WSCF Laboratory

PO Box 650 S3-30
Richland, WA 99352

RECEIVED SEPTEMBER 28, 2010 REVISION 1

September 27, 2010

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

Dear Michael Neely,

RDR6487 KB
10-28-10

REVISED100924 - 334898 [Report ID: 100924]

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

This letter contains the following information for sample delivery group WSCF100924

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

Very truly yours,

Electronically signed by Bill Baird
For Lab Manager
WSCF Analytical Lab
(509) 373-7495

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Attachments 4
CC: w/Attachments

File/LB

ATTACHMENT 1

COVER SHEET

Consisting of 2 pages
Including cover page

WSCF SAF Number Cross Reference

Group # WSCF100924
Data Deliverable Date 06/18/10

SAF #	Sample ID	Sample #	Matrix	Sampled	Received
S10-039	B24M67	100924001	WATER	05/04/10	05/04/10
S10-039	B24LY1	100924002	WATER	05/04/10	05/04/10
S10-039	B24LY2	100924003	WATER	05/04/10	05/04/10

ATTACHMENT 2

NARRATIVE

Consisting of 8 pages
Including cover page

Attachment 2
Narrative Rev1
WSCF100924

RDR- 6487 Correction – Case Narrative Replaces the Prior Submittal in its Entirety

Introduction

Three (3) groundwater samples were received at the WSCF Laboratory on May 4, 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."* One sample was requested to be re-analyzed in RDR 100622WSCF-R6487, received July 15, 2010.

The narrative (Attachment 2) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 3) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information as applicable. Copies of the chain of custody and sample receipt documentation are included as Attachment 4.

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

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

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

Analytical Methodology for Requested Analyses

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

Inorganic Comments

Anions – Hold time requirements for this analysis were met. A Duplicate, Matrix Spike, Matrix Spike Duplicate, Blank and Laboratory Control Sample were analyzed with this delivery group. Analytical Note(s):

- Batch QC 122984 analyzed on sample# B24NR6 (100922015)

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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 122881 QC analyzed on sample# B230T0 (100913004)
  - Calcium, Magnesium, Silicon and Sodium – exceeded spiking levels by a factor of 4. Spike recoveries and associated RPDs are not valid.
  - The sample was requested to be re-analyzed in 100622WSCF-R6487, received July 15, 2010. The sample was not re-analyzed because there was an inter-element correction error. The error has since been corrected. The original data contained false positives for nickel whereas the reprocessed data does not. All other data are within the statement of work data range and no statistical changes were found.
- Batch 122882 QC analyzed on sample# B24LY2 (100924003)
  - Iron contamination was detected in the Blank and was evaluated. No sample results in this batch were affected. "C" Flags not required.
  - Calcium, Magnesium, Silicon and Sodium – exceeded spiking levels by a factor of 4. Spike recoveries and associated RPDs 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 135392 analyzed on sample# B25KR5 (100982001)
  - Selenium - was detected in the Blank and was evaluated. Affected sample results in this batch were "C" Flagged.

All other QC controls are within the established limits.

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

- Batch QC 125575 analyzed on sample# B24PP4 (100891009)

All QC controls are within the established limits.

Organic Comments

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TPHD-WA – 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 123280 analyzed on sample# B25CN0 (100897001)

All 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 Tritium), 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.
- Tritium:
  - Batch QC 122678 analyzed on sample# B24W03 (100920005)
    - All QC controls are within the established limits.
- Gross Alpha / Gross Beta:
  - Batch QC 122997 analyzed on sample# B24LY2 (100924003)
    - Gross alpha - 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 122980 analyzed on sample# B24NB7 (100922018)
    - All QC controls are within the established limits.
- Americium-241:
  - Batch QC 134280 analyzed on sample# B258X7 (100940003)

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.

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- 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 Rev1
WSCF100924

07/15/2010
RECHECK, RECOUNT, OR REANALYSIS ORDER
CONTRACT NO MW6-SBB-A19981

Waste Sampling & Characterization
600 AREA Hanford, MSIN S3-28
Richland, WA 99352

CHPRC Order Number: 100622WSCF-R6487
Sample Delivery Group: Numerous
Special Instructions None
Samples(s)

Lab Sample ID	CHPRC Sample	Action		TAT	METHOD_NAME
100547019	B24C50	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100605002	B24CC3	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100605006	B24CC4	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100607007	B24BV8	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100607011	B24BV9	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100607005	B24BW2	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100607009	B24BW3	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100653008	B21X65	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100784001	B24L60	Reanalysis	Reported in 101814	30/30	6010_METALS_ICP
100784004	B24L61	Reanalysis	Reported in 101814	30/30	6010_METALS_ICP
100784002	B24L66	Reanalysis	Reported in 101814	30/30	6010_METALS_ICP
100784005	B24L67	Reanalysis	Reported in 101814	30/30	6010_METALS_ICP
100784003	B24L69	Reanalysis	Reported in 101814	30/30	6010_METALS_ICP
100784006	B24L70	Reanalysis	Reported in 101814	30/30	6010_METALS_ICP
100864014	B24MW9	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100864016	B24MX0	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100887004	B24N97	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100887006	B24NB0	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100887005	B24NC1	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100887007	B24NC4	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100890008	B244M0	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100890021	B244M1	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100890007	B24B85	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100890012	B24B86	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100890006	B24BD3	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100890011	B24BD4	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100891010	B24MW5	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP

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WSCF100924

Lab Sample ID	CHPRC Sample	Action		TAT	METHOD_NAME
100891011	B24MW6	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100891003	B24PN1	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100891004	B24PN2	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100922010	B24ND7	Reanalysis	Reported in 101813	30/30	6010_METALS_ICP
100922012	B24ND8	Reanalysis		30/30	6010_METALS_ICP
100922005	B24NF1	Reanalysis		30/30	6010_METALS_ICP
100922006	B24NF2	Reanalysis		30/30	6010_METALS_ICP
100922007	B24NF3	Reanalysis		30/30	6010_METALS_ICP
100922008	B24NF4	Reanalysis		30/30	6010_METALS_ICP
100922009	B24NH3	Reanalysis		30/30	6010_METALS_ICP
100922011	B24NH4	Reanalysis		30/30	6010_METALS_ICP
100922023	B24N87	Reanalysis		30/30	6010_METALS_ICP
100922021	B24N91	Reanalysis		30/30	6010_METALS_ICP
100922027	B24NB1	Reanalysis		30/30	6010_METALS_ICP
100922028	B24NB4	Reanalysis		30/30	6010_METALS_ICP
100924002	B24LY1	Reanalysis		30/30	6010_METALS_ICP
100959002	B25993	Reanalysis		30/30	6010_METALS_ICP
100959003	B25994	Reanalysis		30/30	6010_METALS_ICP
100960002	B257J7	Reanalysis		30/30	6010_METALS_ICP
100960003	B257J8	Reanalysis		30/30	6010_METALS_ICP
100962005	B25939	Reanalysis		30/30	6010_METALS_ICP
100962006	B25940	Reanalysis		30/30	6010_METALS_ICP
100963008	B254C3	Reanalysis		30/30	6010_METALS_ICP
100963012	B254C4	Reanalysis		30/30	6010_METALS_ICP
100963003	B254C6	Reanalysis		30/30	6010_METALS_ICP
100963006	B254C7	Reanalysis		30/30	6010_METALS_ICP
100963002	B254D5	Reanalysis		30/30	6010_METALS_ICP
100963005	B254D6	Reanalysis		30/30	6010_METALS_ICP
100963011	B254H6	Reanalysis		30/30	6010_METALS_ICP
100963010	B254H9	Reanalysis		30/30	6010_METALS_ICP
100963014	B254J0	Reanalysis		30/30	6010_METALS_ICP
100963013	B255P7	Reanalysis		30/30	6010_METALS_ICP
100963009	B25CC7	Reanalysis		30/30	6010_METALS_ICP
90481007	B20660	Reanalysis		30/30	6010_METALS_ICP
90481010	B20661	Reanalysis		30/30	6010_METALS_ICP

