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

December 10, 2012

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

Dear Scot Fitzgerald,

FINAL RESULT FOR SAMPLE DELIVERY GROUP WSCF121430

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 WSCF121430

* 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 # WSCF121430
Data Deliverable Date 12/10/12

SAF #	Sample ID	Sample #	Matrix	Sampled	Received
X13-005	B2MKJ5	121430001	WATER	11/07/12	11/07/12
X13-005	B2MKK3	121430002	WATER	11/07/12	11/07/12
X13-005	B2MKL0	121430003	WATER	11/07/12	11/07/12
X13-005	B2MKL1	121430004	WATER	11/07/12	11/07/12
X13-005	B2MKK8	121430005	WATER	11/07/12	11/07/12
X13-005	B2MKK9	121430006	WATER	11/07/12	11/07/12
X13-005	B2MKL5	121430007	WATER	11/07/12	11/07/12
X13-005	B2MKJ4	121430008	WATER	11/07/12	11/07/12
X13-005	B2MKK2	121430009	WATER	11/07/12	11/07/12
X13-005	B2MK71	121430010	WATER	11/07/12	11/07/12
X13-005	B2MK69	121430011	WATER	11/07/12	11/07/12

ATTACHMENT 2

NARRATIVE

Consisting of 4 pages
Including cover page

Attachment 2
Narrative
WSCF121430

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), Master Contract 39818, Revision 3, "Laboratory Analytical Services to CHPRC Soil and Groundwater Remediation Project."*

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.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report* for a complete listing of approved analytical methods.

Inorganic Comments

Attachment 2
Narrative
WSCF121430

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):

- Batch QC 209931
  - Fluoride – Duplicate Relative Percent Difference(s) (RPD) did not meet the established laboratory limits. Duplicate Relative Percent Difference (RPD) does not apply to results near or below the minimum detectable level. No flags issued.
  - All other 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):

- Copper and Zinc were detected in the Blank and evaluated.
- Sodium – 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.

Radiochemistry Comments

Rad Chem – The hold time requirement for this analysis was met. A Duplicate, Matrix Spike (Matrix Spikes apply only to Technetium), 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.

Gross Alpha / Gross Beta:

- Gross Beta – 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.

Strontium-89/90:

Attachment 2
Narrative
WSCF121430

- 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.

Technetium-99:

- 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 43 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 # WSCF121430
Report Date December 10, 2012

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.

Batch QC List

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
209931	209931	2	BLANK	84727	BLANK		Anions by Ion Chromatography (Water)
209931	209931	3	LCS	84728	LCS		Anions by Ion Chromatography (Water)
209931	209931	4	DUP	84729	B2MKJ5(121430001DUP)	121430001	Anions by Ion Chromatography (Water)
209931	209931	5	MS	84730	B2MKJ5(121430001MS)	121430001	Anions by Ion Chromatography (Water)
209931	209931	6	MSD	84731	B2MKJ5(121430001MSD)	121430001	Anions by Ion Chromatography (Water)
209931	209931	21	SAMPLE	121430001	B2MKJ5		Anions by Ion Chromatography (Water)
209931	209931	22	SAMPLE	121430002	B2MKK3		Anions by Ion Chromatography (Water)
209932	209932	2	BLANK	84734	BLANK		Anions by Ion Chromatography (Water)
209932	209932	3	LCS	84735	LCS		Anions by Ion Chromatography (Water)
209932	209932	4	DUP	84736	B2MKL0(121430003DUP)	121430003	Anions by Ion Chromatography (Water)
209932	209932	5	MS	84737	B2MKL0(121430003MS)	121430003	Anions by Ion Chromatography (Water)
209932	209932	6	MSD	84738	B2MKL0(121430003MSD	121430003	Anions by Ion Chromatography (Water)
209932	209932	8	SAMPLE	121430003	B2MKL0		Anions by Ion Chromatography (Water)
209933	209933	2	BLANK	84741	BLANK		Anions by Ion Chromatography (Water)
209933	209933	3	LCS	84742	LCS		Anions by Ion Chromatography (Water)
209933	209933	4	DUP	84743	B2MKL1(121430004DUP)	121430004	Anions by Ion Chromatography (Water)
209933	209933	5	MS	84744	B2MKL1(121430004MS)	121430004	Anions by Ion Chromatography (Water)
209933	209933	6	MSD	84745	B2MKL1(121430004MSD	121430004	Anions by Ion Chromatography (Water)
209933	209933	8	SAMPLE	121430004	B2MKL1		Anions by Ion Chromatography (Water)
210638	210817	5	BLANK	85340	BLANK		ICP-6010 - All possible metals
210638	210817	7	LCS	85342	LCS		ICP-6010 - All possible metals
210638	210817	9	MS	85343	B2MR83(121423005MS)	121423005	ICP-6010 - All possible metals
210638	210817	10	MSD	85344	B2MR83(121423005MSD	121423005	ICP-6010 - All possible metals

Batch QC List

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
210638	210817	14	SAMPLE	121430010	B2MK71		ICP-6010 - All possible metals
210638	210817	15	SAMPLE	121430011	B2MK69		ICP-6010 - All possible metals
210826	210924	4	BLANK	85610	BLANK		ICP-2008 MS All possible metal
210826	210924	5	LCS	85611	LCS		ICP-2008 MS All possible metal
210826	210924	7	MS	85612	B2MMJ7(121411010MS)	121411010	ICP-2008 MS All possible metal
210826	210924	8	MSD	85613	B2MMJ7(121411010MSD	121411010	ICP-2008 MS All possible metal
210826	210924	22	SAMPLE	121430005	B2MKK8		ICP-2008 MS All possible metal
210826	210924	23	SAMPLE	121430006	B2MKK9		ICP-2008 MS All possible metal
210826	210924	24	SAMPLE	121430008	B2MKJ4		ICP-2008 MS All possible metal
210826	210924	25	SAMPLE	121430009	B2MKK2		ICP-2008 MS All possible metal

Batch QC List

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF121430

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
209915	209939	1	BLANK	84679	BLANK		TC99 by Liquid Scintillation
209915	209939	2	LCS	84680	LCS		TC99 by Liquid Scintillation
209915	209939	4	DUP	84681	B2MNX8(121411014DUP	121411014	TC99 by Liquid Scintillation
209915	209939	5	MS	84682	B2MNX8(121411014MS)	121411014	TC99 by Liquid Scintillation
209915	209939	12	SAMPLE	121430005	B2MKK8		TC99 by Liquid Scintillation
209915	209939	13	SAMPLE	121430006	B2MKK9		TC99 by Liquid Scintillation
209915	209939	14	SAMPLE	121430008	B2MKJ4		TC99 by Liquid Scintillation
209915	209939	15	SAMPLE	121430009	B2MKK2		TC99 by Liquid Scintillation
210217	210373	1	BLANK	84845	BLANK		GAB Discrete analysis Alpha only
210217	210373	2	LCS	84846	LCS		GAB Discrete analysis Alpha only
210217	210373	4	DUP	84847	B2MR83(121423005DUP)	121423005	GAB Discrete analysis Alpha only
210217	210373	5	SAMPLE	121430005	B2MKK8		GAB Discrete analysis Alpha only
210217	210373	6	SAMPLE	121430006	B2MKK9		GAB Discrete analysis Alpha only
210217	210378	1	BLANK	84845	BLANK		GAB Discrete analysis Beta only
210217	210378	2	LCS	84846	LCS		GAB Discrete analysis Beta only
210217	210378	4	DUP	84847	B2MR83(121423005DUP)	121423005	GAB Discrete analysis Beta only
210217	210378	5	SAMPLE	121430005	B2MKK8		GAB Discrete analysis Beta only
210217	210378	6	SAMPLE	121430006	B2MKK9		GAB Discrete analysis Beta only
210240	211239	1	BLANK	84911	BLANK		Strontium 89/90 (GPC/GEA)
210240	211239	2	LCS	84912	LCS		Strontium 89/90 (GPC/GEA)
210240	211239	3	DUP	84913	B2MKK8(121430005DUP	121430005	Strontium 89/90 (GPC/GEA)
210240	211239	4	SAMPLE	121430005	B2MKK8		Strontium 89/90 (GPC/GEA)
210240	211239	5	SAMPLE	121430006	B2MKK9		Strontium 89/90 (GPC/GEA)

