	80 - 120			D	04/21/14
Nitrite-N	NO2-N		0.982	ug/mL	99.4	80 - 120			D	04/21/14
Nitrate-N	NO3-N		0.880	ug/mL	98.4	80 - 120			D	04/21/14

* - QC result out of range n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF140725

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Sulfate	14808-79-8		3.93	ug/mL	99.2	80 - 120			D	04/21/14
MSD			**QC Sample #109259**							
			Original	**140719007**				**Paired**	**109258**	
Fluoride	16984-48-8		0.894	ug/mL	89.4	80 - 120	0.40	20	D	04/21/14
Chloride	16887-00-6		1.94	ug/mL	97	80 - 120	1.10	20	D	04/21/14
Nitrite-N	NO2-N		1.01	ug/mL	102.7	80 - 120	3.30	20	D	04/21/14
Nitrate-N	NO3-N		0.872	ug/mL	97.6	80 - 120	0.60	20	D	04/21/14
Sulfate	14808-79-8		4.18	ug/mL	105.7	80 - 120	0.80	20	D	04/21/14

* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF140725

Analytical Batch 232154 (QC Batch: 232154)
Associated Samples 140725003, 140725004

Test Hexavalent chromium Discrete Analyzer

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #109277**							
Hexavalent chromium	18540-29-9		<0.0020	mg/L					U	04/21/14
LCS			**QC Sample #109279**							
Hexavalent chromium	18540-29-9		0.0517	mg/L	103.4	90 - 110				04/21/14
DUP			**QC Sample #109280**							
			Original 140725004							
Hexavalent chromium	18540-29-9	0.0155	0.0161	mg/L			3.80	20		04/21/14
MS			**QC Sample #109281**							
			Original 140725004							
Hexavalent chromium	18540-29-9	0.0155	0.0426	mg/L	106.5	85 - 115				04/21/14

* - QC result out of range n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
Department Wet Chemistry

Group # WSCF140725

Analytical Batch 232160 (QC Batch: 232160)
Associated Samples 140725002

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 #109303**							
Total Alkalinity as CaCO3	ALKALINITY		95	mg/L	95.3	80 - 120				04/22/14
DUP			**QC Sample #109304**							
			Original 140718001							
Total Alkalinity as CaCO3	ALKALINITY		98	mg/L			1.00	20		04/22/14
LCS			**QC Sample #109305**							
Total Alkalinity as CaCO3	ALKALINITY		97	mg/L	97.5	80 - 120				04/22/14

* - QC result out of range n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF140725

Analytical Batch 232254 (QC Batch: 232167)
Associated Samples 140725002

Test Tritium by LSC

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #109342**							
Tritium	10028-17-8		-160	pCi/L					U	04/28/14
LCS			**QC Sample #109343**							
Tritium	10028-17-8		3500	pCi/L	91.7	80 - 120				04/28/14
DUP			**QC Sample #109344**							
			Original 140718001							
Tritium	10028-17-8		1200	pCi/L			6.10	20		04/28/14
MSPK			**QC Sample #109345**							
Tritium	10028-17-8		20000	pCi/L	95.2	75 - 125				04/28/14

* - QC result out of range n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF140725

Analytical Batch 232784 (QC Batch: 232163)
Associated Samples 140725001, 140725002

Test ICP-6010 - All possible metals

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #109326**							
Iron	7439-89-6		<40	ug/L					U	05/05/14
Magnesium	7439-95-4		<60	ug/L					U	05/05/14
Potassium	7440-09-7		<250	ug/L					U	05/05/14
Sodium	7440-23-5		<100	ug/L					U	05/05/14
Calcium	7440-70-2		<50	ug/L					U	05/05/14
LCS			**QC Sample #109328**							
Iron	7439-89-6		1100	ug/L	110.5	80 - 120				05/05/14
Magnesium	7439-95-4		9830	ug/L	98.3	80 - 120				05/05/14
Potassium	7440-09-7		10100	ug/L	100.6	80 - 120				05/05/14
Sodium	7440-23-5		9760	ug/L	97.6	80 - 120				05/05/14
Calcium	7440-70-2		19700	ug/L	98.7	80 - 120				05/05/14
MS			**QC Sample #109329**							
			Original 140723001							
Iron	7439-89-6		997	ug/L	99.7	75 - 125				05/05/14
Magnesium	7439-95-4		9850	ug/L	98.5	75 - 125				05/05/14
Potassium	7440-09-7		8770	ug/L	87.7	75 - 125				05/05/14
Sodium	7440-23-5		9410	ug/L	94.1	75 - 125				05/05/14

* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF140725

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Calcium	7440-70-2		17300	ug/L	86.3	75 - 125			X	05/05/14
MSD			**QC Sample #109330**							
			Original	**140723001**				**Paired**	**109329**	
Iron	7439-89-6		992	ug/L	99.2	75 - 125	0.50	20		05/05/14
Magnesium	7439-95-4		8560	ug/L	85.6	75 - 125	2.90	20		05/05/14
Potassium	7440-09-7		8420	ug/L	84.2	75 - 125	1.80	20		05/05/14
Sodium	7440-23-5		8520	ug/L	85.2	75 - 125	2.20	20		05/05/14
Calcium	7440-70-2		14700	ug/L	73.6	75 - 125	1.80	20	X	05/05/14

* - QC result out of range n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
Department Wet Chemistry

Group # WSCF140725

Analytical Batch 233273 (QC Batch: 233273)
Associated Samples 140725002

Test Total Organic Carbon

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #110042**							
Total Organic Carbon	TOC		<0.045	mg/L					U	05/12/14
LCS			**QC Sample #110043**							
Total Organic Carbon	TOC		2.16	mg/L	107.8	80 - 120				05/12/14
MS			**QC Sample #110044**							
			Original 140725002							
Total Organic Carbon	TOC	0.178	2.13	mg/L	106.7	75 - 125				05/12/14
MSD			**QC Sample #110045**							
			Original 140725002					**Paired**	**110044**	
Total Organic Carbon	TOC	0.178	2.14	mg/L	107	75 - 125	0.30	20		05/12/14

* - QC result out of range n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
Department Wet Chemistry

Group # WSCF140725

Analytical Batch 233275 (QC Batch: 233275)
Associated Samples 140725001

Test Dissolved Organic Carbon

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #110058**							
Dissolved Organic Carbon	DOC		<0.045	mg/L					U	05/12/14
LCS			**QC Sample #110059**							
Dissolved Organic Carbon	DOC		2.16	mg/L	108.2	80 - 120				05/12/14
MS			**QC Sample #110060**							
			Original 140718004							
Dissolved Organic Carbon	DOC		2.06	mg/L	103	75 - 125				05/12/14
MSD			**QC Sample #110061**							
			Original 140718004					**Paired**	**110060**	
Dissolved Organic Carbon	DOC		2.06	mg/L	103.2	75 - 125	0.20	20		05/12/14

* - QC result out of range n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF140725

Analytical Batch 233469 (QC Batch: 233468)
Associated Samples 140725001, 140725002

Test ICP-2008 MS All possible metal

Analyte	CAS #	Original Found	QC Found	Units	% Recov Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #110063**						
Aluminum	7429-90-5		<10	ug/L				U	05/14/14
Manganese	7439-96-5		<0.10	ug/L				U	05/14/14
Nickel	7440-02-0		<0.10	ug/L				U	05/14/14
Silver	7440-22-4		<0.050	ug/L				U	05/14/14
Antimony	7440-36-0		<0.30	ug/L				U	05/14/14
Barium	7440-39-3		<0.20	ug/L				U	05/14/14
Beryllium	7440-41-7		<0.10	ug/L				U	05/14/14
Cadmium	7440-43-9		<0.050	ug/L				U	05/14/14
Chromium	7440-47-3		<0.10	ug/L				U	05/14/14
Cobalt	7440-48-4		<0.050	ug/L				U	05/14/14
Copper	7440-50-8		<0.10	ug/L				U	05/14/14
Zinc	7440-66-6		<2.0	ug/L				U	05/14/14
Lead	7439-92-1		<0.050	ug/L				U	05/14/14
Molybdenum	7439-98-7		<0.050	ug/L				U	05/14/14
Strontium	7440-24-6		<0.20	ug/L				U	05/14/14
Thallium	7440-28-0		<0.050	ug/L				U	05/14/14
Tin	7440-31-5		<0.050	ug/L				U	05/14/14

* - QC result out of range n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF140725