WSCF Response: There was an interelemental correction error. The error has since been corrected. The original data contained false positives for nickel whereas the reprocessed data

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Narrative Rev1
WSCF100924

does not. All other data are within the statement of work data range and no statistical changes were found.

Deliver Report Results to: CH2M Hill Plateau Remediation Company
P.O. Box 1600
Mail Stop - R3-60
Richland, WA 99352
C/O Mr. Mike Neely

ATTACHMENT 3

ANALYTICAL RESULTS

Consisting of 49 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 #	WSCF100924
Report Date	September 27, 2010

Analytical: Electronically signed by Bill Baird

Client Services: Electronically signed by Heather Medley

Solid samples results that have a 'Percent Solid' test are reported on a "dry weight basis", except results of TCLP, Percent Solid, and Total Activity. If no `Percent Solid' test is reported then the results are reported on an "as received" basis.

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

Batch QC List

Attention Michael Neely
Department Inorganic

Group # WSCF100924

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
122881	124975	1	BLANK	28265	BLANK		ICP-6010 - All possible metals
122881	124975	2	LCS	28266	LCS		ICP-6010 - All possible metals
122881	124975	3	MS	28267	B230T0(100913004MS)	100913004	ICP-6010 - All possible metals
122881	124975	4	MSD	28268	B230T0(100913004MSD)	100913004	ICP-6010 - All possible metals
122881	124975	24	SAMPLE	100924002	B24LY1		ICP-6010 - All possible metals
122882	132775	1	BLANK	28269	BLANK		ICP-6010 - All possible metals
122882	132775	2	LCS	28270	LCS		ICP-6010 - All possible metals
122882	132775	3	MS	28271	B24LY2(100924003MS)	100924003	ICP-6010 - All possible metals
122882	132775	4	MSD	28272	B24LY2(100924003MSD)	100924003	ICP-6010 - All possible metals
122882	132775	5	SAMPLE	100924003	B24LY2		ICP-6010 - All possible metals
122984	122984	2	BLANK	28322	BLANK		Anions by Ion Chromatography (Water)
122984	122984	3	LCS	28323	LCS		Anions by Ion Chromatography (Water)
122984	122984	4	DUP	28324	B24NR6(100922015DUP)	100922015	Anions by Ion Chromatography (Water)
122984	122984	5	MS	28325	B24NR6(100922015MS)	100922015	Anions by Ion Chromatography (Water)
122984	122984	6	MSD	28326	B24NR6(100922015MSD)	100922015	Anions by Ion Chromatography (Water)
122984	122984	9	SAMPLE	100924001	B24M67		Anions by Ion Chromatography (Water)
135392	135475	4	BLANK	29239	BLANK		ICP-2008 MS All possible metal
135392	135475	5	LCS	29240	LCS		ICP-2008 MS All possible metal
135392	135475	11	SAMPLE	100924002	B24LY1		ICP-2008 MS All possible metal
135392	135475	12	SAMPLE	100924003	B24LY2		ICP-2008 MS All possible metal
135392	135475	25	MS	29241	B25KR5(100982001MS)	100982001	ICP-2008 MS All possible metal
135392	135475	28	MSD	29242	B25KR5(100982001MSD)	100982001	ICP-2008 MS All possible metal

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Batch QC List

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF100924

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
123280	124176	1	BLANK	28428	BLANK		Extractable Diesel and Petroleum
123280	124176	2	LCS	28429	LCS		Extractable Diesel and Petroleum
123280	124176	3	MS	28430	B25CN0(100897001MS)	100897001	Extractable Diesel and Petroleum
123280	124176	4	MSD	28431	B25CN0(100897001MSD)	100897001	Extractable Diesel and Petroleum
123280	124176	7	SAMPLE	100924003	B24LY2		Extractable Diesel and Petroleum

Batch QC List

Attention Michael Neely
Department Radiochemistry

Group # WSCF100924

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
122678	124877	1	BLANK	28238	BLANK		Tritium by LSC
122678	124877	2	LCS	28239	LCS		Tritium by LSC
122678	124877	4	DUP	28240	B24W03(100920005DUP)	100920005	Tritium by LSC
122678	124877	5	MS	28241	B24W03(100920005MS)	100920005	Tritium by LSC
122678	124877	17	SAMPLE	100924003	B24LY2		Tritium by LSC
122980	135086	1	BLANK	28306	BLANK		Strontium 89/90 (GPC/GEA)
122980	135086	2	LCS	28307	LCS		Strontium 89/90 (GPC/GEA)
122980	135086	3	DUP	28308	B24NB7(100922018DUP)	100922018	Strontium 89/90 (GPC/GEA)
122980	135086	8	SAMPLE	100924003	B24LY2		Strontium 89/90 (GPC/GEA)
122997	124886	1	BLANK	28357	BLANK		Gross Alpha/Gross Beta
122997	124886	2	LCS	28358	LCS		Gross Alpha/Gross Beta
122997	124886	3	SAMPLE	100924003	B24LY2		Gross Alpha/Gross Beta
122997	124886	4	SAMPLE	100924003	B24LY2		Gross Alpha/Gross Beta
122997	124886	5	DUP	28359	B24LY2(100924003DUP)	100924003	Gross Alpha/Gross Beta
134280	137475	1	DUP	28965	B258X7(100940003DUP)	100940003	Americium/Curium (AEA)
134280	137475	2	SAMPLE	100924003	B24LY2		Americium/Curium (AEA)
134280	137475	8	BLANK	28963	BLANK		Americium/Curium (AEA)
134280	137475	9	LCS	28964	LCS		Americium/Curium (AEA)