Batch QC List

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF121430

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
210240	211239	6	SAMPLE	121430007	B2MKL5		Strontium 89/90 (GPC/GEA)

Method Reference

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

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-505-411	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 # WSCF121430

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-220-406	Strontium-89 and 90 in Aqueous Samples by SR-SPEC Separation		
	HEIS	SRTOT_SEP_PRECIP_GPC	Strontium 89/90, by Sr-Spec Sep.
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
LA-508-415	Operation Of The Protean 2-Inch Alpha/Beta Counting System For Gross Alpha/ Beta Samples		
	HEIS	ALPHA_GPC	Gross Alpha by GPC
	HEIS	BETA_GPC	Gross Beta by GPC
	HEIS	SRTOT_SEP_PRECIP_GPC	Strontium beta isotopic, GPC

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 # WSCF121430

Sample # 121430001
SAF# X13-005
Sample ID B2MKJ5

Matrix WATER
Sampled 11/07/12
Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										11/07/12
Anions by Ion Chromatography (Water)										
Fluoride	16984-48-8	LA-533-410	BD	0.0636		ug/mL	2	0.046	0.14	11/07/12
Chloride	16887-00-6	LA-533-410	D	3.42		ug/mL	2	0.12	0.81	11/07/12
Nitrite-N	NO2-N	LA-533-410	UD	<0.038		ug/mL	2	0.038	0.20	11/07/12
Nitrate-N	NO3-N	LA-533-410	D	1.17		ug/mL	2	0.038	0.20	11/07/12
Sulfate	14808-79-8	LA-533-410	D	24.5		ug/mL	2	0.22	2.1	11/07/12

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.

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

Sample # 121430002
SAF# X13-005
Sample ID B2MKK3

Matrix WATER
Sampled 11/07/12
Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										11/07/12
Anions by Ion Chromatography (Water)										
Fluoride	16984-48-8	LA-533-410	BD	0.0592		ug/mL	2	0.046	0.14	11/07/12
Chloride	16887-00-6	LA-533-410	D	2.81		ug/mL	2	0.12	0.81	11/07/12
Nitrite-N	NO2-N	LA-533-410	UD	<0.038		ug/mL	2	0.038	0.20	11/07/12
Nitrate-N	NO3-N	LA-533-410	D	1.02		ug/mL	2	0.038	0.20	11/07/12
Sulfate	14808-79-8	LA-533-410	D	17.8		ug/mL	2	0.22	2.1	11/07/12

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.

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

Sample # 121430003
SAF# X13-005
Sample ID B2MKL0

Matrix WATER
Sampled 11/07/12
Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										11/08/12
Anions by Ion Chromatography (Water)										
Fluoride	16984-48-8	LA-533-410	BD	0.0591		ug/mL	2	0.046	0.14	11/08/12
Chloride	16887-00-6	LA-533-410	D	2.89		ug/mL	2	0.12	0.81	11/08/12
Nitrite-N	NO2-N	LA-533-410	UD	<0.038		ug/mL	2	0.038	0.20	11/08/12
Nitrate-N	NO3-N	LA-533-410	D	1.47		ug/mL	2	0.038	0.20	11/08/12
Sulfate	14808-79-8	LA-533-410	D	19.2		ug/mL	2	0.22	2.1	11/08/12

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.

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

Sample # 121430004
SAF# X13-005
Sample ID B2MKL1

Matrix WATER
Sampled 11/07/12
Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
										11/07/12
Anions by Ion Chromatography (Water)										
Fluoride	16984-48-8	LA-533-410	BD	0.0560		ug/mL	2	0.046	0.14	11/07/12
Chloride	16887-00-6	LA-533-410	D	2.86		ug/mL	2	0.12	0.81	11/07/12
Nitrite-N	NO2-N	LA-533-410	UD	<0.038		ug/mL	2	0.038	0.20	11/07/12
Nitrate-N	NO3-N	LA-533-410	D	1.43		ug/mL	2	0.038	0.20	11/07/12
Sulfate	14808-79-8	LA-533-410	D	18.7		ug/mL	2	0.22	2.1	11/07/12

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.

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

Sample # 121430005
SAF# X13-005
Sample ID B2MKK8

Matrix WATER
Sampled 11/07/12
Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPMS Prep (W)										**11/28/12**
ICP-2008 MS All possible metal										
Uranium	7440-61-1	LA-505-412	D	1.49		ug/L	2	0.10	0.50	11/29/12

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.

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

Sample # 121430006
SAF# X13-005
Sample ID B2MKK9

Matrix WATER
Sampled 11/07/12
Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPMS Prep (W)										**11/28/12**
ICP-2008 MS All possible metal										
Uranium	7440-61-1	LA-505-412	D	1.30		ug/L	2	0.10	0.50	11/29/12

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.

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

Sample # 121430008
SAF# X13-005
Sample ID B2MKJ4

Matrix WATER
Sampled 11/07/12
Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPMS Prep (W)										**11/28/12**
ICP-2008 MS All possible metal										
Uranium	7440-61-1	LA-505-412	BD	0.496		ug/L	2	0.10	0.50	11/29/12

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.

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

Sample # 121430009
SAF# X13-005
Sample ID B2MKK2

Matrix WATER
Sampled 11/07/12
Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPMS Prep (W)										**11/28/12**
ICP-2008 MS All possible metal										
Uranium	7440-61-1	LA-505-412	D	1.00		ug/L	2	0.10	0.50	11/29/12

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.

