WSCF Laboratory

PO Box 1000 S3-30
Richland, WA 99352
(509) 373-7005
(509) 372-0456

RECEIVED APRIL 02, 2010

0089003

Memorandum

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

Date: April 1, 2010

From: WSCF Laboratory
WSCF Analytical Chemistry

CC:

Subject: FINAL RESULT FOR SAMPLE DELIVERY GROUP WSCF100502

Reference: (1) SOW, Mod 2, #36587, Release 3
(2) HNF-SD-CD-QAPP-017, Rev 9, Waste Sampling & Characterization Facility Quality Assurance Plan

This letter contains the following information for sample delivery group WSCF100502

* Cover Sheet (Attachment 1)
* Narrative (Attachment 2)
* Analytical Results (Attachment 3)
* Sample Receipt Information (Attachment 4)

RECEIVED
JUN 03 2010
EDMC

Electronically signed by Markus Stauffer
For Lab Manager

Attachments 4

ATTACHMENT 1

COVER SHEET

Consisting of 2 pages
Including cover page

WSCF SAF Number Cross Reference

Group # WSCF100502
Data Deliverable Date 04/02/10

SAF #	Sample ID	Sample #	Matrix	Sampled	Received
F10-119	B243V1	100502001	WATER	03/11/10	03/15/10
F10-119	B243V2	100502002	WATER	03/11/10	03/15/10

ATTACHMENT 2

NARRATIVE

Consisting of 5 pages
Including cover page

Attachment 2
Narrative
WSCF100502

Introduction

Two (2) S&GRP samples were received at the WSCF Laboratory on March 15th, 2010. 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), Modification No. 2 to Agreement 36587, Release 3, "FH WSCF ANALYTICAL SERVICES FOR GROUNDWATER."*

The narrative (Attachment 2) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 3) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information as applicable. Copies of the chain of custody and sample receipt documentation are included as Attachment 4. Also is attached an Issue Resolution Form (IRF) pertaining to limited amount of samples received for radiological analysis.

It should be noted that the attached chain of custody was not stamped "ICED" by the WSCF Laboratory Sample Custodian during sample receiving. However, based on procedure LO-090-403 form "NOTICE OF IMPROPER SAMPLE SUBMITTAL" was not submitted and was not stamped "NOT ICED". No anomaly was noted during sample receipt.

The following generic data qualifiers (i.e., B, D, U and J) may be applicable to this report, as appropriate

- **B** – Sample results with a concentration greater than the MDL but less than the PQL are B flagged (applies to inorganic and wet chemical analyses), as appropriate.
- **D** – Sample results are D flagged if dilution(s) were required, as appropriate.
- **J** – Sample results with a concentration greater than the MDL but less than the PQL are J flagged (applies to organic analyses), as appropriate.
- **U** – Analyzed for but not detected above limiting criteria. Relative Percent Difference (RPD) values associated with an analyte qualified with a "U" are not applicable.

Analytical Methodology for Requested Analyses

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

Inorganic Comments

Cyanide – 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):

- Batch QC 102177 analyzed on sample# B23V61 (100503007)

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Attachment 2
Narrative
WSCF100502

All 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):

- Batch QC 103403 analyzed on sample# B247L2 (100497001)
    - Calcium and Magnesium – exceeded spiking levels by a factor of 4. Spike recoveries are not valid.

All other 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):

- Batch QC 101081 analyzed on sample# B248Y3 (100474014)

All QC controls are within the established limits.

Radiochemistry Comments

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

- Rad Chem requested to be performed included: Americium-241 by AEA, Gamma Energy Analysis, Plutonium Isotopic and Uranium Isotopic by AEA, Stronium-89/90.
- Technetium-99 was cancelled according to IRF 10-071, please see attached document.
- Tracers are used to determine chemical yield. RPD is monitored in sample duplicate and is not required for tracer recovery per SOW.
- Americium-241:
    - Batch QC 103378 analyzed on sample# B243V1 (100502001)
    - Americium-241 – 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 QC controls are within the established limits.
- Gamma Energy Analysis:
    - Batch QC 102075 analyzed on sample# B243V3 (100487001)

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- Cesium-137 and Europium-154 – 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 QC controls are within the established limits.

- Isotopic Plutonium analysis:
  - Batch QC 103378 analyzed on sample# B243V1 (100502001)
  - Plutonium-238 and Plutonium-239/240 – 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 QC controls are within the established limits.
- Isotopic Uranium analysis:
  - Batch QC 103378 analyzed on sample# B243V1 (100502001)
  - Uranium-233/234, Uranium-235 and Uranium-238 – Duplicate Relative Percent Difference(s) (RPD) did not meet the established laboratory limits. Duplicate Relative Percent Difference (RPD) does not apply to results below 5X the minimum detectable activity. No flags issued.
  - All other QC controls are within the established limits.
- Strontium-89/90:
  - Batch QC 106576 analyzed on sample# B23VP9 (100585008)
  - Strontium-89/90 – 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 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 2
Narrative
WSCF100502

ISSUE RESOLUTION FORM

CHPRC TRACKING NUMBER: 10-071

Date. 3-22-2010 SAF No. F10-119

SDG: 100502 LOGIN No.: TEST: GEA, AEA-Am 241, AEA-PU, AEA-U, Tc-99 by LSC, Sr-89/90

Sample No. B243V1, B243V2

Submitted By: H Medley
Phone No.: 372-1488
Fax. No.:

Submitted To: H Hampt
Phone No.: 376-4319
Fax No.:

ISSUE	PROPOSED RESOLUTION
The samples were received at WSCF on March 15, 2010. A 1-liter container was received (for each sample) to perform the rad analyses. There are 2 issues: 1. Normally, a 500ml is received just for the GEA analysis. 2. The Tc-99 LSC is normally preserved with HCl.	Cancel the Tc-99 analysis. Run GEA, then isotopic with limited QC. Start the TAT when this direction is received with the understanding that preliminary data will be provided in 10 days and the final data will be provided in 15 days.

CHPRC COMMENTS

Accept proposed resolution.

Heidi Hampt 3/23/10
Signature and Date

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ATTACHMENT 3

ANALYTICAL RESULTS

Consisting of 32 pages
Including cover page

WSCF ANALYTICAL RESULTS REPORT

For

CH2M Hill Plateau Remediation

PO Box 1600
Richland, WA 99352

Attention: Michael Neely

Contract # MOA-FH-CHPRC-2008
Group # WSCF100502
Report Date April 1, 2010

Analytical: Electronically signed by Markus Stauffer

Client Services: Electronically signed by Susan Kon

All radiochemistry results are reported on an "as received" basis.

This information is intended for the use of the addressee only. If the reader of this report is not the intended recipient or is not authorized by the recipient to receive the report, you are hereby notified that any dissemination, distribution or copying of this report is strictly prohibited. If you have received this report in error, please notify WSCF Laboratory immediately by telephone at (509) 373-7020 or (509) 531-8004. Information designation of this report is the responsibility of the customer.