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Batch QC List

Attention Michael Neely
Department Wet Chemistry

Group # WSCF100924

QC Batch	Analytical Batch	S#	Type	Sample #	Client Sample#	Original	Test
125575	125575	2	DUP	28681	B24PP4(100891009DUP)	100891009	Total Alkalinity as mg/L CaCO3 (Water)
125575	125575	13	LCS	28682	LCS		Total Alkalinity as mg/L CaCO3 (Water)
125575	125575	14	SAMPLE	100924003	B24LY2		Total Alkalinity as mg/L CaCO3 (Water)

REVISED100924 -

Method Reference

Attention Michael Neely
Department Inorganic

Group # WSCF100924

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 Michael Neely
Department Organic, Semivolatiles

Group # WSCF100924

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-523-493	NWTPH-Dx, Extractible Diesel and Petroleum Productions Analysis in Soil and Water		
	WDOE	WDOE	Total Petroleum Hydrocarbons in Diesel
	HEIS	WTPH_DIESEL	TPH Diesel

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 # WSCF100924

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	Thorium, Neptunium, Plutonium, Americium, and Uranium In Soil and Water Using Eichrom Column Separation (Prep)		
	HEIS	PUISO_IE_PRECIP_AEA	Isotopic Plutonium, Alpha Spec
LA-508-471	Determination Of Uranium, Plutonium, And Americium		
	HEIS	AMCMISO_IE_PREC_AEA	Americium/Curium Iso, Alpha Spec
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

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Method Reference

Attention Michael Neely
Department Wet Chemistry

Group # WSCF100924

The results provided in this report were generated using the following WSCF Laboratory procedures. For your convenience, this table provides a listing of the regulatory, industry methods or HEIS methods that are referenced by each of these WSCF procedures. Please note that the most recent version of the regulatory or industry method is listed here even though WSCF procedure may reference an older version of the method. Also, a reference to a regulatory or industry method here does not necessarily indicate a verbatim implementation of that method.

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

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

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF100924

Sample # 100924001
SAF# S10-039
Sample ID B24M67

Matrix WATER
Sampled 05/04/10
Received 05/04/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Anions by IC										**05/04/10**
Anions by IC										
Fluoride	16984-48-8	LA-533-410	D	0.638		ug/mL	2	0.060	0.40	05/04/10
Chloride	16887-00-6	LA-533-410	D	8.32		ug/mL	2	0.086	0.80	05/04/10
Nitrite-N	NO2-N	LA-533-410	UD	<0.036		ug/mL	2	0.036	0.20	05/04/10
Bromide	24959-67-9	LA-533-410	UD	<0.090		ug/mL	2	0.090	1.0	05/04/10
Nitrate-N	NO3-N	LA-533-410	D	3.13		ug/mL	2	0.062	0.20	05/04/10
Phosphate-P	PO4-P	LA-533-410	UD	<0.14		ug/mL	2	0.14	0.80	05/04/10
Sulfate	14808-79-8	LA-533-410	D	29.1		ug/mL	2	0.13	2.0	05/04/10

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 recovery outside control limits.

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

REVISED100924 -

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF100924

Sample # 100924002
SAF# S10-039
Sample ID B24LY1

Matrix WATER
Sampled 05/04/10
Received 05/04/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICP Prep										**05/05/10**
ICP-AES										
Aluminum	7429-90-5	LA-505-411		222		ug/L	1	17	85	05/10/10
Iron	7439-89-6	LA-505-411	U	<18		ug/L	1	18	90	05/10/10
Magnesium	7439-95-4	LA-505-411		9650		ug/L	1	16	80	05/10/10
Manganese	7439-96-5	LA-505-411	U	<4.0		ug/L	1	4.0	20	05/10/10
Nickel	7440-02-0	LA-505-411	B	6.90		ug/L	1	4.0	20	05/10/10
Potassium	7440-09-7	LA-505-411		5980		ug/L	1	55	280	05/10/10
Silver	7440-22-4	LA-505-411	U	<5.0		ug/L	1	5.0	25	05/10/10
Sodium	7440-23-5	LA-505-411		28300		ug/L	1	23	120	05/10/10
Antimony	7440-36-0	LA-505-411	U	<38		ug/L	1	38	190	05/10/10
Barium	7440-39-3	LA-505-411	B	13.3		ug/L	1	4.0	20	05/10/10
Cadmium	7440-43-9	LA-505-411	U	<4.0		ug/L	1	4.0	20	05/10/10
Chromium	7440-47-3	LA-505-411	B	13.5		ug/L	1	13	65	05/10/10
Cobalt	7440-48-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	05/10/10
Copper	7440-50-8	LA-505-411	U	<4.0		ug/L	1	4.0	20	05/10/10
Vanadium	7440-62-2	LA-505-411	B	21.8		ug/L	1	12	60	05/10/10
Zinc	7440-66-6	LA-505-411	U	<6.0		ug/L	1	6.0	30	05/10/10
Calcium	7440-70-2	LA-505-411		29300		ug/L	1	39	200	05/10/10

MDL = Minimum Detection
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DF = Dilution Factor
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C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

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

REVISED100924 -

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF100924

Sample # 100924002
SAF# S10-039
Sample ID B24LY1

Matrix WATER
Sampled 05/04/10
Received 05/04/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Lead	7439-92-1	LA-505-411	U	<23		ug/L	1	23	120	05/10/10
Lithium	7439-93-2	LA-505-411	B	4.50		ug/L	1	4.0	20	05/10/10
Molybdenum	7439-98-7	LA-505-411	U	<4.0		ug/L	1	4.0	20	05/10/10
Strontium	7440-24-6	LA-505-411		167		ug/L	1	4.0	20	05/10/10
Thallium	7440-28-0	LA-505-411	U	<35		ug/L	1	35	180	05/10/10
Tin	7440-31-5	LA-505-411	U	<39		ug/L	1	39	200	05/10/10
Arsenic	7440-38-2	LA-505-411	U	<65		ug/L	1	65	320	05/10/10
Beryllium	7440-41-7	LA-505-411	U	<4.0		ug/L	1	4.0	20	05/10/10
Boron	7440-42-8	LA-505-411	B	20.1		ug/L	1	19	95	05/10/10
Bismuth	7440-69-9	LA-505-411	U	<23		ug/L	1	23	120	05/10/10
Silicon	7440-21-3	LA-505-411		20000		ug/L	1	61	300	05/10/10
Phosphorus	7723-14-0	LA-505-411	U	<55		ug/L	1	55	280	05/10/10
Selenium	7782-49-2	LA-505-411	U	<45		ug/L	1	45	220	05/10/10
ICPMS Prep										**05/15/10**
ICP-MS										
Aluminum	7429-90-5	LA-505-412	UD	<10		ug/L	2	10	200	05/18/10
Silver	7440-22-4	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	05/18/10
Antimony	7440-36-0	LA-505-412	UD	<0.60		ug/L	2	0.60	6.0	05/18/10
Barium	7440-39-3	LA-505-412	D	14.1		ug/L	2	0.40	4.0	05/18/10