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

Sample # 121430010
SAF# X13-005
Sample ID B2MK71

Matrix WATER
Sampled 11/07/12
Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPAES Prep (W)										**11/26/12**
ICP-6010 - All possible metals										
Iron	7439-89-6	LA-505-411	B	22.2		ug/L	1	19	95	11/28/12
Magnesium	7439-95-4	LA-505-411		5300		ug/L	1	4.0	20	11/28/12
Manganese	7439-96-5	LA-505-411		45.7		ug/L	1	4.0	20	11/28/12
Nickel	7440-02-0	LA-505-411	U	<4.0		ug/L	1	4.0	20	11/28/12
Potassium	7440-09-7	LA-505-411		1910		ug/L	1	76	380	11/28/12
Silver	7440-22-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	11/28/12
Sodium	7440-23-5	LA-505-411		2620		ug/L	1	10	50	11/28/12
Antimony	7440-36-0	LA-505-411	U	<36		ug/L	1	36	180	11/28/12
Barium	7440-39-3	LA-505-411		31.3		ug/L	1	4.0	20	11/28/12
Cadmium	7440-43-9	LA-505-411	U	<4.0		ug/L	1	4.0	20	11/28/12
Chromium	7440-47-3	LA-505-411	U	<5.0		ug/L	1	5.0	25	11/28/12
Cobalt	7440-48-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	11/28/12
Copper	7440-50-8	LA-505-411	U	<4.0		ug/L	1	4.0	20	11/28/12
Vanadium	7440-62-2	LA-505-411	U	<5.0		ug/L	1	5.0	25	11/28/12
Zinc	7440-66-6	LA-505-411	U	<5.0		ug/L	1	5.0	25	11/28/12
Calcium	7440-70-2	LA-505-411		26600		ug/L	1	49	240	11/28/12
Strontium	7440-24-6	LA-505-411		115		ug/L	1	9.0	45	11/28/12

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.

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

Sample # 121430010
SAF# X13-005
Sample ID B2MK71

Matrix WATER
Sampled 11/07/12
Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Beryllium	7440-41-7	LA-505-411	U	<4.0		ug/L	1	4.0	20	11/28/12

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.

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

Sample # 121430011
SAF# X13-005
Sample ID B2MK69

Matrix WATER
Sampled 11/07/12
Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICPAES Prep (W)										**11/26/12**
ICP-6010 - All possible metals										
Iron	7439-89-6	LA-505-411		255		ug/L	1	19	95	11/28/12
Magnesium	7439-95-4	LA-505-411		5410		ug/L	1	4.0	20	11/28/12
Manganese	7439-96-5	LA-505-411		66.1		ug/L	1	4.0	20	11/28/12
Nickel	7440-02-0	LA-505-411	U	<4.0		ug/L	1	4.0	20	11/28/12
Potassium	7440-09-7	LA-505-411		1870		ug/L	1	76	380	11/28/12
Silver	7440-22-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	11/28/12
Sodium	7440-23-5	LA-505-411		2630		ug/L	1	10	50	11/28/12
Antimony	7440-36-0	LA-505-411	U	<36		ug/L	1	36	180	11/28/12
Barium	7440-39-3	LA-505-411		34.9		ug/L	1	4.0	20	11/28/12
Cadmium	7440-43-9	LA-505-411	U	<4.0		ug/L	1	4.0	20	11/28/12
Chromium	7440-47-3	LA-505-411	U	<5.0		ug/L	1	5.0	25	11/28/12
Cobalt	7440-48-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	11/28/12
Copper	7440-50-8	LA-505-411	U	<4.0		ug/L	1	4.0	20	11/28/12
Vanadium	7440-62-2	LA-505-411	U	<5.0		ug/L	1	5.0	25	11/28/12
Zinc	7440-66-6	LA-505-411	BC	8.80		ug/L	1	5.0	25	11/28/12
Calcium	7440-70-2	LA-505-411		27200		ug/L	1	49	240	11/28/12
Strontium	7440-24-6	LA-505-411		118		ug/L	1	9.0	45	11/28/12

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.

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

Sample # 121430011
SAF# X13-005
Sample ID B2MK69

Matrix WATER
Sampled 11/07/12
Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Beryllium	7440-41-7	LA-505-411	U	<4.0		ug/L	1	4.0	20	11/28/12

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.

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF121430

Sample # 121430005
SAF# X13-005
Sample ID B2MKK8

Matrix WATER
Sampled 11/07/12
Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
GAB Prep for Discrete Analysis (W)										**11/16/12**
GAB Discrete analysis Alpha only										
Gross Alpha	12587-46-1	LA-508-415	U	0.43	1.2	pCi/L	1	2.2		11/26/12
GAB Discrete analysis Beta only										
Gross Beta	12587-47-2	LA-508-415		13	2.8	pCi/L	1	3.1		11/26/12
Strontium 89/90 WATER/LIQUID PREP										**12/04/12**
Strontium 89/90 (GPC/GEA)										
Strontium-89_90	SR-RAD	LA-220-406		2.0	.77	pCi/L	1	0.89		12/05/12
TC99 by Liquid Scin. WATER/LIQUID PREP										**11/08/12**
TC99 by Liquid Scintillation										
Technetium-99	14133-76-7	LA-508-421	U	2.2	4	pCi/L	1	6.7		11/11/12

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
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.
PQL is equivalent to Estimated Quantitation Limit (EQL)

o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF121430

Sample # 121430006
SAF# X13-005
Sample ID B2MKK9

Matrix WATER
Sampled 11/07/12
Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
GAB Prep for Discrete Analysis (W)										**11/16/12**
GAB Discrete analysis Alpha only										
Gross Alpha	12587-46-1	LA-508-415	U	0.67	1.3	pCi/L	1	2.2		11/26/12
GAB Discrete analysis Beta only										
Gross Beta	12587-47-2	LA-508-415		23	3.7	pCi/L	1	3.2		11/26/12
Strontium 89/90 WATER/LIQUID PREP										**12/04/12**
Strontium 89/90 (GPC/GEA)										
Strontium-89_90	SR-RAD	LA-220-406		2.0	.76	pCi/L	1	0.90		12/05/12
TC99 by Liquid Scin. WATER/LIQUID PREP										**11/08/12**
TC99 by Liquid Scintillation										
Technetium-99	14133-76-7	LA-508-421	U	2.3	4	pCi/L	1	6.7		11/11/12

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
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.
PQL is equivalent to Estimated Quantitation Limit (EQL)

o - LCS recovery outside established laboratory acceptance limits.

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF121430

Sample # 121430007
SAF# X13-005
Sample ID B2MKL5

Matrix WATER
Sampled 11/07/12
Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Strontium 89/90 WATER/LIQUID PREP										**12/04/12**
Strontium 89/90 (GPC/GEA)										
Strontium-89_90	SR-RAD	LA-220-406		2.6	.92	pCi/L	1	1.0		12/05/12

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
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.
PQL is equivalent to Estimated Quantitation Limit (EQL)

o - LCS recovery outside established laboratory acceptance limits.

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF121430

Sample # 121430008
SAF# X13-005
Sample ID B2MKJ4

Matrix WATER
Sampled 11/07/12
Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
TC99 by Liquid Scin. WATER/LIQUID PREP										**11/08/12**
TC99 by Liquid Scintillation										
Technetium-99	14133-76-7	LA-508-421	U	-1.5	4	pCi/L	1	6.7		11/11/12

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
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.
PQL is equivalent to Estimated Quantitation Limit (EQL)

o - LCS recovery outside established laboratory acceptance limits.

WSCF Analytical Results Report

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF121430

Sample # 121430009
SAF# X13-005
Sample ID B2MKK2

Matrix WATER
Sampled 11/07/12
Received 11/07/12

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
TC99 by Liquid Scin. WATER/LIQUID PREP										**11/08/12**
TC99 by Liquid Scintillation										
Technetium-99	14133-76-7	LA-508-421	U	-2.8	4	pCi/L	1	6.7		11/11/12

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
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.
PQL is equivalent to Estimated Quantitation Limit (EQL)

o - LCS recovery outside established laboratory acceptance limits.