Batch QC List

Attention Michael Neely
Department Inorganic

Group # WSCF100502

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
101081	101082	4	BLANK	24857	BLANK		ICP-2008 MS All possible metal
101081	101082	5	LCS	24858	LCS		ICP-2008 MS All possible metal
101081	101082	7	MS	24859	B248Y3(100474014MS)	100474014	ICP-2008 MS All possible metal
101081	101082	8	MSD	24860	B248Y3(100474014MSD)	100474014	ICP-2008 MS All possible metal
101081	101082	25	SAMPLE	100502001	B243V1		ICP-2008 MS All possible metal
101081	101082	28	SAMPLE	100502002	B243V2		ICP-2008 MS All possible metal
103403	105583	1	BLANK	25282	BLANK		ICP-6010 - All possible metals
103403	105583	2	LCS	25283	LCS		ICP-6010 - All possible metals
103403	105583	3	MS	25284	B247L2(100497001MS)	100497001	ICP-6010 - All possible metals
103403	105583	4	MSD	25285	B247L2(100497001MSD)	100497001	ICP-6010 - All possible metals
103403	105583	18	SAMPLE	100502001	B243V1		ICP-6010 - All possible metals
103403	105583	19	SAMPLE	100502002	B243V2		ICP-6010 - All possible metals

Batch QC List

Attention Michael Neely
Department Radiochemistry

Group # WSCF100502

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
102075	102578	1	IBLANK	25019	IBLANK		Gamma Energy Analysis-general
102075	102578	2	LCS	25020	LCS		Gamma Energy Analysis-general
102075	102578	3	DUP	25021	B243V3(100487001DUP)	100487001	Gamma Energy Analysis-general
102075	102578	10	SAMPLE	100502001	B243V1		Gamma Energy Analysis-general
102075	102578	11	SAMPLE	100502002	B243V2		Gamma Energy Analysis-general
103378	106278	1	BLANK	25221	BLANK		Plutonium (AEA)
103378	106278	2	LCS	25222	LCS		Plutonium (AEA)
103378	106278	3	SAMPLE	100502001	B243V1		Plutonium (AEA)
103378	106278	4	DUP	25223	B243V1(100502001DUP)	100502001	Plutonium (AEA)
103378	106278	5	SAMPLE	100502002	B243V2		Plutonium (AEA)
103378	106279	1	DUP	25223	B243V1(100502001DUP)	100502001	Americium/Curium (AEA)
103378	106279	2	SAMPLE	100502001	B243V1		Americium/Curium (AEA)
103378	106279	3	SAMPLE	100502002	B243V2		Americium/Curium (AEA)
103378	106279	5	BLANK	25221	BLANK		Americium/Curium (AEA)
103378	106279	6	LCS	25222	LCS		Americium/Curium (AEA)
103378	106280	1	SAMPLE	100502001	B243V1		Uranium (AEA)
103378	106280	2	SAMPLE	100502002	B243V2		Uranium (AEA)
103378	106280	4	BLANK	25221	BLANK		Uranium (AEA)
103378	106280	5	LCS	25222	LCS		Uranium (AEA)
103378	106280	6	DUP	25223	B243V1(100502001DUP)	100502001	Uranium (AEA)
106576	106975	1	BLANK	25597	BLANK		Strontium 89/90 (GPC/GEA)
106576	106975	2	LCS	25598	LCS		Strontium 89/90 (GPC/GEA)
106576	106975	3	DUP	25599	B23VP9(100585008DUP)	100585008	Strontium 89/90 (GPC/GEA)

Batch QC List

Attention Michael Neely
Department Radiochemistry

Group # WSCF100502

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
106576	106975	4	SAMPLE	100502001	B243V1		Strontium 89/90 (GPC/GEA)
106576	106975	5	SAMPLE	100502002	B243V2		Strontium 89/90 (GPC/GEA)

Batch QC List

Attention Michael Neely
Department Wet Chemistry

Group # WSCF100502

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
102177	102178	3	BLANK	25043	BLANK		Cyanide by Midi/Spectrophotometer
102177	102178	4	LCS	25045	LCS		Cyanide by Midi/Spectrophotometer
102177	102178	13	SAMPLE	100502001	B243V1		Cyanide by Midi/Spectrophotometer
102177	102178	14	SAMPLE	100502002	B243V2		Cyanide by Midi/Spectrophotometer
102177	102178	18	MS	25048	B23V61(100503007MS)	100503007	Cyanide by Midi/Spectrophotometer
102177	102178	19	MSD	25049	B23V61(100503007MSD)	100503007	Cyanide by Midi/Spectrophotometer

Method Reference

Attention Michael Neely
Department Inorganic

Group # WSCF100502

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.

Note: A complete list of WSCF analytical procedures and reference regulatory or industry methods is available online at http://www7.rl.gov/rapidweb/AS-DOL/index.cfm

Method Reference

Attention Michael Neely
Department Radiochemistry

Group # WSCF100502

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-508-471	Determination Of Uranium, Plutonium, And Americium		
	HEIS	AMCMISO_IE_PREC_AEA	Americium/Curium Iso, Alpha Spec
	HEIS	UISO_IE_PRECIP_AEA	Uranium Iso, Alpha Spec
	HEIS	PUISO_IE_PRECIP_AEA	Isotopic Plutonium, Alpha Spec
LA-508-481	Gamma Energy Analysis using the Canberra Genie Ssystem		
	HEIS	GAMMA_GS	Gamma Energy Analysis

Note: A complete list of WSCF analytical procedures and reference regulatory or industry methods is available online at http://www7.rl.gov/rapidweb/AS-DOL/index.cfm

Method Reference

Attention Michael Neely
Department Wet Chemistry

Group # WSCF100502

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-695-402	Determination of Cyanide by Mididistillation and Spectrophotometric Analysis Using the EASY distallation		
	EPA-600/4-79-020	335.2	Cyanide, Total
	EPA	SW-846 Method 9014	Determination of Cyanide by Midi-Distillation and Spectrophotometric Analysis
	EPA	EPA-335.2	Determination of Cyanide by Midi-Distillation and Spectrophotometric Analysis
	HEIS	335.2_CYANIDE	Cyanide, Total

Note: A complete list of WSCF analytical procedures and reference regulatory or industry methods is available online at http://www7.rl.gov/rapidweb/AS-DOL/index.cfm