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

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

REVISED100924 -

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF100924

Sample # 100924002
SAF# S10-039
Sample ID B24LY1

Matrix WATER
Sampled 05/04/10
Received 05/04/10

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	05/18/10
Cadmium	7440-43-9	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	05/18/10
Chromium	7440-47-3	LA-505-412	D	11.6		ug/L	2	1.0	10	05/18/10
Cobalt	7440-48-4	LA-505-412	UD	<0.10		ug/L	2	0.10	0.50	05/18/10
Copper	7440-50-8	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	05/18/10
Lead	7439-92-1	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	05/18/10
Mercury	7439-97-6	LA-505-412	UD	<0.10		ug/L	2	0.10	0.40	05/18/10
Molybdenum	7439-98-7	LA-505-412	D	5.62		ug/L	2	0.10	1.0	05/18/10
Thallium	7440-28-0	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	05/18/10
Tin	7440-31-5	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	05/18/10
Arsenic	7440-38-2	LA-505-412	D	10.5		ug/L	2	0.80	8.0	05/18/10
Selenium	7782-49-2	LA-505-412	BDC	1.23		ug/L	2	0.60	6.0	05/18/10

MDL = Minimum Detection
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TP Err = Total Propagated
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C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

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

REVISED100924 -

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF100924

Sample # 100924003
SAF# S10-039
Sample ID B24LY2

Matrix WATER
Sampled 05/04/10
Received 05/04/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
ICP Prep										**05/12/10**
ICP-AES										
Aluminum	7429-90-5	LA-505-411	U	<17		ug/L	1	17	85	05/12/10
Iron	7439-89-6	LA-505-411	U	<18		ug/L	1	18	90	05/12/10
Magnesium	7439-95-4	LA-505-411		9280		ug/L	1	16	80	05/12/10
Manganese	7439-96-5	LA-505-411	U	<4.0		ug/L	1	4.0	20	05/12/10
Nickel	7440-02-0	LA-505-411	U	<4.0		ug/L	1	4.0	20	05/12/10
Potassium	7440-09-7	LA-505-411		5800		ug/L	1	55	280	05/12/10
Silver	7440-22-4	LA-505-411	U	<5.0		ug/L	1	5.0	25	05/12/10
Sodium	7440-23-5	LA-505-411		27800		ug/L	1	23	120	05/12/10
Antimony	7440-36-0	LA-505-411	U	<38		ug/L	1	38	190	05/12/10
Barium	7440-39-3	LA-505-411	B	13.3		ug/L	1	4.0	20	05/12/10
Cadmium	7440-43-9	LA-505-411	U	<4.0		ug/L	1	4.0	20	05/12/10
Chromium	7440-47-3	LA-505-411	U	<13		ug/L	1	13	65	05/12/10
Cobalt	7440-48-4	LA-505-411	U	<4.0		ug/L	1	4.0	20	05/12/10
Copper	7440-50-8	LA-505-411	U	<4.0		ug/L	1	4.0	20	05/12/10
Vanadium	7440-62-2	LA-505-411	B	24.3		ug/L	1	12	60	05/12/10
Zinc	7440-66-6	LA-505-411	B	7.20		ug/L	1	6.0	30	05/12/10
Calcium	7440-70-2	LA-505-411		28900		ug/L	1	39	200	05/12/10

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D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

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

REVISED100924 -

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF100924

Sample # 100924003
SAF# S10-039
Sample ID B24LY2

Matrix WATER
Sampled 05/04/10
Received 05/04/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Lead	7439-92-1	LA-505-411	U	<23		ug/L	1	23	120	05/12/10
Lithium	7439-93-2	LA-505-411	B	6.90		ug/L	1	4.0	20	05/12/10
Molybdenum	7439-98-7	LA-505-411	B	4.20		ug/L	1	4.0	20	05/12/10
Strontium	7440-24-6	LA-505-411		171		ug/L	1	4.0	20	05/12/10
Thallium	7440-28-0	LA-505-411	U	<35		ug/L	1	35	180	05/12/10
Tin	7440-31-5	LA-505-411	U	<39		ug/L	1	39	200	05/12/10
Arsenic	7440-38-2	LA-505-411	U	<65		ug/L	1	65	320	05/12/10
Beryllium	7440-41-7	LA-505-411	U	<4.0		ug/L	1	4.0	20	05/12/10
Boron	7440-42-8	LA-505-411	U	<19		ug/L	1	19	95	05/12/10
Bismuth	7440-69-9	LA-505-411	B	27.9		ug/L	1	23	120	05/12/10
Silicon	7440-21-3	LA-505-411		19900		ug/L	1	61	300	05/12/10
Phosphorus	7723-14-0	LA-505-411	B	128		ug/L	1	55	280	05/12/10
Selenium	7782-49-2	LA-505-411	U	<45		ug/L	1	45	220	05/12/10
ICPMS Prep										**05/15/10**
ICP-MS										
Aluminum	7429-90-5	LA-505-412	UD	<10		ug/L	2	10	200	05/18/10
Silver	7440-22-4	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	05/18/10
Antimony	7440-36-0	LA-505-412	UD	<0.60		ug/L	2	0.60	6.0	05/18/10
Barium	7440-39-3	LA-505-412	D	14.2		ug/L	2	0.40	4.0	05/18/10

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TP Err = Total Propagated
DF = Dilution Factor
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D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
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U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.

REVISED100924 -

WSCF Analytical Results Report

Attention Michael Neely
Department Inorganic

Group # WSCF100924

Sample # 100924003
SAF# S10-039
Sample ID B24LY2

Matrix WATER
Sampled 05/04/10
Received 05/04/10

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	05/18/10
Cadmium	7440-43-9	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	05/18/10
Chromium	7440-47-3	LA-505-412	D	11.5		ug/L	2	1.0	10	05/18/10
Cobalt	7440-48-4	LA-505-412	UD	<0.10		ug/L	2	0.10	0.50	05/18/10
Copper	7440-50-8	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	05/18/10
Lead	7439-92-1	LA-505-412	UD	<0.20		ug/L	2	0.20	2.0	05/18/10
Mercury	7439-97-6	LA-505-412	UD	<0.10		ug/L	2	0.10	0.40	05/18/10
Molybdenum	7439-98-7	LA-505-412	D	5.76		ug/L	2	0.10	1.0	05/18/10
Thallium	7440-28-0	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	05/18/10
Tin	7440-31-5	LA-505-412	UD	<0.10		ug/L	2	0.10	1.0	05/18/10
Arsenic	7440-38-2	LA-505-412	D	10.6		ug/L	2	0.80	8.0	05/18/10
Selenium	7782-49-2	LA-505-412	BDC	0.976		ug/L	2	0.60	6.0	05/18/10

MDL = Minimum Detection
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TP Err = Total Propagated
DF = Dilution Factor
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C - Analyte was found in the Associated Blank. (Inorganic)
D - Analyte was reported at a secondary diltution factor.
E - Analyte is an estimate, see comment section.
N - MS and/or MSD recovery outside control limits.