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

Analytical Batch 209931 (QC Batch: 209931) **Test** Anions by Ion Chromatography (Water)
Associated Samples 121430001, 121430002

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
BLANK			**QC Sample #84727**								
Fluoride	16984-48-8		<0.023	ug/mL						U	11/07/12
Chloride	16887-00-6		<0.058	ug/mL						U	11/07/12
Nitrite-N	NO2-N		<0.019	ug/mL						U	11/07/12
Nitrate-N	NO3-N		<0.019	ug/mL						U	11/07/12
Sulfate	14808-79-8		<0.11	ug/mL						U	11/07/12
LCS			**QC Sample #84728**								
Fluoride	16984-48-8		0.964	ug/mL	97.3	90 - 110					11/07/12
Chloride	16887-00-6		1.98	ug/mL	99.9	90 - 110					11/07/12
Nitrite-N	NO2-N		1.06	ug/mL	108.3	90 - 110					11/07/12
Nitrate-N	NO3-N		0.937	ug/mL	105.9	90 - 110					11/07/12
Sulfate	14808-79-8		4.13	ug/mL	105.3	90 - 110					11/07/12
DUP			**QC Sample #84729**								
			Original 121430001								
Fluoride	16984-48-8	0.0636	0.0499	ug/mL			24.10	20	*	BXD	11/07/12
Chloride	16887-00-6	3.42	3.30	ug/mL			3.40	20		D	11/07/12
Nitrite-N	NO2-N	<0.038	<0.038	ug/mL			0.00	20		UD	11/07/12
Nitrate-N	NO3-N	1.17	1.16	ug/mL			0.90	20		D	11/07/12

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

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Sulfate	14808-79-8	24.5	23.8	ug/mL			2.80	20	D	11/07/12
MS			**QC Sample #84730**							
			Original 121430001							
Fluoride	16984-48-8	0.0636	0.963	ug/mL	96.3	80 - 120			D	11/07/12
Chloride	16887-00-6	3.42	1.82	ug/mL	91	80 - 120			D	11/07/12
Nitrite-N	NO2-N	<0.038	0.980	ug/mL	99.2	80 - 120			D	11/07/12
Nitrate-N	NO3-N	1.17	0.888	ug/mL	99.3	80 - 120			D	11/07/12
Sulfate	14808-79-8	24.5	3.54	ug/mL	89.3	80 - 120			D	11/07/12
MSD			**QC Sample #84731**							
			Original 121430001					**Paired**	**84730**	
Fluoride	16984-48-8	0.0636	0.943	ug/mL	94.3	80 - 120	2.00	20	D	11/07/12
Chloride	16887-00-6	3.42	1.80	ug/mL	89.8	80 - 120	0.50	20	D	11/07/12
Nitrite-N	NO2-N	<0.038	0.977	ug/mL	98.9	80 - 120	0.30	20	D	11/07/12
Nitrate-N	NO3-N	1.17	0.893	ug/mL	99.9	80 - 120	0.30	20	D	11/07/12
Sulfate	14808-79-8	24.5	3.31	ug/mL	83.5	80 - 120	0.80	20	D	11/07/12

* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

Analytical Batch 209932 (QC Batch: 209932) **Test** Anions by Ion Chromatography (Water)
Associated Samples 121430003

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #84734**							
Fluoride	16984-48-8		<0.023	ug/mL					U	11/08/12
Chloride	16887-00-6		<0.058	ug/mL					U	11/08/12
Nitrite-N	NO2-N		<0.019	ug/mL					U	11/08/12
Nitrate-N	NO3-N		<0.019	ug/mL					U	11/08/12
Sulfate	14808-79-8		<0.11	ug/mL					U	11/08/12
LCS			**QC Sample #84735**							
Fluoride	16984-48-8		0.982	ug/mL	99.2	90 - 110				11/08/12
Chloride	16887-00-6		1.96	ug/mL	98.8	90 - 110				11/08/12
Nitrite-N	NO2-N		1.05	ug/mL	106.9	90 - 110				11/08/12
Nitrate-N	NO3-N		0.932	ug/mL	105.3	90 - 110				11/08/12
Sulfate	14808-79-8		4.06	ug/mL	103.5	90 - 110				11/08/12
DUP			**QC Sample #84736**							
			Original 121430003							
Fluoride	16984-48-8	0.0591	0.0679	ug/mL			13.90	20	BD	11/08/12
Chloride	16887-00-6	2.89	2.90	ug/mL			0.10	20	D	11/08/12
Nitrite-N	NO2-N	<0.038	<0.038	ug/mL			0.00	20	UD	11/08/12
Nitrate-N	NO3-N	1.47	1.45	ug/mL			1.50	20	D	11/08/12

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

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Sulfate	14808-79-8	19.2	19.1	ug/mL			0.40	20	D	11/08/12
MS			**QC Sample #84737**							
			Original 121430003							
Fluoride	16984-48-8	0.0591	0.980	ug/mL	98	80 - 120			D	11/08/12
Chloride	16887-00-6	2.89	1.96	ug/mL	98	80 - 120			D	11/08/12
Nitrite-N	NO2-N	<0.038	0.993	ug/mL	100.5	80 - 120			D	11/08/12
Nitrate-N	NO3-N	1.47	0.942	ug/mL	105.3	80 - 120			D	11/08/12
Sulfate	14808-79-8	19.2	3.88	ug/mL	97.8	80 - 120			D	11/08/12
MSD			**QC Sample #84738**							
			Original 121430003					**Paired**	**84737**	
Fluoride	16984-48-8	0.0591	0.944	ug/mL	94.4	80 - 120	3.50	20	D	11/08/12
Chloride	16887-00-6	2.89	1.86	ug/mL	92.8	80 - 120	2.20	20	D	11/08/12
Nitrite-N	NO2-N	<0.038	0.995	ug/mL	100.7	80 - 120	0.20	20	D	11/08/12
Nitrate-N	NO3-N	1.47	0.884	ug/mL	98.8	80 - 120	2.40	20	D	11/08/12
Sulfate	14808-79-8	19.2	3.53	ug/mL	89.2	80 - 120	1.50	20	D	11/08/12

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

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

Analytical Batch 209933 (QC Batch: 209933) **Test** Anions by Ion Chromatography (Water)
Associated Samples 121430004

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #84741**							
Fluoride	16984-48-8		<0.023	ug/mL					U	11/07/12
Chloride	16887-00-6		<0.058	ug/mL					U	11/07/12
Nitrite-N	NO2-N		<0.019	ug/mL					U	11/07/12
Nitrate-N	NO3-N		<0.019	ug/mL					U	11/07/12
Sulfate	14808-79-8		<0.11	ug/mL					U	11/07/12
LCS			**QC Sample #84742**							
Fluoride	16984-48-8		0.972	ug/mL	98.1	90 - 110				11/07/12
Chloride	16887-00-6		2.00	ug/mL	101	90 - 110				11/07/12
Nitrite-N	NO2-N		1.07	ug/mL	109.7	90 - 110				11/07/12
Nitrate-N	NO3-N		0.930	ug/mL	105	90 - 110				11/07/12
Sulfate	14808-79-8		4.17	ug/mL	106.3	90 - 110				11/07/12
DUP			**QC Sample #84743**							
			Original 121430004							
Fluoride	16984-48-8	0.0560	0.0644	ug/mL			14.00	20	BD	11/07/12
Chloride	16887-00-6	2.86	2.92	ug/mL			1.90	20	D	11/07/12
Nitrite-N	NO2-N	<0.038	<0.038	ug/mL			0.00	20	UD	11/07/12
Nitrate-N	NO3-N	1.43	1.46	ug/mL			2.20	20	D	11/07/12