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF100502

Sample # 100502001
SAF# F10-119
Sample ID B243V1

Matrix WATER
Sampled 03/11/10
Received 03/15/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICP Prep										**03/23/10**
ICP-AES										
Iron	7439-89-6	LA-505-411		105		ug/L	1	18	90	03/25/10
Magnesium	7439-95-4	LA-505-411	B	23.3		ug/L	1	16	80	03/25/10
Potassium	7440-09-7	LA-505-411	U	<55		ug/L	1	55	280	03/25/10
Sodium	7440-23-5	LA-505-411		502		ug/L	1	23	120	03/25/10
Calcium	7440-70-2	LA-505-411		237		ug/L	1	39	200	03/25/10
Lithium	7439-93-2	LA-505-411	U	<4.0		ug/L	1	4.0	20	03/25/10
Titanium	7440-32-6	LA-505-411	U	<4.0		ug/L	1	4.0	20	03/25/10
Boron	7440-42-8	LA-505-411	U	<19		ug/L	1	19	95	03/25/10
Bismuth	7440-69-9	LA-505-411	U	<23		ug/L	1	23	120	03/25/10
ICPMS Prep										**03/18/10**
ICP-MS										
Aluminum	7429-90-5	LA-505-412	BD	19.8		ug/L	2	10	200	03/19/10
Manganese	7439-96-5	LA-505-412	BD	0.700		ug/L	2	0.20	2.0	03/19/10
Nickel	7440-02-0	LA-505-412	UD	<0.40		ug/L	2	0.40	4.0	03/19/10
Silver	7440-22-4	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	03/19/10
Antimony	7440-36-0	LA-505-412	UD	<0.60		ug/L	2	0.60	6.0	03/19/10
Barium	7440-39-3	LA-505-412	BD	0.560		ug/L	2	0.40	4.0	03/19/10

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

B - Analyte < the RDL but >= the IDL/MDL. (Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD sample recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF100502

Sample # 100502001
SAF# F10-119
Sample ID B243V1

Matrix WATER
Sampled 03/11/10
Received 03/15/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Beryllium	7440-41-7	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	03/19/10
Cadmium	7440-43-9	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	03/19/10
Chromium	7440-47-3	LA-505-412	UD	<1.0		ug/L	2	1.0	10	03/19/10
Cobalt	7440-48-4	LA-505-412	UD	<0.10		ug/L	2	0.10	0.50	03/19/10
Copper	7440-50-8	LA-505-412	BD	1.10		ug/L	2	0.20	2.0	03/19/10
Vanadium	7440-62-2	LA-505-412	UD	<0.40		ug/L	2	0.40	4.0	03/19/10
Zinc	7440-66-6	LA-505-412	UD	<1.6		ug/L	2	1.6	10	03/19/10
Lead	7439-92-1	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	03/19/10
Mercury	7439-97-6	LA-505-412	UD	<0.10		ug/L	2	0.10	0.40	03/19/10
Molybdenum	7439-98-7	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	03/19/10
Strontium	7440-24-6	LA-505-412	BD	0.800		ug/L	2	0.20	2.0	03/19/10
Thallium	7440-28-0	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	03/19/10
Uranium	7440-61-1	LA-505-412	UD	<0.10		ug/L	2	0.10	0.40	03/19/10
Arsenic	7440-38-2	LA-505-412	UD	<0.80		ug/L	2	0.80	8.0	03/19/10
Selenium	7782-49-2	LA-505-412	UD	<0.60		ug/L	2	0.60	6.0	03/19/10

MDL = Minimum Detection
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DF = Dilution Factor
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B - Analyte < the RDL but >= the IDL/MDL. (Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
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N - MS and/or MSD sample recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF100502

Sample # 100502002
SAF# F10-119
Sample ID B243V2

Matrix WATER
Sampled 03/11/10
Received 03/15/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICP Prep										**03/23/10**
ICP-AES										
Iron	7439-89-6	LA-505-411	U	<18		ug/L	1	18	90	03/25/10
Magnesium	7439-95-4	LA-505-411	U	<16		ug/L	1	16	80	03/25/10
Potassium	7440-09-7	LA-505-411	U	<55		ug/L	1	55	280	03/25/10
Sodium	7440-23-5	LA-505-411		431		ug/L	1	23	120	03/25/10
Calcium	7440-70-2	LA-505-411	B	131		ug/L	1	39	200	03/25/10
Lithium	7439-93-2	LA-505-411	U	<4.0		ug/L	1	4.0	20	03/25/10
Titanium	7440-32-6	LA-505-411	U	<4.0		ug/L	1	4.0	20	03/25/10
Boron	7440-42-8	LA-505-411	U	<19		ug/L	1	19	95	03/25/10
Bismuth	7440-69-9	LA-505-411	U	<23		ug/L	1	23	120	03/25/10
ICPMS Prep										**03/18/10**
ICP-MS										
Aluminum	7429-90-5	LA-505-412	UD	<10		ug/L	2	10	200	03/19/10
Manganese	7439-96-5	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	03/19/10
Nickel	7440-02-0	LA-505-412	UD	<0.40		ug/L	2	0.40	4.0	03/19/10
Silver	7440-22-4	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	03/19/10
Antimony	7440-36-0	LA-505-412	UD	<0.60		ug/L	2	0.60	6.0	03/19/10
Barium	7440-39-3	LA-505-412	UD	<0.40		ug/L	2	0.40	4.0	03/19/10

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

B - Analyte < the RDL but >= the IDL/MDL. (Inorganic)
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U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF100502

Sample # 100502002
SAF# F10-119
Sample ID B243V2

Matrix WATER
Sampled 03/11/10
Received 03/15/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Beryllium	7440-41-7	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	03/19/10
Cadmium	7440-43-9	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	03/19/10
Chromium	7440-47-3	LA-505-412	UD	<1.0		ug/L	2	1.0	10	03/19/10
Cobalt	7440-48-4	LA-505-412	UD	<0.10		ug/L	2	0.10	0.50	03/19/10
Copper	7440-50-8	LA-505-412	BD	0.719		ug/L	2	0.20	2.0	03/19/10
Vanadium	7440-62-2	LA-505-412	UD	<0.40		ug/L	2	0.40	4.0	03/19/10
Zinc	7440-66-6	LA-505-412	UD	<1.6		ug/L	2	1.6	10	03/19/10
Lead	7439-92-1	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	03/19/10
Mercury	7439-97-6	LA-505-412	UD	<0.10		ug/L	2	0.10	0.40	03/19/10
Molybdenum	7439-98-7	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	03/19/10
Strontium	7440-24-6	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	03/19/10
Thallium	7440-28-0	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	03/19/10
Uranium	7440-61-1	LA-505-412	UD	<0.10		ug/L	2	0.10	0.40	03/19/10
Arsenic	7440-38-2	LA-505-412	UD	<0.80		ug/L	2	0.80	8.0	03/19/10
Selenium	7782-49-2	LA-505-412	UD	<0.60		ug/L	2	0.60	6.0	03/19/10

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

B - Analyte < the RDL but >= the IDL/MDL. (Inorganic)
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD sample recovery outside control limits.

U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.