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

REVISED100924 -

WSCF Analytical Results Report

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF100924

Sample # 100924003
SAF# S10-039
Sample ID B24LY2

Matrix WATER
Sampled 05/04/10
Received 05/04/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Prep for Water										**05/06/10**
TPHDWA										
Diesel	TPHDIESEL	LA-523-493	U	<70		ug/L	1	70	100	05/07/10

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
D - Analyte was reported at a secondary diltution factor.
E - The calibration exceeds the calibration range (GC/MS).
J - Analyte < lowest calibration but >= MDL.
N - Presumed evidence based on MS library search(GC/MS only)

T - MS/MSD recovery outside control limits(GC/MS only).
U - Analyzed for but not detected above limiting criteria.
X,Y or Z - See comment detail and/or narrative.

REVISED100924 -

WSCF Analytical Results Report

Attention Michael Neely
Department Radiochemistry

Group # WSCF100924

Sample # 100924003
SAF# S10-039
Sample ID B24LY2

Matrix WATER
Sampled 05/04/10
Received 05/04/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Alpha/Beta Prep										**05/07/10**
Gross Alpha/Beta										
Gross Alpha	12587-46-1	LA-508-415		2.8	1.8	pCi/L	1	2.5		05/20/10
Gross Beta	12587-47-2	LA-508-415		78	9	pCi/L	1	2.9		05/20/10
H3 EICHROM										**05/04/10**
TRI-CARB LSC										
Tritium	10028-17-8	LA-508-421		3400	700	pCi/L	1	190		05/07/10
SR-89/90										**05/13/10**
SR-89/90										
Strontium-89/90	SR-RAD	LA-220-406	U	-3.4	2.7	pCi/L	1	2.0		05/25/10
Th/Pu/Am/U Teva										**05/27/10**
AEA Am-U-Pu										
Americium-241	14596-10-2	LA-508-471	U	0.051	.06	pCi/L	1	0.091		05/28/10

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.

REVISED100924 -

WSCF Analytical Results Report

Attention Michael Neely
Department Wet Chemistry

Group # WSCF100924

Sample # 100924003
SAF# S10-039
Sample ID B24LY2

Matrix WATER
Sampled 05/04/10
Received 05/04/10

Test Performed	CAS #	Method	RQ	Result	TP Err	Units	DF	MDL	PQL	Analyzed
Alkalinity										**05/06/10**
Alkalinity										
Total Alkalinity as CaCO3	ALKALINITY	LA-531-411		120		mg/L	1	1	10	05/06/10

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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.

REVISED100924 -

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF100924

QC Batch 122881
Associated Samples 100924002

Test ICP-6010 - All possible metals

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #28265**							
Aluminum	7429-90-5		<17	ug/L					U	05/10/10
Iron	7439-89-6		<18	ug/L					U	05/10/10
Magnesium	7439-95-4		<16	ug/L					U	05/10/10
Manganese	7439-96-5		<4.0	ug/L					U	05/10/10
Nickel	7440-02-0		<4.0	ug/L					U	05/10/10
Potassium	7440-09-7		<55	ug/L					U	05/10/10
Silver	7440-22-4		<5.0	ug/L					U	05/10/10
Sodium	7440-23-5		<23	ug/L					U	05/10/10
Antimony	7440-36-0		<38	ug/L					U	05/10/10
Barium	7440-39-3		<4.0	ug/L					U	05/10/10
Cadmium	7440-43-9		<4.0	ug/L					U	05/10/10
Chromium	7440-47-3		<13	ug/L					U	05/10/10
Cobalt	7440-48-4		<4.0	ug/L					U	05/10/10
Copper	7440-50-8		<4.0	ug/L					U	05/10/10
Vanadium	7440-62-2		<12	ug/L					U	05/10/10
Zinc	7440-66-6		<6.0	ug/L					U	05/10/10
Calcium	7440-70-2		<39	ug/L					U	05/10/10
Lead	7439-92-1		<23	ug/L					U	05/10/10
Lithium	7439-93-2		<4.0	ug/L					U	05/10/10

REVISED100924 -

Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF100924

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Molybdenum	7439-98-7		<4.0	ug/L					U	05/10/10
Strontium	7440-24-6		<4.0	ug/L					U	05/10/10
Thallium	7440-28-0		<35	ug/L					U	05/10/10
Tin	7440-31-5		<39	ug/L					U	05/10/10
Arsenic	7440-38-2		<65	ug/L					U	05/10/10
Beryllium	7440-41-7		<4.0	ug/L					U	05/10/10
Boron	7440-42-8		<19	ug/L					U	05/10/10
Bismuth	7440-69-9		<23	ug/L					U	05/10/10
Silicon	7440-21-3		<61	ug/L					U	05/10/10
Phosphorus	7723-14-0		<55	ug/L					U	05/10/10
Selenium	7782-49-2		<45	ug/L					U	05/10/10
LCS			**QC Sample #28266**							
Aluminum	7429-90-5		1010	ug/L	101.3	80 - 120				05/10/10
Iron	7439-89-6		1020	ug/L	102.4	80 - 120				05/10/10
Magnesium	7439-95-4		1030	ug/L	102.7	80 - 120				05/10/10
Manganese	7439-96-5		1040	ug/L	104.5	80 - 120				05/10/10
Nickel	7440-02-0		1030	ug/L	102.9	80 - 120				05/10/10
Potassium	7440-09-7		10600	ug/L	105.5	80 - 120				05/10/10
Silver	7440-22-4		1020	ug/L	102.3	80 - 120				05/10/10
Sodium	7440-23-5		1060	ug/L	106.5	80 - 120				05/10/10
Antimony	7440-36-0		1020	ug/L	102.3	80 - 120				05/10/10
Barium	7440-39-3		513	ug/L	102.7	80 - 120				05/10/10
Cadmium	7440-43-9		1010	ug/L	101.1	80 - 120				05/10/10
Chromium	7440-47-3		1060	ug/L	105.6	80 - 120				05/10/10

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Group # WSCF100924

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Cobalt	7440-48-4		1020	ug/L	102	80 - 120				05/10/10
Copper	7440-50-8		1020	ug/L	102.5	80 - 120				05/10/10
Vanadium	7440-62-2		1020	ug/L	102.3	80 - 120				05/10/10
Zinc	7440-66-6		1050	ug/L	104.9	80 - 120				05/10/10
Calcium	7440-70-2		1020	ug/L	102.3	80 - 120				05/10/10
Lead	7439-92-1		1020	ug/L	102.3	80 - 120				05/10/10
Lithium	7439-93-2		522	ug/L	104.4	80 - 120				05/10/10
Molybdenum	7439-98-7		1010	ug/L	101.3	80 - 120				05/10/10
Strontium	7440-24-6		520	ug/L	104.1	80 - 120				05/10/10
Thallium	7440-28-0		920	ug/L	92	80 - 120				05/10/10
Tin	7440-31-5		987	ug/L	98.7	80 - 120				05/10/10
Arsenic	7440-38-2		1040	ug/L	104.3	80 - 120				05/10/10
Beryllium	7440-41-7		514	ug/L	102.7	80 - 120				05/10/10
Boron	7440-42-8		1010	ug/L	100.9	80 - 120				05/10/10
Bismuth	7440-69-9		1020	ug/L	101.5	80 - 120				05/10/10
Silicon	7440-21-3		1070	ug/L	107.3	80 - 120				05/10/10
Phosphorus	7723-14-0		1040	ug/L	104.1	80 - 120				05/10/10
Selenium	7782-49-2		1010	ug/L	101.2	80 - 120				05/10/10
MS			**QC Sample #28267**							
			Original 100913004							
Aluminum	7429-90-5		1030	ug/L	102.6	75 - 125				05/10/10
Iron	7439-89-6		1010	ug/L	101.3	75 - 125				05/10/10
Magnesium	7439-95-4		1500	ug/L	150	75 - 125			X	05/10/10
Manganese	7439-96-5		1020	ug/L	101.8	75 - 125				05/10/10
Nickel	7440-02-0		1020	ug/L	101.8	75 - 125				05/10/10