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

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Sulfate	14808-79-8	18.7	19.3	ug/mL			3.20	20	D	11/07/12
MS			**QC Sample #84744**							
			Original 121430004							
Fluoride	16984-48-8	0.0560	0.970	ug/mL	97	80 - 120			D	11/07/12
Chloride	16887-00-6	2.86	1.92	ug/mL	96.2	80 - 120			D	11/07/12
Nitrite-N	NO2-N	<0.038	0.980	ug/mL	99.2	80 - 120			D	11/07/12
Nitrate-N	NO3-N	1.43	0.933	ug/mL	104.3	80 - 120			D	11/07/12
Sulfate	14808-79-8	18.7	4.29	ug/mL	108.3	80 - 120			D	11/07/12
MSD			**QC Sample #84745**							
			Original 121430004					**Paired 84744**		
Fluoride	16984-48-8	0.0560	0.974	ug/mL	97.4	80 - 120	0.40	20	D	11/08/12
Chloride	16887-00-6	2.86	1.91	ug/mL	95.5	80 - 120	0.30	20	D	11/08/12
Nitrite-N	NO2-N	<0.038	0.969	ug/mL	98.1	80 - 120	1.10	20	D	11/08/12
Nitrate-N	NO3-N	1.43	0.935	ug/mL	104.6	80 - 120	0.10	20	D	11/08/12
Sulfate	14808-79-8	18.7	4.12	ug/mL	104	80 - 120	0.70	20	D	11/08/12

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

Quality Control Report

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF121430

Analytical Batch 209939 (QC Batch: 209915) **Test** TC99 by Liquid Scintillation
Associated Samples 121430005, 121430006, 121430008, 121430009

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #84679**							
Technetium-99	14133-76-7		0.70	pCi/L					U	11/11/12
LCS			**QC Sample #84680**							
Technetium-99	14133-76-7		220	pCi/L	102.9	80 - 120				11/11/12
DUP			**QC Sample #84681**							
			Original 121411014							
Technetium-99	14133-76-7		1100	pCi/L			5.30	20		11/11/12
MS			**QC Sample #84682**							
			Original 121411014							
Technetium-99	14133-76-7		950	pCi/L	109.4	75 - 125				11/11/12

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

Quality Control Report

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF121430

Analytical Batch 210373 (QC Batch: 210217)
Associated Samples 121430005, 121430006

Test GAB Discrete analysis Alpha only

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
BLANK			**QC Sample #84845**								
Gross Alpha	12587-46-1		0.089	pCi/L						U	11/26/12
LCS			**QC Sample #84846**								
Gross Alpha	12587-46-1		59	pCi/L	99.5	80 - 120					11/26/12
DUP			**QC Sample #84847**								
			Original 121423005								
Gross Alpha	12587-46-1		1.3	pCi/L			25.60	20	*	U	11/26/12

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

Quality Control Report

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF121430

Analytical Batch 210378 (QC Batch: 210217)
Associated Samples 121430005, 121430006

Test GAB Discrete analysis Beta only

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
BLANK			**QC Sample #84845**								
Gross Beta	12587-47-2		1.1	pCi/L						U	11/26/12
LCS			**QC Sample #84846**								
Gross Beta	12587-47-2		250	pCi/L	98.4	80 - 120					11/26/12
DUP			**QC Sample #84847**								
			Original 121423005								
Gross Beta	12587-47-2		5.3	pCi/L			51.70	20	*	X	11/26/12

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

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

Analytical Batch 210817 (QC Batch: 210638) **Test** ICP-6010 - All possible metals
Associated Samples 121430010, 121430011

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #85340**							
Iron	7439-89-6		<19	ug/L					U	11/28/12
Magnesium	7439-95-4		<4.0	ug/L					U	11/28/12
Manganese	7439-96-5		<4.0	ug/L					U	11/28/12
Nickel	7440-02-0		<4.0	ug/L					U	11/28/12
Potassium	7440-09-7		<76	ug/L					U	11/28/12
Silver	7440-22-4		<4.0	ug/L					U	11/28/12
Sodium	7440-23-5		<10	ug/L					U	11/28/12
Antimony	7440-36-0		<36	ug/L					U	11/28/12
Barium	7440-39-3		<4.0	ug/L					U	11/28/12
Cadmium	7440-43-9		<4.0	ug/L					U	11/28/12
Chromium	7440-47-3		<5.0	ug/L					U	11/28/12
Cobalt	7440-48-4		<4.0	ug/L					U	11/28/12
Copper	7440-50-8		5.90	ug/L					B	11/28/12
Vanadium	7440-62-2		<5.0	ug/L					U	11/28/12
Zinc	7440-66-6		7.60	ug/L					B	11/28/12
Calcium	7440-70-2		<49	ug/L					U	11/28/12
Strontium	7440-24-6		<9.0	ug/L					U	11/28/12

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

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Beryllium	7440-41-7		<4.0	ug/L					U	11/28/12
LCS			**QC Sample #85342**							
Iron	7439-89-6		996	ug/L	99.6	80 - 120				11/28/12
Magnesium	7439-95-4		10200	ug/L	101.5	80 - 120				11/28/12
Manganese	7439-96-5		1010	ug/L	100.7	80 - 120				11/28/12
Nickel	7440-02-0		957	ug/L	95.7	80 - 120				11/28/12
Potassium	7440-09-7		10800	ug/L	108	80 - 120				11/28/12
Silver	7440-22-4		1020	ug/L	102.3	80 - 120				11/28/12
Sodium	7440-23-5		10000	ug/L	100	80 - 120				11/28/12
Antimony	7440-36-0		1020	ug/L	101.5	80 - 120				11/28/12
Barium	7440-39-3		1010	ug/L	101.2	80 - 120				11/28/12
Cadmium	7440-43-9		988	ug/L	98.8	80 - 120				11/28/12
Chromium	7440-47-3		1000	ug/L	100.2	80 - 120				11/28/12
Cobalt	7440-48-4		976	ug/L	97.6	80 - 120				11/28/12
Copper	7440-50-8		1010	ug/L	101.1	80 - 120				11/28/12
Vanadium	7440-62-2		1010	ug/L	101	80 - 120				11/28/12
Zinc	7440-66-6		1020	ug/L	101.5	80 - 120				11/28/12
Calcium	7440-70-2		20500	ug/L	102.4	80 - 120				11/28/12
Strontium	7440-24-6		989	ug/L	98.9	80 - 120				11/28/12
Beryllium	7440-41-7		1000	ug/L	100	80 - 120				11/28/12
MS			**QC Sample #85343**							
			Original 121423005							
Iron	7439-89-6		1000	ug/L	100.1	75 - 125				11/28/12

* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Magnesium	7439-95-4		9950	ug/L	99.5	75 - 125				11/28/12
Manganese	7439-96-5		1000	ug/L	100.4	75 - 125				11/28/12
Nickel	7440-02-0		948	ug/L	94.8	75 - 125				11/28/12
Potassium	7440-09-7		10500	ug/L	105.5	75 - 125				11/28/12
Silver	7440-22-4		1000	ug/L	100.5	75 - 125				11/28/12
Sodium	7440-23-5		8650	ug/L	86.5	75 - 125			X	11/28/12
Antimony	7440-36-0		1030	ug/L	102.8	75 - 125				11/28/12
Barium	7440-39-3		1000	ug/L	100	75 - 125				11/28/12
Cadmium	7440-43-9		995	ug/L	99.5	75 - 125				11/28/12
Chromium	7440-47-3		994	ug/L	99.4	75 - 125				11/28/12
Cobalt	7440-48-4		974	ug/L	97.4	75 - 125				11/28/12
Copper	7440-50-8		986	ug/L	98.6	75 - 125				11/28/12
Vanadium	7440-62-2		1000	ug/L	100.1	75 - 125				11/28/12
Zinc	7440-66-6		1030	ug/L	102.7	75 - 125				11/28/12
Calcium	7440-70-2		20000	ug/L	100.1	75 - 125				11/28/12
Strontium	7440-24-6		983	ug/L	98.3	75 - 125				11/28/12
Beryllium	7440-41-7		1000	ug/L	100	75 - 125				11/28/12
MSD			**QC Sample #85344**							
			Original 121423005					**Paired 85343**		
Iron	7439-89-6		1020	ug/L	102.3	75 - 125	2.20	20		11/28/12
Magnesium	7439-95-4		10200	ug/L	101.9	75 - 125	1.20	20		11/28/12
Manganese	7439-96-5		1030	ug/L	102.7	75 - 125	2.30	20		11/28/12
Nickel	7440-02-0		970	ug/L	97	75 - 125	2.30	20		11/28/12

* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Potassium	7440-09-7		10800	ug/L	108.1	75 - 125	1.70	20		11/28/12
Silver	7440-22-4		1020	ug/L	101.7	75 - 125	1.20	20		11/28/12
Sodium	7440-23-5		8790	ug/L	87.9	75 - 125	0.30	20	X	11/28/12
Antimony	7440-36-0		1050	ug/L	105.3	75 - 125	2.40	20		11/28/12
Barium	7440-39-3		1020	ug/L	101.9	75 - 125	1.80	20		11/28/12
Cadmium	7440-43-9		1010	ug/L	101.4	75 - 125	1.90	20		11/28/12
Chromium	7440-47-3		1020	ug/L	102.1	75 - 125	2.70	20		11/28/12
Cobalt	7440-48-4		992	ug/L	99.2	75 - 125	1.80	20		11/28/12
Copper	7440-50-8		1010	ug/L	100.8	75 - 125	2.20	20		11/28/12
Vanadium	7440-62-2		1020	ug/L	102.3	75 - 125	2.10	20		11/28/12
Zinc	7440-66-6		1040	ug/L	104.5	75 - 125	1.70	20		11/28/12
Calcium	7440-70-2		20600	ug/L	102.9	75 - 125	1.00	20		11/28/12
Strontium	7440-24-6		1010	ug/L	101	75 - 125	2.20	20		11/28/12
Beryllium	7440-41-7		1020	ug/L	102.4	75 - 125	2.40	20		11/28/12

* - QC result out of range

n/a - Not Applicable

Quality Control Report

Attention Scot Fitzgerald
Department Inorganic

Group # WSCF121430

Analytical Batch 210924 (QC Batch: 210826) **Test** ICP-2008 MS All possible metal
Associated Samples 121430005, 121430006, 121430008, 121430009

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #85610**							
Uranium	7440-61-1		<0.050	ug/L					U	11/29/12
LCS			**QC Sample #85611**							
Uranium	7440-61-1		42.1	ug/L	105.3	85 - 115				11/29/12
MS			**QC Sample #85612**							
			Original 121411010							
Uranium	7440-61-1		41.8	ug/L	104.6	70 - 130				11/29/12
MSD			**QC Sample #85613**							
			Original 121411010					**Paired 85612**		
Uranium	7440-61-1		42.4	ug/L	105.9	70 - 130	1.30	20		11/29/12

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

Quality Control Report

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF121430

Analytical Batch 211239 (QC Batch: 210240) **Test** Strontium 89/90 (GPC/GEA)
Associated Samples 121430005, 121430006, 121430007

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
BLANK			**QC Sample #84911**								
Strontium-89_90	SR-RAD		0.39	pCi/L						U	12/05/12
LCS			**QC Sample #84912**								
Strontium-89_90	SR-RAD		87	pCi/L	98.1	80 - 120					12/05/12
DUP			**QC Sample #84913**								
			Original 121430005								
Strontium-89_90	SR-RAD	2.0	1.3	pCi/L			44.30	20	*	X	12/05/12
SAMPLE			**Sample #121430005**								
Strontium Nitrate	10042-76-9			mg	78.5	25 - 105					12/05/12
SAMPLE			**Sample #121430006**								
Strontium Nitrate	10042-76-9			mg	76.9	25 - 105					12/05/12
SAMPLE			**Sample #121430007**								
Strontium Nitrate	10042-76-9			mg	67.8	25 - 105					12/05/12
BLANK			**QC Sample #84911**								
Strontium Nitrate	10042-76-9			mg	76	25 - 105					12/05/12

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

Quality Control Report

Attention Scot Fitzgerald
Department Radiochemistry

Group # WSCF121430

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
LCS			**QC Sample #84912**							
Strontium Nitrate	10042-76-9			mg	81.8	25 - 105				12/05/12
DUP			**QC Sample #84913**							
			Original 121430005							
Strontium Nitrate	10042-76-9	9.5		mg	73.6	25 - 105	n/a			12/05/12

* - QC result out of range

n/a - Not Applicable

Analytical Comment Report

Attention: Scot Fitzgerald

Group # WSCF121430

Quality Control Comments

Department Inorganic

84729 B2MKJ5(121430001DUP)

Analyte Fluoride - Anions by Ion Chromatography (Water)

[1] Duplicate is flagged for RPD out-of-limits. RPD does not apply to samples concentrations below the calibration range. RPD is calculated on measured values and not applicable for a result below the RDL.

85343 B2MR83(121423005MS)

Analyte Sodium - ICP-6010 - All possible metals

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

85344 B2MR83(121423005MSD)

Analyte Sodium - ICP-6010 - All possible metals

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

Analytical Comment Report

Attention: Scot Fitzgerald

Group # WSCF121430

Quality Control Comments

Department Radiochemistry

84847 B2MR83(121423005DUP)

Analyte Gross Beta - GAB Discrete analysis Beta only

[1] The duplicate is outside of default RPD limits. RPD limit does not apply to results less than 5X the Minimum Detectable Concentration.

84913 B2MKK8(121430005DUP)

Analyte Strontium-89_90 - Strontium 89/90 (GPC/GEA)

[1] The duplicate is outside of default RPD limits. RPD limit does not apply to results less than 5X the Minimum Detectable Concentration.