WSCF Analytical Results Report

Attention Michael Neely
Department Radiochemistry

Group # WSCF100502

Sample # 100502001
SAF# F10-119
Sample ID B243V1

Matrix WATER
Sampled 03/11/10
Received 03/15/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
GEA Prep										**03/21/10**
GEA										
Cesium-137	10045-97-3	LA-508-481	U	-5.5	4.5	pCi/L	1	7.3		03/24/10
Europium-154	15585-10-1	LA-508-481	U	-6.2	12	pCi/L	1	21		03/24/10
SR-89/90										**03/28/10**
SR-89/90										
Strontium-89/90	SR-RAD	LA-220-406	U	-3.0	4.3	pCi/L	1	1.9		03/31/10
Th/Pu/Am/U Teva										**03/25/10**
AEA Am-U-Pu										
Americium-241	14596-10-2	LA-508-471		0.089	.07	pCi/L	1	0.088		03/26/10
AEA Pu-Np										
Plutonium-238	13981-16-3	LA-508-471	U	0.021	.18	pCi/L	1	0.32		03/26/10
Plutonium-239/240	PU-239/240	LA-508-471	U	0.053	.058	pCi/L	1	0.078		03/26/10
Uranium Iso										
Uranium-233/234	U-233/234	LA-508-471	U	0.072	.065	pCi/L	1	0.084		03/26/10
Uranium-235	15117-96-1	LA-508-471	U	0.069	.062	pCi/L	1	0.073		03/26/10
Uranium-238	U-238	LA-508-471	U	0.018	.026	pCi/L	1	0.025		03/26/10

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

B - Analyte was detected in both the BLANK and SAMPLE
U - Analyzed for but not detected above limiting criteria.
N - Spike Recovery is Outside Control Limits.
X,Y or Z - See comment detail and/or narrative.

WSCF Analytical Results Report

Attention Michael Neely
Department Radiochemistry

Group # WSCF100502

Sample # 100502002
SAF# F10-119
Sample ID B243V2

Matrix WATER
Sampled 03/11/10
Received 03/15/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
GEA Prep										**03/21/10**
GEA										
Cesium-137	10045-97-3	LA-508-481	U	-2.7	5.2	pCi/L	1	8.7		03/24/10
Europium-154	15585-10-1	LA-508-481	U	2.1	13	pCi/L	1	23		03/24/10
SR-89/90										**03/28/10**
SR-89/90										
Strontium-89/90	SR-RAD	LA-220-406	U	-0.75	4.5	pCi/L	1	2.1		03/31/10
Th/Pu/Am/U Teva										**03/25/10**
AEA Am-U-Pu										
Americium-241	14596-10-2	LA-508-471		0.13	.077	pCi/L	1	0.064		03/26/10
AEA Pu-Np										
Plutonium-238	13981-16-3	LA-508-471	U	-0.010	.17	pCi/L	1	0.30		03/26/10
Plutonium-239/240	PU-239/240	LA-508-471	U	0.021	.051	pCi/L	1	0.096		03/26/10
Uranium Iso										
Uranium-233/234	U-233/234	LA-508-471		0.073	.061	pCi/L	1	0.067		03/26/10
Uranium-235	15117-96-1	LA-508-471	U	0.020	.029	pCi/L	1	0.027		03/26/10
Uranium-238	U-238	LA-508-471	U	0.018	.026	pCi/L	1	0.025		03/26/10

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

B - Analyte was detected in both the BLANK and SAMPLE
U - Analyzed for but not detected above limiting criteria.
N - Spike Recovery is Outside Control Limits.
X,Y or Z - See comment detail and/or narrative.

WSCF Analytical Results Report

Attention Michael Neely
Department Wet Chemistry

Group # WSCF100502

Sample # 100502001
SAF# F10-119
Sample ID B243V1

Matrix WATER
Sampled 03/11/10
Received 03/15/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Cyanide Prep										**03/17/10**
Cyanide										
Cyanide	57-12-5	LA-695-402	U	<4.0		ug/L	1	4.0	20	03/18/10

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

B - Analyte < the RDL but >= the IDL/MDL.
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
N - MS and/or MSD sample recovery outside control limits.
U - Analyzed for but not detected above limiting criteria.

N - Spike Recovery is Outside Control Limits.
X,Y or Z - See comment detail and/or narrative.

WSCF Analytical Results Report

Attention Michael Neely
Department Wet Chemistry

Group # WSCF100502

Sample # 100502002
SAF# F10-119
Sample ID B243V2

Matrix WATER
Sampled 03/11/10
Received 03/15/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Cyanide Prep										**03/17/10**
Cyanide										
Cyanide	57-12-5	LA-695-402	U	<4.0		ug/L	1	4.0	20	03/18/10

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

B - Analyte < the RDL but >= the IDL/MDL.
C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
N - MS and/or MSD sample recovery outside control limits.
U - Analyzed for but not detected above limiting criteria.

N - Spike Recovery is Outside Control Limits.
X,Y or Z - See comment detail and/or narrative.

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF100502

QC Batch 101081
Associated Samples 100502001, 100502002

Test ICP-2008 MS All possible metal

Analyte	CAS #	Original Found	QC Found	Units	% Recov Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #24857**						
Aluminum	7429-90-5		<5.0	ug/L				U	03/19/10
Manganese	7439-96-5		<0.10	ug/L				U	03/19/10
Nickel	7440-02-0		<0.20	ug/L				U	03/19/10
Silver	7440-22-4		<0.10	ug/L				U	03/19/10
Antimony	7440-36-0		<0.30	ug/L				U	03/19/10
Barium	7440-39-3		<0.20	ug/L				U	03/19/10
Beryllium	7440-41-7		<0.050	ug/L				U	03/19/10
Cadmium	7440-43-9		<0.10	ug/L				U	03/19/10
Chromium	7440-47-3		<0.50	ug/L				U	03/19/10
Cobalt	7440-48-4		<0.050	ug/L				U	03/19/10
Copper	7440-50-8		<0.10	ug/L				U	03/19/10
Vanadium	7440-62-2		<0.20	ug/L				U	03/19/10
Zinc	7440-66-6		<0.80	ug/L				U	03/19/10
Lead	7439-92-1		<0.10	ug/L				U	03/19/10
Mercury	7439-97-6		<0.050	ug/L				U	03/19/10
Molybdenum	7439-98-7		<0.050	ug/L				U	03/19/10
Strontium	7440-24-6		<0.10	ug/L				U	03/19/10
Thallium	7440-28-0		<0.050	ug/L				U	03/19/10
Uranium	7440-61-1		<0.050	ug/L				U	03/19/10