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Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Potassium	7440-09-7		10800	ug/L	107.6	75 - 125				05/10/10
Silver	7440-22-4		1010	ug/L	101	75 - 125				05/10/10
Sodium	7440-23-5		1990	ug/L	199	75 - 125			X	05/10/10
Antimony	7440-36-0		1020	ug/L	102.1	75 - 125				05/10/10
Barium	7440-39-3		512	ug/L	102.4	75 - 125				05/10/10
Cadmium	7440-43-9		987	ug/L	98.7	75 - 125				05/10/10
Chromium	7440-47-3		1030	ug/L	102.8	75 - 125				05/10/10
Cobalt	7440-48-4		973	ug/L	97.3	75 - 125				05/10/10
Copper	7440-50-8		1020	ug/L	102.3	75 - 125				05/10/10
Vanadium	7440-62-2		1020	ug/L	101.7	75 - 125				05/10/10
Zinc	7440-66-6		1030	ug/L	102.9	75 - 125				05/10/10
Calcium	7440-70-2		1420	ug/L	142	75 - 125			X	05/10/10
Lead	7439-92-1		977	ug/L	97.7	75 - 125				05/10/10
Lithium	7439-93-2		522	ug/L	104.4	75 - 125				05/10/10
Molybdenum	7439-98-7		985	ug/L	98.5	75 - 125				05/10/10
Strontium	7440-24-6		505	ug/L	101.1	75 - 125				05/10/10
Thallium	7440-28-0		868	ug/L	86.8	75 - 125				05/10/10
Tin	7440-31-5		958	ug/L	95.8	75 - 125				05/10/10
Arsenic	7440-38-2		1040	ug/L	103.8	75 - 125				05/10/10
Beryllium	7440-41-7		512	ug/L	102.4	75 - 125				05/10/10
Boron	7440-42-8		1020	ug/L	101.9	75 - 125				05/10/10
Bismuth	7440-69-9		993	ug/L	99.3	75 - 125				05/10/10
Silicon	7440-21-3		1320	ug/L	132	75 - 125			X	05/10/10
Phosphorus	7723-14-0		1080	ug/L	108.5	75 - 125				05/10/10
Selenium	7782-49-2		1010	ug/L	101.2	75 - 125				05/10/10

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Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
MSD			**QC Sample #28268**								
			Original	**100913004**					**Paired**	**28267**	
Aluminum	7429-90-5		1000	ug/L	100.2	75 - 125	2.40	20			05/10/10
Iron	7439-89-6		1000	ug/L	100.4	75 - 125	0.90	20			05/10/10
Magnesium	7439-95-4		1270	ug/L	127	75 - 125	16.60	20		X	05/10/10
Manganese	7439-96-5		1020	ug/L	101.7	75 - 125	0.10	20			05/10/10
Nickel	7440-02-0		1020	ug/L	101.9	75 - 125	0.10	20			05/10/10
Potassium	7440-09-7		10300	ug/L	103	75 - 125	4.40	20			05/10/10
Silver	7440-22-4		999	ug/L	99.9	75 - 125	1.10	20			05/10/10
Sodium	7440-23-5		1360	ug/L	136	75 - 125	37.60	20	*	X	05/10/10
Antimony	7440-36-0		1000	ug/L	100.4	75 - 125	1.70	20			05/10/10
Barium	7440-39-3		502	ug/L	100.5	75 - 125	1.90	20			05/10/10
Cadmium	7440-43-9		986	ug/L	98.6	75 - 125	0.10	20			05/10/10
Chromium	7440-47-3		1020	ug/L	102.4	75 - 125	0.40	20			05/10/10
Cobalt	7440-48-4		974	ug/L	97.4	75 - 125	0.10	20			05/10/10
Copper	7440-50-8		1000	ug/L	100.4	75 - 125	1.90	20			05/10/10
Vanadium	7440-62-2		1000	ug/L	100.5	75 - 125	1.20	20			05/10/10
Zinc	7440-66-6		1020	ug/L	102.4	75 - 125	0.50	20			05/10/10
Calcium	7440-70-2		1850	ug/L	185	75 - 125	26.30	20	*	X	05/10/10
Lead	7439-92-1		976	ug/L	97.6	75 - 125	0.10	20			05/10/10
Lithium	7439-93-2		504	ug/L	100.9	75 - 125	3.40	20			05/10/10
Molybdenum	7439-98-7		982	ug/L	98.2	75 - 125	0.30	20			05/10/10
Strontium	7440-24-6		506	ug/L	101.3	75 - 125	0.20	20			05/10/10
Thallium	7440-28-0		876	ug/L	87.6	75 - 125	0.90	20			05/10/10
Tin	7440-31-5		961	ug/L	96.1	75 - 125	0.30	20			05/10/10

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Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Arsenic	7440-38-2		1030	ug/L	102.9	75 - 125	0.90	20		05/10/10
Beryllium	7440-41-7		509	ug/L	101.9	75 - 125	0.50	20		05/10/10
Boron	7440-42-8		1010	ug/L	100.7	75 - 125	1.20	20		05/10/10
Bismuth	7440-69-9		988	ug/L	98.8	75 - 125	0.50	20		05/10/10
Silicon	7440-21-3		1250	ug/L	125	75 - 125	5.40	20	X	05/10/10
Phosphorus	7723-14-0		1080	ug/L	107.8	75 - 125	0.60	20		05/10/10
Selenium	7782-49-2		1000	ug/L	100.2	75 - 125	1.00	20		05/10/10