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Uranium	7440-61-1		<0.050	ug/L					U	05/14/14
Arsenic	7440-38-2		<0.20	ug/L					U	05/14/14
Selenium	7782-49-2		<1.0	ug/L					U	05/14/14
Thorium	7440-29-1		<0.10	ug/L					U	05/14/14
Boron	7440-42-8		<2.0	ug/L					U	05/14/14
LCS			**QC Sample #110064**							
Aluminum	7429-90-5		374	ug/L	93.5	85 - 115				05/14/14
Manganese	7439-96-5		38.1	ug/L	95.1	85 - 115				05/14/14
Nickel	7440-02-0		38.4	ug/L	96.1	85 - 115				05/14/14
Silver	7440-22-4		37.9	ug/L	94.8	85 - 115				05/14/14
Antimony	7440-36-0		38.0	ug/L	95.1	85 - 115				05/14/14
Barium	7440-39-3		37.3	ug/L	93.3	85 - 115				05/14/14
Beryllium	7440-41-7		37.4	ug/L	93.6	85 - 115				05/14/14
Cadmium	7440-43-9		37.4	ug/L	93.5	85 - 115				05/14/14
Chromium	7440-47-3		38.5	ug/L	96.1	85 - 115				05/14/14
Cobalt	7440-48-4		38.5	ug/L	96.4	85 - 115				05/14/14
Copper	7440-50-8		38.4	ug/L	96.1	85 - 115				05/14/14
Zinc	7440-66-6		36.4	ug/L	90.9	85 - 115				05/14/14
Lead	7439-92-1		36.0	ug/L	89.9	85 - 115				05/14/14
Molybdenum	7439-98-7		38.7	ug/L	96.7	85 - 115				05/14/14
Strontium	7440-24-6		350	ug/L	87.5	85 - 115				05/14/14
Thallium	7440-28-0		35.8	ug/L	89.6	85 - 115				05/14/14

* - QC result out of range n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF140725

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Tin	7440-31-5		37.8	ug/L	94.4	85 - 115				05/14/14
Uranium	7440-61-1		38.4	ug/L	96	85 - 115				05/14/14
Arsenic	7440-38-2		36.9	ug/L	92.3	85 - 115				05/14/14
Selenium	7782-49-2		39.8	ug/L	99.6	85 - 115				05/14/14
Thorium	7440-29-1		38.2	ug/L	95.4	85 - 115				05/14/14
Boron	7440-42-8		37.2	ug/L	93	85 - 115				05/14/14
MS			**QC Sample #110065**							
			Original 140718005							
Aluminum	7429-90-5		387	ug/L	96.8	70 - 130				05/14/14
Manganese	7439-96-5		38.4	ug/L	95.9	70 - 130				05/14/14
Nickel	7440-02-0		38.0	ug/L	95	70 - 130				05/14/14
Silver	7440-22-4		38.1	ug/L	95.2	70 - 130				05/14/14
Antimony	7440-36-0		39.4	ug/L	98.4	70 - 130				05/14/14
Barium	7440-39-3		36.3	ug/L	90.7	70 - 130				05/14/14
Beryllium	7440-41-7		38.2	ug/L	95.5	70 - 130				05/14/14
Cadmium	7440-43-9		38.2	ug/L	95.4	70 - 130				05/14/14
Chromium	7440-47-3		39.0	ug/L	97.6	70 - 130				05/14/14
Cobalt	7440-48-4		38.7	ug/L	96.8	70 - 130				05/14/14
Copper	7440-50-8		38.0	ug/L	95.1	70 - 130				05/14/14
Zinc	7440-66-6		37.3	ug/L	93.2	70 - 130				05/14/14
Lead	7439-92-1		36.4	ug/L	91	70 - 130				05/14/14
Molybdenum	7439-98-7		39.3	ug/L	98.2	70 - 130				05/14/14
Strontium	7440-24-6		351	ug/L	87.8	70 - 130				05/14/14

* - QC result out of range n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF140725