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF100502

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Arsenic	7440-38-2		<0.40	ug/L					U	03/19/10
Selenium	7782-49-2		<0.30	ug/L					U	03/19/10
LCS			**QC Sample #24858**							
Aluminum	7429-90-5		390	ug/L	97.4	85 - 115				03/19/10
Manganese	7439-96-5		39.6	ug/L	98.9	85 - 115				03/19/10
Nickel	7440-02-0		38.0	ug/L	95.1	85 - 115				03/19/10
Silver	7440-22-4		37.4	ug/L	93.5	85 - 115				03/19/10
Antimony	7440-36-0		40.5	ug/L	101.4	85 - 115				03/19/10
Barium	7440-39-3		38.9	ug/L	97.2	85 - 115				03/19/10
Beryllium	7440-41-7		38.5	ug/L	96.3	85 - 115				03/19/10
Cadmium	7440-43-9		38.0	ug/L	95	85 - 115				03/19/10
Chromium	7440-47-3		38.8	ug/L	96.9	85 - 115				03/19/10
Cobalt	7440-48-4		37.7	ug/L	94.3	85 - 115				03/19/10
Copper	7440-50-8		38.1	ug/L	95.2	85 - 115				03/19/10
Vanadium	7440-62-2		38.7	ug/L	96.8	85 - 115				03/19/10
Zinc	7440-66-6		37.7	ug/L	94.3	85 - 115				03/19/10
Lead	7439-92-1		38.4	ug/L	96.1	85 - 115				03/19/10
Mercury	7439-97-6		1.99	ug/L	99.4	85 - 115				03/19/10
Molybdenum	7439-98-7		39.4	ug/L	98.5	85 - 115				03/19/10
Strontium	7440-24-6		38.8	ug/L	97	85 - 115				03/19/10
Thallium	7440-28-0		38.0	ug/L	95	85 - 115				03/19/10
Uranium	7440-61-1		39.0	ug/L	97.4	85 - 115				03/19/10
Arsenic	7440-38-2		37.9	ug/L	94.7	85 - 115				03/19/10
Selenium	7782-49-2		38.0	ug/L	95.1	85 - 115				03/19/10

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF100502

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
MS			**QC Sample #24859**							
			Original 100474014							
Aluminum	7429-90-5		382	ug/L	95.6	70 - 130				03/19/10
Manganese	7439-96-5		38.3	ug/L	95.8	70 - 130				03/19/10
Nickel	7440-02-0		36.8	ug/L	92	70 - 130				03/19/10
Silver	7440-22-4		37.2	ug/L	93	70 - 130				03/19/10
Antimony	7440-36-0		40.4	ug/L	101	70 - 130				03/19/10
Barium	7440-39-3		38.7	ug/L	96.8	70 - 130				03/19/10
Beryllium	7440-41-7		38.1	ug/L	95.4	70 - 130				03/19/10
Cadmium	7440-43-9		37.8	ug/L	94.6	70 - 130				03/19/10
Chromium	7440-47-3		37.0	ug/L	92.4	70 - 130				03/19/10
Cobalt	7440-48-4		36.4	ug/L	91	70 - 130				03/19/10
Copper	7440-50-8		36.6	ug/L	91.5	70 - 130				03/19/10
Vanadium	7440-62-2		37.5	ug/L	93.8	70 - 130				03/19/10
Zinc	7440-66-6		36.7	ug/L	91.8	70 - 130				03/19/10
Lead	7439-92-1		38.0	ug/L	95	70 - 130				03/19/10
Mercury	7439-97-6		1.91	ug/L	95.6	70 - 130				03/19/10
Molybdenum	7439-98-7		39.2	ug/L	98	70 - 130				03/19/10
Strontium	7440-24-6		38.8	ug/L	97	70 - 130				03/19/10
Thallium	7440-28-0		37.4	ug/L	93.5	70 - 130				03/19/10
Uranium	7440-61-1		38.8	ug/L	97	70 - 130				03/19/10
Arsenic	7440-38-2		37.1	ug/L	92.7	70 - 130				03/19/10
Selenium	7782-49-2		37.4	ug/L	93.5	70 - 130				03/19/10
MSD			**QC Sample #24860**							
			Original 100474014					**Paired 24859**		

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF100502

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Aluminum	7429-90-5		390	ug/L	97.6	70 - 130	2.10	20		03/19/10
Manganese	7439-96-5		38.3	ug/L	95.8	70 - 130	0.00	20		03/19/10
Nickel	7440-02-0		37.1	ug/L	92.8	70 - 130	0.90	20		03/19/10
Silver	7440-22-4		37.7	ug/L	94.2	70 - 130	1.30	20		03/19/10
Antimony	7440-36-0		40.8	ug/L	102.1	70 - 130	1.10	20		03/19/10
Barium	7440-39-3		38.9	ug/L	97.3	70 - 130	0.50	20		03/19/10
Beryllium	7440-41-7		37.7	ug/L	94.3	70 - 130	1.20	20		03/19/10
Cadmium	7440-43-9		37.6	ug/L	94	70 - 130	0.60	20		03/19/10
Chromium	7440-47-3		38.2	ug/L	95.6	70 - 130	3.40	20		03/19/10
Cobalt	7440-48-4		37.0	ug/L	92.4	70 - 130	1.50	20		03/19/10
Copper	7440-50-8		37.2	ug/L	93	70 - 130	1.60	20		03/19/10
Vanadium	7440-62-2		38.2	ug/L	95.6	70 - 130	1.90	20		03/19/10
Zinc	7440-66-6		36.6	ug/L	91.4	70 - 130	0.40	20		03/19/10
Lead	7439-92-1		38.6	ug/L	96.6	70 - 130	1.70	20		03/19/10
Mercury	7439-97-6		2.01	ug/L	100.7	70 - 130	5.20	20		03/19/10
Molybdenum	7439-98-7		39.5	ug/L	98.8	70 - 130	0.80	20		03/19/10
Strontium	7440-24-6		39.6	ug/L	99.1	70 - 130	2.10	20		03/19/10
Thallium	7440-28-0		38.3	ug/L	95.8	70 - 130	2.40	20		03/19/10
Uranium	7440-61-1		39.1	ug/L	97.7	70 - 130	0.70	20		03/19/10
Arsenic	7440-38-2		38.1	ug/L	95.2	70 - 130	2.70	20		03/19/10
Selenium	7782-49-2		36.2	ug/L	90.6	70 - 130	3.20	20		03/19/10

Quality Control Report

Attention Michael Neely
Department Wet Chemistry

Group # WSCF100502

QC Batch 102177
Associated Samples 100502001, 100502002

Test Cyanide by Midi/Spectrophotometer

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #25043**							
Cyanide	57-12-5		<4.0	ug/L					U	03/18/10
LCS			**QC Sample #25045**							
Cyanide	57-12-5		51.7	ug/L	103.4	85 - 115				03/18/10
MS			**QC Sample #25048**							
			Original 100503007							
Cyanide	57-12-5		40.2	ug/L	100.5	75 - 125				03/18/10
MSD			**QC Sample #25049**							
			Original 100503007					**Paired**	**25048**	
Cyanide	57-12-5		38.6	ug/L	96.5	75 - 125	4.10	20		03/18/10