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Group # WSCF100924

QC Batch 122882
Associated Samples 100924003

Test ICP-6010 - All possible metals

Analyte	CAS #	Original Found	QC Found	Units	% Recov Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #28269**						
Aluminum	7429-90-5		<17	ug/L				U	05/12/10
Iron	7439-89-6		19.1	ug/L				B	05/12/10
Magnesium	7439-95-4		<16	ug/L				U	05/12/10
Manganese	7439-96-5		<4.0	ug/L				U	05/12/10
Nickel	7440-02-0		<4.0	ug/L				U	05/12/10
Potassium	7440-09-7		<55	ug/L				U	05/12/10
Silver	7440-22-4		<5.0	ug/L				U	05/12/10
Sodium	7440-23-5		<23	ug/L				U	05/12/10
Antimony	7440-36-0		<38	ug/L				U	05/12/10
Barium	7440-39-3		<4.0	ug/L				U	05/12/10
Cadmium	7440-43-9		<4.0	ug/L				U	05/12/10
Chromium	7440-47-3		<13	ug/L				U	05/12/10
Cobalt	7440-48-4		<4.0	ug/L				U	05/12/10
Copper	7440-50-8		<4.0	ug/L				U	05/12/10
Vanadium	7440-62-2		<12	ug/L				U	05/12/10
Zinc	7440-66-6		<6.0	ug/L				U	05/12/10
Calcium	7440-70-2		<39	ug/L				U	05/12/10
Lead	7439-92-1		<23	ug/L				U	05/12/10
Lithium	7439-93-2		<4.0	ug/L				U	05/12/10

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Group # WSCF100924

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Molybdenum	7439-98-7		<4.0	ug/L					U	05/12/10
Strontium	7440-24-6		<4.0	ug/L					U	05/12/10
Thallium	7440-28-0		<35	ug/L					U	05/12/10
Tin	7440-31-5		<39	ug/L					U	05/12/10
Arsenic	7440-38-2		<65	ug/L					U	05/12/10
Beryllium	7440-41-7		<4.0	ug/L					U	05/12/10
Boron	7440-42-8		<19	ug/L					U	05/12/10
Bismuth	7440-69-9		<23	ug/L					U	05/12/10
Silicon	7440-21-3		<61	ug/L					U	05/12/10
Phosphorus	7723-14-0		<55	ug/L					U	05/12/10
Selenium	7782-49-2		<45	ug/L					U	05/12/10
LCS			**QC Sample #28270**							
Aluminum	7429-90-5		1020	ug/L	102.3	80 - 120				05/12/10
Iron	7439-89-6		1030	ug/L	103.4	80 - 120				05/12/10
Magnesium	7439-95-4		1030	ug/L	103	80 - 120				05/12/10
Manganese	7439-96-5		1040	ug/L	103.9	80 - 120				05/12/10
Nickel	7440-02-0		1040	ug/L	103.5	80 - 120				05/12/10
Potassium	7440-09-7		10400	ug/L	103.9	80 - 120				05/12/10
Silver	7440-22-4		1020	ug/L	101.9	80 - 120				05/12/10
Sodium	7440-23-5		1110	ug/L	111.3	80 - 120				05/12/10
Antimony	7440-36-0		1070	ug/L	106.9	80 - 120				05/12/10
Barium	7440-39-3		518	ug/L	103.5	80 - 120				05/12/10
Cadmium	7440-43-9		1040	ug/L	104.3	80 - 120				05/12/10
Chromium	7440-47-3		1050	ug/L	104.8	80 - 120				05/12/10

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Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Cobalt	7440-48-4		1040	ug/L	104.3	80 - 120				05/12/10
Copper	7440-50-8		1040	ug/L	104.1	80 - 120				05/12/10
Vanadium	7440-62-2		1020	ug/L	102.5	80 - 120				05/12/10
Zinc	7440-66-6		1040	ug/L	104.4	80 - 120				05/12/10
Calcium	7440-70-2		1070	ug/L	106.6	80 - 120				05/12/10
Lead	7439-92-1		1050	ug/L	105	80 - 120				05/12/10
Lithium	7439-93-2		537	ug/L	107.4	80 - 120				05/12/10
Molybdenum	7439-98-7		1020	ug/L	101.7	80 - 120				05/12/10
Strontium	7440-24-6		524	ug/L	104.8	80 - 120				05/12/10
Thallium	7440-28-0		960	ug/L	96	80 - 120				05/12/10
Tin	7440-31-5		1070	ug/L	107.3	80 - 120				05/12/10
Arsenic	7440-38-2		1120	ug/L	111.7	80 - 120				05/12/10
Beryllium	7440-41-7		547	ug/L	109.5	80 - 120				05/12/10
Boron	7440-42-8		1030	ug/L	102.9	80 - 120				05/12/10
Bismuth	7440-69-9		1050	ug/L	105.3	80 - 120				05/12/10
Silicon	7440-21-3		1080	ug/L	108.1	80 - 120				05/12/10
Phosphorus	7723-14-0		1160	ug/L	116.4	80 - 120				05/12/10
Selenium	7782-49-2		1060	ug/L	105.6	80 - 120				05/12/10
MS			**QC Sample #28271**							
			Original 100924003							
Aluminum	7429-90-5	<17	1020	ug/L	101.8	75 - 125				05/12/10
Iron	7439-89-6	<18	1040	ug/L	103.6	75 - 125				05/12/10
Magnesium	7439-95-4	9280	1180	ug/L	117.8	75 - 125			X	05/12/10
Manganese	7439-96-5	<4.0	1010	ug/L	101.3	75 - 125				05/12/10
Nickel	7440-02-0	<4.0	996	ug/L	99.6	75 - 125				05/12/10

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Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Potassium	7440-09-7	5800	10200	ug/L	102.2	75 - 125				05/12/10
Silver	7440-22-4	<5.0	994	ug/L	99.4	75 - 125				05/12/10
Sodium	7440-23-5	27800	1430	ug/L	143	75 - 125			X	05/12/10
Antimony	7440-36-0	<38	1060	ug/L	106.5	75 - 125				05/12/10
Barium	7440-39-3	13.3	506	ug/L	101.2	75 - 125				05/12/10
Cadmium	7440-43-9	<4.0	1020	ug/L	101.8	75 - 125				05/12/10
Chromium	7440-47-3	<13	1040	ug/L	104.4	75 - 125				05/12/10
Cobalt	7440-48-4	<4.0	1010	ug/L	100.7	75 - 125				05/12/10
Copper	7440-50-8	<4.0	1010	ug/L	101.2	75 - 125				05/12/10
Vanadium	7440-62-2	24.3	1010	ug/L	100.7	75 - 125				05/12/10
Zinc	7440-66-6	7.20	1020	ug/L	102.2	75 - 125				05/12/10
Calcium	7440-70-2	28900	1160	ug/L	116	75 - 125			X	05/12/10
Lead	7439-92-1	<23	1010	ug/L	100.8	75 - 125				05/12/10
Lithium	7439-93-2	6.90	529	ug/L	105.9	75 - 125				05/12/10
Molybdenum	7439-98-7	4.20	1000	ug/L	100.1	75 - 125				05/12/10
Strontium	7440-24-6	171	523	ug/L	104.5	75 - 125				05/12/10
Thallium	7440-28-0	<35	947	ug/L	94.7	75 - 125				05/12/10
Tin	7440-31-5	<39	1070	ug/L	106.8	75 - 125				05/12/10
Arsenic	7440-38-2	<65	1140	ug/L	113.9	75 - 125				05/12/10
Beryllium	7440-41-7	<4.0	535	ug/L	107	75 - 125				05/12/10
Boron	7440-42-8	<19	1040	ug/L	103.9	75 - 125				05/12/10
Bismuth	7440-69-9	27.9	1000	ug/L	100	75 - 125				05/12/10
Silicon	7440-21-3	19900	1450	ug/L	145	75 - 125			X	05/12/10
Phosphorus	7723-14-0	128	935	ug/L	93.5	75 - 125				05/12/10
Selenium	7782-49-2	<45	1020	ug/L	102	75 - 125				05/12/10