ATTACHMENT4

SAMPLE RECEIPT

Consisting of 13 pages
Including cover page

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 #: 403899
Work Order #: 121430
Profile #: X13-005-203
Proj. Mgr.:
Phone:

The following samples were received from you on 11/7/2012 1:00:00 PM. 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		
121430001	B2MKJ5	WATER	11/7/2012 10:15	11/7/2012 13:00
		IC-W		
121430002	B2MKK3	WATER	11/7/2012 10:51	11/7/2012 13:00
		IC-W		
121430003	B2MKL0	WATER	11/7/2012 11:13	11/7/2012 13:00
		IC-W		
121430004	B2MKL1	WATER	11/7/2012 11:13	11/7/2012 13:00
		IC-W		
121430005	B2MKK8	WATER	11/7/2012 11:13	11/7/2012 13:00
		2008-W; GAB-AO-W; GAB-BO-W; SR89/90-W; TC99-W		
121430006	B2MKK9	WATER	11/7/2012 11:13	11/7/2012 13:00
		2008-W; GAB-AO-W; GAB-BO-W; SR89/90-W; TC99-W		
121430007	B2MKL5	WATER	11/7/2012 11:56	11/7/2012 13:00
		SR89/90-W		
121430008	B2MKJ4	WATER	11/7/2012 10:15	11/7/2012 13:00
		2008-W; TC99-W		
121430009	B2MKK2	WATER	11/7/2012 10:51	11/7/2012 13:00
		2008-W; TC99-W		
121430010	B2MK71	WATER	11/7/2012 09:33	11/7/2012 13:00
		6010-W		
121430011	B2MK69	WATER	11/7/2012 09:33	11/7/2012 13:00

Waste Sampling and Characterization Facility
P.O. Box 1970 S3-30, Richland WA 99352
Phone: (509) 373-7004/FAX: (509) 373-7134

6010-W

Test Acronym Description

Test Acronym	Description
2008-W	ICP-MS (W)
6010-W	ICP-AES (W)
GAB-AO-W	Gross Alpha/Beta (A only)(W)
GAB-BO-W	Gross Alpha/Beta (B only)(W)
IC-W	Anions by IC (W)
SR89/90-W	Strontium 89/90 (GPC) (W)
TC99-W	Technetium-99 (W)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **X13-005-203**

Page 1 of 1

Collector	J. Aguilar	Contact/Requester	Karen Waters-Husted	Telephone No.	376-4650
SAF No.	X13-005	Sampling Origin	Hanford Site	Purchase Order/Charge Code	303064ES20
Project Title	AQUIFER TUBES, NOVEMBER 2012	Logbook No.	HNF-N-506 46/89,90	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	SURV	Priority: 31 Days	**PRIORITY**	Offsite Property No.	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS

** ** Contains Radioactive Material at concentations that are not regulated for transportation per 49 CRF but are not releasable per DOE Order 5400.5 (1990/1993)

121430

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

Site Wide Generator Knowledge Information Form applies.
The CACN for all analytical work at WSCF is 403899.
FY12 and FY13 samples cannot be in the same SDG.

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2MKJ5 1	N	W	11-7-12	1015	1x500-mL P	300.0_ANIONS_IC: List-1 (5)	48 Hours	Cool~4C

Relinquished By	Print / Sign	Date/Time	Received By	Print / Sign	Date/Time
J. Aguilar		11-7-12 1300	TA FRAZIER		11-7-12 1300
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

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A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **X13-005-208**

Page 1 of 1

Collector	J. Aguilar	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	376-4650
SAF No.	X13-005	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	303064ES20
Project Title	AQUIFER TUBES, NOVEMBER 2012	**Logbook No.**	HNF-N-506 46/89,90	**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	SURV	**Priority:**	31 Days **PRIORITY**	**Offsite Property No.**	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS

** ** Contains Radioactive Material at concentations that are not regulated for transportation per 49 CRF but are not releasable per DOE Order 5400 5 (1990/1993)

SPECIAL INSTRUCTIONS **Hold Time**

Site Wide Generator Knowledge Information Form applies.
The CACN for all analytical work at WSCF is 403899.
FY12 and FY13 samples cannot be in the same SDG.

Total Activity Exemption: Yes ☑ No ☐

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2MKK3	2	N	W	11-7-12	1051	1x500-mL P	300.0_ANIONS_IC: List-1 (5)	48 Hours	Cool~4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
J. Aguilar	11-7-12 1300	TA Frazier	11-7-12 1300
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

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CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # X13-005-211

Page 1 of 1

Collector	J. Aguilar	Contact/Requester	Karen Waters-Husted	Telephone No.	376-4650
SAF No.	X13-005	Sampling Origin	Hanford Site	Purchase Order/Charge Code	303064ES20
Project Title	AQUIFER TUBES, NOVEMBER 2012	Logbook No.	HNF-N-506 46/89,90	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	SURV	Priority:	31 Days PRIORITY	Offsite Property No.	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS

** ** Contains Radioactive Material at concentations that are not regulated for transportation per 49 CRF but are not releasable per DOE Order 5400 5 (1990/1993)

SPECIAL INSTRUCTIONS **Hold Time**

Site Wide Generator Knowledge Information Form applies
The CACN for all analytical work at WSCF is 403899
FY12 and FY13 samples cannot be in the same SDG.

Total Activity Exemption: Yes ☑ No ☐

Sample No	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2MKL0 3	N	W	11-7-12	1113	1x500-mL P	300.0_ANIONS_IC: List-1 (5)	48 Hours	Cool~4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
J. Aguilar	11-7-12 1300	TA FRAZIER	11-7-12 1300

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

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CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# X13-005-214

Page 1 of 1

Collector	J. Aguilar	Contact/Requester	Karen Waters-Husted	Telephone No.	376-4650
SAF No.	X13-005	Sampling Origin	Hanford Site	Purchase Order/Charge Code	303064ES20
Project Title	AQUIFER TUBES, NOVEMBER 2012	Logbook No.	HNF-N-506 96 / 89,90	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	SURV	Priority:	31 Days **PRIORITY**	Offsite Property No.	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS

** ** Contains Radioactive Material at concentations that are not regulated for transportation per 49 CRF but are not releasable per DOE Order 5400.5 (1990/1993)

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

Site Wide Generator Knowledge Information Form applies.
The CACN for all analytical work at WSCF is 403899
FY12 and FY13 samples cannot be in the same SDG.

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2MKL1 4	N	W	11-7-12	1113	1x500-mL P	300.0_ANIONS_IC: List-1 (5)	48 Hours	Cool~4C

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
J. Aguilar	11-7-12 1300	TA FRAZIER	11-7-12 1300
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

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Chain of Custody

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# **X13-005-210**

Page 1 of 1

Collector	J. Agular	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	376-4650
SAF No.	X13-005	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	303064ES20
Project Title	AQUIFER TUBES, NOVEMBER 2012	**Logbook No.**	HNF-N-506 46/89,90	**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	SURV	**Priority:**	31 Days **PRIORITY**	**Offsite Property No.**	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS

**** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CRF but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL INSTRUCTIONS **Hold Time**

Site Wide Generator Knowledge Information Form applies.
The CACN for all analytical work at WSCF is 403899.
FY12 and FY13 samples cannot be in the same SDG.