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF100502

QC Batch 103403
Associated Samples 100502001, 100502002

Test ICP-6010 - All possible metals

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #25282**							
Iron	7439-89-6		<18	ug/L					U	03/25/10
Magnesium	7439-95-4		<16	ug/L					U	03/25/10
Potassium	7440-09-7		<55	ug/L					U	03/25/10
Sodium	7440-23-5		<23	ug/L					U	03/25/10
Calcium	7440-70-2		<39	ug/L					U	03/25/10
Lithium	7439-93-2		<4.0	ug/L					U	03/25/10
Titanium	7440-32-6		<4.0	ug/L					U	03/25/10
Boron	7440-42-8		<19	ug/L					U	03/25/10
Bismuth	7440-69-9		<23	ug/L					U	03/25/10
LCS			**QC Sample #25283**							
Iron	7439-89-6		1040	ug/L	104.1	80 - 120				03/25/10
Magnesium	7439-95-4		1050	ug/L	104.7	80 - 120				03/25/10
Potassium	7440-09-7		10400	ug/L	104	80 - 120				03/25/10
Sodium	7440-23-5		1120	ug/L	111.6	80 - 120				03/25/10
Calcium	7440-70-2		1110	ug/L	111.2	80 - 120				03/25/10
Lithium	7439-93-2		532	ug/L	106.3	80 - 120				03/25/10
Titanium	7440-32-6		1040	ug/L	103.5	80 - 120				03/25/10
Boron	7440-42-8		1050	ug/L	105.2	80 - 120				03/25/10

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF100502

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
Bismuth	7440-69-9		1050	ug/L	105.1	80 - 120					03/25/10
MS			**QC Sample #25284**								
			Original 100497001								
Iron	7439-89-6		1060	ug/L	106.4	75 - 125					03/25/10
Magnesium	7439-95-4		989	ug/L	98.9	75 - 125				1X	03/25/10
Potassium	7440-09-7		10400	ug/L	104.4	75 - 125					03/25/10
Sodium	7440-23-5		1010	ug/L	101	75 - 125					03/25/10
Calcium	7440-70-2		360	ug/L	36	75 - 125				2X	03/25/10
Lithium	7439-93-2		542	ug/L	108.3	75 - 125					03/25/10
Titanium	7440-32-6		1060	ug/L	105.9	75 - 125					03/25/10
Boron	7440-42-8		1060	ug/L	106.3	75 - 125					03/25/10
Bismuth	7440-69-9		1050	ug/L	105.2	75 - 125					03/25/10
MSD			**QC Sample #25285**								
			Original 100497001						**Paired**	**25284**	
Iron	7439-89-6		1050	ug/L	104.8	75 - 125	1.50	20			03/25/10
Magnesium	7439-95-4		1100	ug/L	110.4	75 - 125	11.00	20		1X	03/25/10
Potassium	7440-09-7		10400	ug/L	104.4	75 - 125	0.00	20			03/25/10
Sodium	7440-23-5		1100	ug/L	110.2	75 - 125	8.70	20			03/25/10
Calcium	7440-70-2		1110	ug/L	111	75 - 125	102.00	20	*	2X	03/25/10
Lithium	7439-93-2		537	ug/L	107.4	75 - 125	0.80	20			03/25/10
Titanium	7440-32-6		1050	ug/L	105.4	75 - 125	0.50	20			03/25/10
Boron	7440-42-8		1060	ug/L	106.2	75 - 125	0.10	20			03/25/10
Bismuth	7440-69-9		1040	ug/L	103.5	75 - 125	1.60	20			03/25/10

Quality Control Report

Attention Michael Neely
Department Radiochemistry

Group # WSCF100502

QC Batch 102075
Associated Samples 100502001, 100502002

Test Gamma Energy Analysis-general

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
IBLANK			**QC Sample #25019**								
Cesium-137	10045-97-3		4.7	pCi/L						U	03/22/10
Europium-154	15585-10-1		2.1	pCi/L						U	03/22/10
LCS			**QC Sample #25020**								
Cesium-137	10045-97-3		6400	pCi/sample	105.5	80 - 120					03/24/10
DUP			**QC Sample #25021**								
			Original 100487001								
Cesium-137	10045-97-3		-4.5	pCi/L			-30.20	-20 - 20	*	U	03/24/10
Europium-154	15585-10-1		-5.7	pCi/L			-94.90	-20 - 20	*	U	03/24/10

Quality Control Report

Attention Michael Neely
Department Radiochemistry

Group # WSCF100502

QC Batch 103378
Associated Samples 100502001, 100502002

Test Plutonium (AEA)

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
BLANK			**QC Sample #25221**								
Plutonium-238	13981-16-3		0.12	pCi/L						U	03/26/10
Americium-241	14596-10-2		0.059	pCi/L						U	03/26/10
Plutonium-239/240	PU-239/240		0.048	pCi/L						U	03/26/10
Uranium-233/234	U-233/234		0.085	pCi/L						U	03/26/10
Uranium-235	15117-96-1		0.019	pCi/L						U	03/26/10
Uranium-238	U-238		0.043	pCi/L						U	03/26/10
LCS			**QC Sample #25222**								
Americium-241	14596-10-2		5.4	pCi/sample	98.1	80 - 120					03/26/10
Plutonium-239/240	PU-239/240		5.9	pCi/sample	102.1	80 - 120					03/26/10
Uranium-238	U-238		8.6	pCi/sample	101.7	80 - 120					03/26/10
DUP			**QC Sample #25223**								
			Original 100502001								
Americium-241	14596-10-2	0.089	0.12	pCi/L			29.70	-20 - 20	*	1X	03/26/10
Plutonium-238	13981-16-3	0.021	-0.14	pCi/L			-270.60	-20 - 20	*	U	03/26/10
Uranium-233/234	U-233/234	0.072	0.056	pCi/L			25.00	-20 - 20	*	U	03/26/10
Plutonium-239/240	PU-239/240	0.053	0.011	pCi/L			131.20	-20 - 20	*	U	03/26/10
Uranium-235	15117-96-1	0.069	0.051	pCi/L			30.00	-20 - 20	*	U	03/26/10
Uranium-238	U-238	0.018	0.047	pCi/L			89.20	-20 - 20	*	U	03/26/10

Quality Control Report

Attention Michael Neely
Department Radiochemistry

Group # WSCF100502

QC Batch 106576
Associated Samples 100502001, 100502002

Test Strontium 89/90 (GPC/GEA)

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
BLANK			**QC Sample #25597**								
Strontium-89/90	SR-RAD		-4.9	pCi/L						U	03/31/10
LCS			**QC Sample #25598**								
Strontium-89/90	SR-RAD		110	pCi/L	98	80 - 120					03/31/10
DUP			**QC Sample #25599**								
			Original 100585008								
Strontium-89/90	SR-RAD		0.10	pCi/L			-205.10	-20 - 20	*	U	03/31/10

Quality Control Report

Attention Michael Neely
Department Radiochemistry

Group # WSCF100502

QC Batch 103378
Associated Samples 100502001, 100502002

Test Americium/Curium (AEA)