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Thallium	7440-28-0		36.5	ug/L	91.2	70 - 130				05/14/14
Tin	7440-31-5		39.4	ug/L	98.4	70 - 130				05/14/14
Uranium	7440-61-1		39.8	ug/L	99.5	70 - 130				05/14/14
Arsenic	7440-38-2		38.4	ug/L	96.1	70 - 130				05/14/14
Selenium	7782-49-2		41.6	ug/L	103.9	70 - 130				05/14/14
Thorium	7440-29-1		39.6	ug/L	99	70 - 130				05/14/14
Boron	7440-42-8		36.7	ug/L	91.8	70 - 130				05/14/14
MSD			**QC Sample #110066**							
			Original 140718005						**Paired 110065**	
Aluminum	7429-90-5		377	ug/L	94.3	70 - 130	2.60	20		05/14/14
Manganese	7439-96-5		39.2	ug/L	98	70 - 130	1.60	20		05/14/14
Nickel	7440-02-0		37.6	ug/L	94.1	70 - 130	0.90	20		05/14/14
Silver	7440-22-4		38.4	ug/L	95.9	70 - 130	0.70	20		05/14/14
Antimony	7440-36-0		39.9	ug/L	99.7	70 - 130	1.30	20		05/14/14
Barium	7440-39-3		35.5	ug/L	88.7	70 - 130	1.20	20		05/14/14
Beryllium	7440-41-7		37.8	ug/L	94.5	70 - 130	1.10	20		05/14/14
Cadmium	7440-43-9		38.2	ug/L	95.6	70 - 130	0.20	20		05/14/14
Chromium	7440-47-3		39.6	ug/L	98.9	70 - 130	1.00	20		05/14/14
Cobalt	7440-48-4		38.9	ug/L	97.4	70 - 130	0.60	20		05/14/14
Copper	7440-50-8		38.0	ug/L	94.9	70 - 130	0.20	20		05/14/14
Zinc	7440-66-6		37.2	ug/L	93	70 - 130	0.20	20		05/14/14
Lead	7439-92-1		36.8	ug/L	92	70 - 130	1.20	20		05/14/14
Molybdenum	7439-98-7		39.5	ug/L	98.7	70 - 130	0.30	20		05/14/14

* - QC result out of range n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF140725

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Strontium	7440-24-6		353	ug/L	88.3	70 - 130	0.40	20		05/14/14
Thallium	7440-28-0		36.9	ug/L	92.2	70 - 130	1.10	20		05/14/14
Tin	7440-31-5		39.8	ug/L	99.6	70 - 130	1.20	20		05/14/14
Uranium	7440-61-1		40.2	ug/L	100.6	70 - 130	1.10	20		05/14/14
Arsenic	7440-38-2		39.1	ug/L	97.7	70 - 130	1.60	20		05/14/14
Selenium	7782-49-2		38.6	ug/L	96.5	70 - 130	7.40	20		05/14/14
Thorium	7440-29-1		39.7	ug/L	99.2	70 - 130	0.20	20		05/14/14
Boron	7440-42-8		36.9	ug/L	92.3	70 - 130	0.50	20		05/14/14

* - QC result out of range

n/a - Not Applicable

Analytical Comment Report

Attention: Scot Fitzgerald

Group # WSCF140725

Quality Control Comments

Department Inorganic

109329 B2V2Y7(140723001MS)

Analyte Calcium - ICP-6010 - All possible metals

[1] X5: Sample concentration exceed spiking level by a factor of 4. Spike recoveries are not valid.

109330 B2V2Y7(140723001MSD)

Analyte Calcium - ICP-6010 - All possible metals

[1] X5: Sample concentration exceed spiking level by a factor of 4. Spike recoveries are not valid.

May 15, 2014

ATTACHMENT4

SAMPLE RECEIPT

Consisting of 5 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
CACN: 404438
Work Order #: 140725
Customer Work ID: X14-028-029
Due Date: 05/22/2014 **(R031)**

The following samples were received from you on 4/21/2014 2:50:00 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
140725001	B2W6D4	WATER	4/21/2014 08:57	4/21/2014 14:50

Procedure	Compound List
Dissolved Organic Carbon	DOC
ICP-2008 MS All possible metal	200.8 ICPMS GW01
ICP-6010 - All possible metals	Fe,Mg,K,Na,Ca

Sample #	Sample ID	Matrix	Collected	Received
140725002	B2W6D1	WATER	4/21/2014 08:57	4/21/2014 14:50