Total Activity Exemption: Yes ☑ No ☐

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2MKK8	N	W	11-7-12	1113	1x500-mL G/P	200.8_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2
B2MKK8	N	W	11-7-12	1113	1x500-mL G/P	ALPHABETA_GPC: Alpha discrete + Beta (2)	6 Months	HNO3 to pH <2
B2MKK8	N	W	11-7-12	1113	1x1-L G/P	Strontium-89,90 -- Total Sr	6 Months	HNO3 to pH <2
B2MKK8	N	W	11-7-12	1113	1x1-L G/P	TC99_3MDSK_LSC: Tc-99 (1)	6 Months	HCl to pH <2

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
J. Agular			11-7-12 1300	TASHAZ Ian Vasquez			11-7-12 1300
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed 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

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CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # X13-005-213

Page 1 of 1

Collector	J. Aguilar	Contact/Requester	Karen Waters-Husted	Telephone No.	376-4650
SAF No.	X13-005	Sampling Origin	Hanford Site	Purchase Order/Charge Code	303064ES20
Project Title	AQUIFER TUBES, NOVEMBER 2012	Logbook No.	HNF-N-506 46/89,90	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	SURV	Priority: 31 Days	PRIORITY	Offsite Property No.	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS

** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CRF but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL INSTRUCTIONS **Hold Time**

Site Wide Generator Knowledge Information Form applies.
The CACN for all analytical work at WSCF is 403899.
FY12 and FY13 samples cannot be in the same SDG.

Total Activity Exemption: Yes ☑ No ☐

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2MKK9	N	W	11-7-12	1113	1x500-mL G/P	200.8_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2
B2MKK9	N	W	11-7-12	1113	1x500-mL G/P	ALPHABETA_GPC: Alpha discrete + Beta (2)	6 Months	HNO3 to pH <2
B2MKK9	N	W	11-7-12	1113	1x1-L G/P	Strontium-89,90 -- Total Sr	6 Months	HNO3 to pH <2
B2MKK9	N	W	11-7-12	1113	1x1-L G/P	TC99_3MDSK_LSC: Tc-99 (1)	6 Months	HCl to pH <2

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
J. Aguilar			11-7-12 1300	TA FRAZIER			11-7-12 1300
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

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Chain of Custody

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C.# X13-005-216

Page 1 of 1

Collector	J. Aguilar	Contact/Requester	Karen Waters-Husted	Telephone No. 376-4650	
SAF No.	X13-005	Sampling Origin	Hanford Site	Purchase Order/Charge Code	303064ES20
Project Title	AQUIFER TUBES, NOVEMBER 2012	Logbook No.	HNF-N-506-46 / 89,90	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	SURV	Priority: 31 Days	PRIORITY	Offsite Property No.	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS

**** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL INSTRUCTIONS Hold Time

Site Wide Generator Knowledge Information Form applies
The CACN for all analytical work at WSCF is 403899
FY12 and FY13 samples cannot be in the same SDG.

Total Activity Exemption: Yes ☑ No ☐

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2MKL5	7	N	W 11-7-12	1156	1x1-L G/P	Strontium-89,90 – Total Sr	6 Months	HNO3 to pH <2

Relinquished By	J. Aguilar	Sign	Date/Time 11-7-12 1300	Received By	TA Finazzo	Sign	Date/Time 11-7-12 1300
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed 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

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Chain of Custody

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # X13-005-202

Page 1 of 1

Collector: J. Aguilar	Contact/Requester: Karen Waters-Husted	Telephone No.: 376-4650	
SAF No.: X13-005	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 303064ES20	
Project Title: AQUIFER TUBES, NOVEMBER 2012	Logbook No.: HNF-N-506 46 / 89, 90	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: SURV	Priority: 31 Days	Offsite Property No.: N/A	
POSSIBLE SAMPLE HAZARDS/REMARKS	PRIORITY	Hold Time: SPECIAL INSTRUCTIONS	Total Activity Exemption: Yes ☑ No ☐
**** Contains Radioactive Material at concentations that are not regulated for transportation per 49 CRF but are not releasable per DOE Order 5400.5 (1990/1993)		Site Wide Generator Knowledge Information Form applies. The CACN for all analytical work at WSCF is 403899. FY12 and FY13 samples cannot be in the same SDG.	

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2MKJ4	N	W	11-7-12	1015	1x500-mL G/P	200.8_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2
B2MKJ4	N	W	11-7-12	1015	1x1-L G/P	TC99_3MDSK_LSC: Tc-99 (1)	6 Months	HCl to pH <2

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
J. Aguilar			11-7-12 1320	TA Fluzier			11-7-12 1300
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time
Relinquished By			Date/Time	Received By			Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Disposed By			Date/Time

Matrix *: S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air, DS = Drum Solids, DL = Drum Liquids, T = Tissue, WI = Wipe, L = Liquid, V = Vegetation, X = Other

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Chain of Custody

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # X13-005-207

Page 1 of 1

Collector	J. Aguilar	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	376-4650
SAF No.	X13-005	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	303064ES20
Project Title	AQUIFER TUBES, NOVEMBER 2012	**Logbook No.**	HNF-N-506 46 / 89, 90	**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	SURV	**Priority:**	31 Days **PRIORITY**	**Offsite Property No.**	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS

** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL INSTRUCTIONS

Site Wide Generator Knowledge Information Form applies. The CACN for all analytical work at WSCF is 403899 FY12 and FY13 samples cannot be in the same SDG.

Hold Time — **Total Activity Exemption** Yes ☑ No ☐

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2MKK2	N	W	11-7-12	1051	1x500-mL G/P	200.8_METALS_ICPMS: Uranium (1)	6 Months	HNO3 to pH <2
B2MKK2	N	W	11-7-12	1051	1x1-L G/P	TC99_3MDSK_LSC: Tc-99 (1)	6 Months	HCl to pH <2

Relinquished By	Print	Sign	Date/Time	**Received By**	Print	Sign	Date/Time
J. Aguilar			11-7-12 1300	TA Fritzler			11-7-12 1300
Relinquished By			Date/Time	**Received By**			Date/Time
Relinquished By			Date/Time	**Received By**			Date/Time
Relinquished By			Date/Time	**Received By**			Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)			**Disposed 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

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Chain of Custody

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

C.O.C. # **X13-005-150**

Page 1 of 1

Collector	J. Aguilar	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	376-4650
SAF No.	X13-005	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	303064ES20
Project Title	AQUIFER TUBES, NOVEMBER 2012	**Logbook No.**	HNF-N-506 46 / 89,90	**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	SURV	**Priority:**	**31 Days** **PRIORITY**	**Offsite Property No.**	N/A

POSSIBLE SAMPLE HAZARDS/REMARKS

**** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CRF but are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL INSTRUCTIONS **Hold Time**

Site Wide Generator Knowledge Information Form applies.
The CACN for all analytical work at WSCF is 403899.
FY12 and FY13 samples cannot be in the same SDG.

Total Activity Exemption: Yes ☑ No ☐

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B2MK71	Y	W	11-7-12	0933	1x500-mL G/P	6010_METALS_ICP: List-3 (18)	6 Months	HNO3 to pH <2
B2MK69	N	W	11-7-12	0933	1x500-mL G/P	6010_METALS_ICP: List-3 (18)	6 Months	HNO3 to pH <2

	Print	Sign	Date/Time
Relinquished By	J. Aguilar		11-7-12 1300
Relinquished By			Date/Time
Received By	TA FINZER		Date/Time
Relinquished By			Date/Time
Received By			Date/Time
Relinquished By			Date/Time
Received By			Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed 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

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