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
SAMPLE			**Sample #100502001**							
Americium-243 Tracer	14993-75-0				84.3	25 - 105				03/26/10
Uranium-232 Tracer	14158-29-3				94	25 - 105				03/26/10
Plutonium-242 Tracer	13982-10-0				77.3	25 - 105				03/26/10
SAMPLE			**Sample #100502002**							
Americium-243 Tracer	14993-75-0				86.6	25 - 105				03/26/10
Uranium-232 Tracer	14158-29-3				96.3	25 - 105				03/26/10
Plutonium-242 Tracer	13982-10-0				83.3	25 - 105				03/26/10
BLANK			**QC Sample #25221**							
Americium-243 Tracer	14993-75-0				85.4	25 - 105				03/26/10
Uranium-232 Tracer	14158-29-3				95	25 - 105				03/26/10
Plutonium-242 Tracer	13982-10-0				81.5	25 - 105				03/26/10
LCS			**QC Sample #25222**							
Americium-243 Tracer	14993-75-0				83.8	25 - 105				03/26/10
Uranium-232 Tracer	14158-29-3				80.7	25 - 105				03/26/10
Plutonium-242 Tracer	13982-10-0				79.4	25 - 105				03/26/10
DUP			**QC Sample #25223**							
			Original 100502001							

Quality Control Report

Attention Michael Neely
Department Radiochemistry

Group # WSCF100502

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Americium-243 Tracer	14993-75-0				77.3	25 - 105	0.00			03/26/10
Uranium-232 Tracer	14158-29-3				89.2	25 - 105	0.00			03/26/10
Plutonium-242 Tracer	13982-10-0				80.4	25 - 105	0.00			03/26/10

Quality Control Report

Attention Michael Neely
Department Radiochemistry

Group # WSCF100502

QC Batch 106576
Associated Samples 100502001, 100502002

Test Strontium 89/90 (GPC/GEA)

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
SAMPLE			**Sample #100502001**							
Strontium-85	13967-73-2				92.6	25 - 105				03/31/10
SAMPLE			**Sample #100502002**							
Strontium-85	13967-73-2				86.3	25 - 105				03/31/10
BLANK			**QC Sample #25597**							
Strontium-85	13967-73-2				90.6	25 - 105				03/31/10
LCS			**QC Sample #25598**							
Strontium-85	13967-73-2				77.1	25 - 105				03/31/10
DUP			**QC Sample #25599**							
			Original 100585008							
Strontium-85	13967-73-2				79.4	25 - 105	3.80			03/31/10

Analytical Comment Report

Attention: Michael Neely

Group # WSCF100502

Quality Control Comments

Department Inorganic

25284 B247L2(100497001MS)

Analyte Calcium - ICP-6010 - All possible metals

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

Analyte Magnesium - ICP-6010 - All possible metals

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

25285 B247L2(100497001MSD)

Analyte Calcium - ICP-6010 - All possible metals

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

Analyte Magnesium - 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: Michael Neely

Group # WSCF100502

Quality Control Comments

Department Radiochemistry

25223 B243V1(100502001DUP)

Analyte Americium-241 - Americium/Curium (AEA)

[1] Duplicate RPD out-of-limits. RPD limit does not apply to results near the Minimum Detectable Concentration.

ATTACHMENT4

SAMPLE RECEIPT

Consisting of 6 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 1000 S3-30
Richland, WA 99352

ATTN: Michael Neely

Customer Code: GHPRC
PO #: 401586
Work Order #: 100502
Profile #: F10-119-007
Proj. Mgr.:
Phone:

The following samples were received from you on 3/15/2010 9:30:00 AM. They have been scheduled for the tests listed beside each sample. If this information is incorrect, please contact your service representative. Thank you for using Waste Sampling and Characterization Facility.

Sample #	Sample ID	Matrix	Collected	Received
		Tests scheduled		
100502001	B243V1	WATER	3/11/2010 12:30	3/15/2010 09:30
		2008-W; 6010-W; AEA-AM-W; AEA-PU-W; AEA-U-W; CN-W; GEA-W; SR89/90-W		
100502002	B243V2	WATER	3/11/2010 12:15	3/15/2010 09:30
		2008-W; 6010-W; AEA-AM-W; AEA-PU-W; AEA-U-W; CN-W; GEA-W; SR89/90-W		

Test Acronym Description

Test Acronym	Description
2008-W	ICP-MS (W)
6010-W	ICP-AES (W)
AEA-AM-W	Americium (AEA) (W)
AEA-PU-W	Plutonium (AEA) (W)
AEA-U-W	Uranium Isotopic (AEA) (W)
CN-W	Cyanide (Spectroscopy) (W)
GEA-W	Gamma Energy Analysis (W)
SR89/90-W	Strontium 89/90 (GPC) (W)

CHEMICAL Potrero Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-119-007 PAGE 1 OF 1

COLLECTOR: J Scales

SAMPLING LOCATION: 2150-2 Pier, 94992 KB

ICE CHEST NO.: N/A

SHIPPED TO: 3/11/10 TS WSCF

COMPANY CONTACT: KIMBERLEY, MA

TELEPHONE NO.: 925-0890

PROJECT COORDINATOR: WIDRIG, GL

PRICE CODE: 7C

DATA TURNAROUND: 15 DAYS / 15 Days

PROJECT DESIGNATION: 200-CW-1 Phase Group 5 Sampling - Large Area Pilot - GC

SAF NO.: F10-119

AIR QUALITY:

FIELD LOGBOOK NO.: FMF-N-567-5

ACTUAL SAMPLE DEPTH: 7.5-9.5 ft

COA: 30247053.0

METHOD OF SHIPMENT: GOVERNMENT VEHICLE

OFFSITE PROPERTY NO.: N/A

BILL OF LADING/AIR BILL NO.: N/A

MATRIX*

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Material or Concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations and are not intended for DOE 1300.5 (1999/2001)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION

TYPE OF CONTAINER

NO. OF CONTAINER(S)

VOLUME

SAMPLE ANALYSIS

100502

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
G243V1	01	WATER	3/11/10	1330	X	X	X

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
J Scales	3/11/10 1930	SSU 42	3/11/10 1930
SSU- 1	MAR 15 2010	R. D. Julian	MAR 15 2010
R. D. Julian	MAR 15 2010		MAR 15 2010
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME

SPECIAL INSTRUCTIONS

SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

ORIGINAL 3/11/10 AB

COPY ORIGINAL TO 222-S

LABORATORY SECTION: RECEIVED BY

FINAL SAMPLE DISPOSITION: DISPOSAL METHOD

TITLE

DISPOSED BY

DATE/TIME

DATE/TIME

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F10-119-002	PAGE 1 OF 2
COLLECTOR: J. Scofield	COMPANY CONTACT: DAMBERGER, MA	TELEPHONE NO.: 373-8980	PROJECT COORDINATOR: WOODS, D	PRICE CODE: 7C	DATA TURNAROUND: 15 Days / 15 Days
SAMPLING LOCATION: 216-A-5 Pond, 200-BP-5	PROJECT DESIGNATION: 200-CW-1 Moist Group 3 Sampling - Large Area Pond - 16		SAF NO.: F10-119	AIR QUALITY:	
ICE CHEST NO.: N/A	FIELD LOGBOOK NO.: HNF-16-5027-5	ACTUAL SAMPLE DEPTH: 15-19.5 in	COA: [illegible]	METHOD OF SHIPMENT: GOVERNMENT VEHICLE	
SHIPPED TO: Waste Sampling & Characterization	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: N/A		

SPECIAL INSTRUCTIONS

** The CACN for WSCF Analytical is currently being determined. Once the CACN is established it will be submitted for use by the laboratory. ** The 200 Area SAGRP Characterization and Monitoring Sampling and Analysis Grid applies to this SAF.