Procedure	Compound List
ICP-2008 MS All possible metal	200.8 ICPMS GW01
ICP-6010 - All possible metals	Fe,Mg,K,Na,Ca
Total Alkalinity as mg/L CaCO3 (Water)	Alkalinity,Carbonate,Bicarbonate,Hydroxyl Ion
Total Organic Carbon	TOC
Tritium by LSC	H3

Sample #	Sample ID	Matrix	Collected	Received
140725003	B2W6D5	WATER	4/21/2014 08:57	4/21/2014 14:50

Procedure	Compound List
Hexavalent chromium Discrete Analyzer	Cr6

Sample #	Sample ID	Matrix	Collected	Received
140725004	B2W6D3	WATER	4/21/2014 08:57	4/21/2014 14:50

Procedure	Compound List
Hexavalent chromium Discrete Analyzer	Cr6

Sample #	Sample ID	Matrix	Collected	Received
140725005	B2W6D2	WATER	4/21/2014 08:57	4/21/2014 14:50

Procedure	Compound List
Anions by Ion Chromatography (Water)	F,Cl,NO2,NO3,SO4

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # X14-028-029

Page 1 of 1

Collector	DAVE FLOYD	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	X14-028	Sampling Origin	Hanford Site	Purchase Order/Charge Code	303271ES20
Project Title	1BC5-ADD, APRIL 2014	Logbook No.	HNF N-506 68/10	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:	31 Days **PRIORITY**	Offsite Property No.	N/A

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 458.1.

140725

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐

WELLS
100-Area Generator Knowledge Information Form applies
The CACN for analytical work at WSCF is 404438.

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2W6D1 2	N	W	APR 2 1 2014	0857	1x500-mL G/P	200.8_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
B2W6D1	N	W			1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool~4C
B2W6D1	N	W			1x250-mL aG	9060_TOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool~4C
B2W6D1	N	W			1x250-mL G	TRITIUM_EIE_LSC: COMMON	6 Months	None
B2W6D4 1	Y	W			1x500-mL G/P	200.8_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
B2W6D4	Y	W	APR 2 1 2014	0857	1x250-mL aG	9060_DOC: COMMON	28 Days	HCl or H2SO4 to pH <2/Cool~4C

Chain of Custody

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
DAVE FLOYD			APR 2 1 2014 1450	Cynthia R Johnson			APR 2 1 2014 1450
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time

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

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

PRINTED O 3/4/2014

A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # X14-028-031 Page 1 of 1

Collector	DAVE FLOYD	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	X14-028	Sampling Origin	Hanford Site	Purchase Order/Charge Code	303271ES20
Project Title	IBCS-ADD, APRIL 2014	Logbook No.	HNF-N-506 68/10	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: 31 Days	PRIORITY	Offsite Property No.	N/A

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 458.1.

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
WELLS
100-Area Generator Knowledge Information Form applies.
The CACN for analytical work at WSCF is 404438.

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2W6D5 3	Y	W	APR 2 1 2014	0857	1x500-mL aG	7196_CR6: COMMON	24 Hours	Cool-4C
B2W6D3 4	N	W	APR 2 1 2014	0857	1x500-mL aG	7196_CR6: COMMON	24 Hours	Cool-4C

Chain of Custody

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
DAVE FLOYD			APR 2 1 2014 1430	Cynthia R Johnson			APR 2 1 2014 1430
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time

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

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

PRINTED 04/2014 A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # X14-028-030 Page 1 of 1

Collector	DAVE FLOYD	Contact/Requester	Karen Waters-Husted	Telephone No.	509-376-4650
SAF No.	X14-028	Sampling Origin	Hanford Site	Purchase Order/Charge Code	303271ES20
Project Title	1BC5-ADD, APRIL 2014	Logbook No.	HNF-N-506 68 / 10	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:	31 Days **PRIORITY**	Offsite Property No.	N/A

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 458.1.

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption: Yes ☑ No ☐
WELLS
100-Area Generator Knowledge Information Form applies.
The CACN for analytical work at WSCF is 406438.

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2W6D2	N	W	APR 2 1 2014	0857	1x500-mL P	300.0_ANIONS_IC: COMMON	48 Hours	Cool-4C

Chain of Custody

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
DAVE FLOYD	APR 2 1 2014 1450	Cynthia R Johnson	APR 2 1 2014 1450
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received By	Date/Time

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	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

PRINTED O 3/4/2014 A-6004-842 (REV 2)