(1) ICP Metals - 6010B (TAL) (Sodium, Iron, Potassium, Calcium, Magnesium) ICP Metals - 6010B (ACID Cu) (Boron, Bismuth, Titanium, Uranium) ICP/MS - 200.8 (TAL) (Aluminum, Antimony, Barium, Chromium, Cobalt, Cadmium, Copper, Zinc, Manganese, Nickel, Vanadium, Silver) ICP/MS - 200.8 (Additional) (Arsenic, Lead, Molybdenum, Strontium, Thallium, Beryllium, Tin, Selenium) 200.8, MS - 1631E (Mercury)

(2) IC Anions - 300.0 (Phosphorus as phosphate, Chloride, Nitrogen as Nitrite, Fluoride, Nitrogen as Nitrate, Sulfate)

(3) Gamma Spectrometry (Cesium-137, Europium-154) Americium-241 Gamma Potassium (Potassium-40) Isotopic Uranium (Uranium-238) Strontium-89,90 - 1028 Sr; Technetium-99

ORIGINAL

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-119-009

PAGE 1 OF 2

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE	DATA TURNAROUND
J Scales	DANIEL COX, MA	373-0860	WIDRIG, DC	7C	15 Days / 15 Days

SAMPLING LOCATION	PROJECT DESIGNATION	SAF NO.	AIR QUALITY
200-UW-1 PODS	200-UW-1 PODS Group 5 Sampling - Large Well PODS - QC	F10-119	

ICE CHEST NO.	FIELD LOGBOOK NO.	ACTUAL SAMPLE DEPTH	COA	METHOD OF SHIPMENT
	HNF-N-503-5	7.5-9.5 ft	30047551	GOVERNMENT VEHICLE

SHIPPED TO	OFFSITE PROPERTY NO.	BILL OF LADING/AIR BILL NO.
Waste Sampling & Characterization	N/A	N/A

MATRIX*: S - Soil, SD - Solids, SL - Sludge, W - Water, WI - Wipe, X - Other

POSSIBLE SAMPLE HAZARDS/ REMARKS: Contains Radioactive Materials at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations and are not releasable per DOE Order 5400.5 (1990/1993)

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION				
TYPE OF CONTAINER	G	G	G	G
NO. OF CONTAINER(S)	1		1	1
VOLUME	500ml	500ml	500ml	500ml
SAMPLE ANALYSIS	See Page 2 for Special Instructions	See Page 2 for Special Instructions	See Page 2 for Special Instructions	See Page 2 for Special Instructions

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME										
B243V2	CO2	WATER	3/4/10	1215	X		X	X					

CHAIN OF POSSESSION	DATE/TIME	SIGN/ PRINT NAMES	DATE/TIME
RELINQUISHED BY/REMOVED FROM: J Scales	3/4/10 1456	RECEIVED BY/STORED IN: SSU #2	3/4/10 1456
RELINQUISHED BY/REMOVED FROM: SSU-1	MAR 15 2010	RECEIVED BY/STORED IN: R. D. Julian	MAR 15 2010
RELINQUISHED BY/REMOVED FROM: R. D. Julian	MAR 15 2010	RECEIVED BY/STORED IN:	MAR 15 2010
RELINQUISHED BY/REMOVED FROM:	DATE/TIME	RECEIVED BY/STORED IN:	DATE/TIME
RELINQUISHED BY/REMOVED FROM:	DATE/TIME	RECEIVED BY/STORED IN:	DATE/TIME
RELINQUISHED BY/REMOVED FROM:	DATE/TIME	RECEIVED BY/STORED IN:	DATE/TIME
RELINQUISHED BY/REMOVED FROM:	DATE/TIME	RECEIVED BY/STORED IN:	DATE/TIME

SPECIAL INSTRUCTIONS

SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

ORIGINAL

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

CH2MHILL Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F10-119-009

PAGE 2 OF 2

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE	DATA TURNAROUND
T Bailey	KIMBERGER, MA	372-0883	WILSON, DL	7C	15 Days / 15 Days

SAMPLING LOCATION	PROJECT DESIGNATION	SAF NO.	AIR QUALITY
216-B-3 Pond, (200E) FTR	200-CW-1 Mixed Group 5 Sampling - Longer Area Ponds - QC	F10-119	

ICE CHEST NO.	FIELD LOGBOOK NO.	ACTUAL SAMPLE DEPTH	COA	METHOD OF SHIPMENT
N/A	HNF 17507-5	7.5-7.5 ft	3024779510	GOVERNMENT VEHICLE

SHIPPED TO	OFFSITE PROPERTY NO.	BILL OF LADING/AIR BILL NO.
Waste Sampling & Characterization	N/A	N/A

SPECIAL INSTRUCTIONS

** The CRCN for WSCF Analytical is currently being determined. Once the CRCN is established it will be distributed for use by the laboratory.(1)(2)(3) The 200 Area SOCRP Characterization and Monitoring Sampling and Analysis CRD applies to this SAF:

(1)ICP Metals - 6010B (TAL) (Sodium, Iron, Potassium, Calcium, Magnesium) HG Metals - 6010B (Add-On) (Boron, Silicon, Titanium, Uranium) ICP/MS - 200.8 (TAL) (Aluminum, Antimony, Barium, Chromium, Cobalt, Vanadium, Copper, Zinc, Manganese, Nickel, Molybdenum, Silver) ICP/MS - 200.8 (Add-On) (Arsenic, Lead, Molybdenum, Strontium, Thallium, Beryllium, Uranium, Selenium) 200.2_HG - ICP/MS (Mercury)

(2)IC Anions - 300.0 (Phosphate as Phosphate, Chloride, Nitrogen as Nitrite, Fluoride, Nitrogen as Nitrate, Sulfate)

(3)Gamma Spectroscopy (Cesium-137, Europium-154) Americium-241; Isotopic Plutonium (Plutonium-239/240) Isotopic Uranium (Uranium-238) Strontium-90/90 -- Total Sr; Technetium-99)

ORIGINAL