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Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
MSD			**QC Sample #28272**								
			Original	**100924003**					**Paired**	**28271**	
Aluminum	7429-90-5	<17	1040	ug/L	103.7	75 - 125	1.80	20			05/12/10
Iron	7439-89-6	<18	1040	ug/L	103.5	75 - 125	0.10	20			05/12/10
Magnesium	7439-95-4	9280	1190	ug/L	118.8	75 - 125	0.80	20		X	05/12/10
Manganese	7439-96-5	<4.0	1010	ug/L	101.4	75 - 125	0.10	20			05/12/10
Nickel	7440-02-0	<4.0	995	ug/L	99.5	75 - 125	0.10	20			05/12/10
Potassium	7440-09-7	5800	10400	ug/L	103.6	75 - 125	1.40	20			05/12/10
Silver	7440-22-4	<5.0	993	ug/L	99.3	75 - 125	0.10	20			05/12/10
Sodium	7440-23-5	27800	1400	ug/L	140	75 - 125	2.10	20		X	05/12/10
Antimony	7440-36-0	<38	1060	ug/L	105.6	75 - 125	0.80	20			05/12/10
Barium	7440-39-3	13.3	503	ug/L	100.7	75 - 125	0.50	20			05/12/10
Cadmium	7440-43-9	<4.0	1010	ug/L	101.2	75 - 125	0.60	20			05/12/10
Chromium	7440-47-3	<13	1040	ug/L	103.8	75 - 125	0.60	20			05/12/10
Cobalt	7440-48-4	<4.0	1000	ug/L	100.3	75 - 125	0.40	20			05/12/10
Copper	7440-50-8	<4.0	1020	ug/L	102	75 - 125	0.80	20			05/12/10
Vanadium	7440-62-2	24.3	1010	ug/L	100.6	75 - 125	0.10	20			05/12/10
Zinc	7440-66-6	7.20	1020	ug/L	102.2	75 - 125	0.00	20			05/12/10
Calcium	7440-70-2	28900	720	ug/L	72	75 - 125	46.80	20	*	X	05/12/10
Lead	7439-92-1	<23	971	ug/L	97.1	75 - 125	3.70	20			05/12/10
Lithium	7439-93-2	6.90	535	ug/L	107	75 - 125	1.00	20			05/12/10
Molybdenum	7439-98-7	4.20	1000	ug/L	100	75 - 125	0.10	20			05/12/10
Strontium	7440-24-6	171	526	ug/L	105.2	75 - 125	0.70	20			05/12/10
Thallium	7440-28-0	<35	929	ug/L	92.9	75 - 125	1.90	20			05/12/10
Tin	7440-31-5	<39	1050	ug/L	105.2	75 - 125	1.50	20			05/12/10

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Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF100924

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
Arsenic	7440-38-2	<65	1070	ug/L	107	75 - 125	6.20	20			05/12/10
Beryllium	7440-41-7	<4.0	538	ug/L	107.5	75 - 125	0.50	20			05/12/10
Boron	7440-42-8	<19	1040	ug/L	104.5	75 - 125	0.60	20			05/12/10
Bismuth	7440-69-9	27.9	986	ug/L	98.6	75 - 125	1.40	20			05/12/10
Silicon	7440-21-3	19900	1140	ug/L	114	75 - 125	23.90	20	*	X	05/12/10
Phosphorus	7723-14-0	128	986	ug/L	98.6	75 - 125	5.30	20			05/12/10
Selenium	7782-49-2	<45	1040	ug/L	103.6	75 - 125	1.60	20			05/12/10

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Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF100924

QC Batch 122984
Associated Samples 100924001

Test Anions by Ion Chromatography (Water)

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #28322**							
Fluoride	16984-48-8		<0.030	ug/mL					U	05/04/10
Chloride	16887-00-6		<0.043	ug/mL					U	05/04/10
Nitrite-N	NO2-N		<0.018	ug/mL					U	05/04/10
Bromide	24959-67-9		<0.045	ug/mL					U	05/04/10
Nitrate-N	NO3-N		<0.031	ug/mL					U	05/04/10
Phosphate-P	PO4-P		<0.070	ug/mL					U	05/04/10
Sulfate	14808-79-8		<0.066	ug/mL					U	05/04/10
LCS			**QC Sample #28323**							
Fluoride	16984-48-8		0.930	ug/mL	94	90 - 110				05/04/10
Chloride	16887-00-6		2.00	ug/mL	101.1	90 - 110				05/04/10
Nitrite-N	NO2-N		0.978	ug/mL	100	90 - 110				05/04/10
Bromide	24959-67-9		3.98	ug/mL	101.6	90 - 110				05/04/10
Nitrate-N	NO3-N		0.909	ug/mL	102.7	90 - 110				05/04/10
Phosphate-P	PO4-P		1.97	ug/mL	103.2	90 - 110				05/04/10
Sulfate	14808-79-8		4.05	ug/mL	103.2	90 - 110				05/04/10
DUP			**QC Sample #28324**							
			Original 100922015							
Fluoride	16984-48-8		<0.060	ug/mL			0.00	20	UD	05/04/10

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Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF100924

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Chloride	16887-00-6		<0.086	ug/mL			0.00	20	UD	05/04/10
Nitrite-N	NO2-N		<0.036	ug/mL			0.00	20	UD	05/04/10
Bromide	24959-67-9		<0.090	ug/mL			0.00	20	UD	05/04/10
Nitrate-N	NO3-N		<0.062	ug/mL			0.00	20	UD	05/04/10
Phosphate-P	PO4-P		<0.14	ug/mL			0.00	20	UD	05/04/10
Sulfate	14808-79-8		<0.13	ug/mL			0.00	20	UD	05/04/10
MS			**QC Sample #28325**							
			Original 100922015							
Fluoride	16984-48-8		0.818	ug/mL	81.8	80 - 120			D	05/04/10
Chloride	16887-00-6		2.06	ug/mL	103.1	80 - 120			D	05/04/10
Nitrite-N	NO2-N		1.05	ug/mL	106.3	80 - 120			D	05/04/10
Bromide	24959-67-9		4.12	ug/mL	104	80 - 120			D	05/04/10
Nitrate-N	NO3-N		0.953	ug/mL	106.6	80 - 120			D	05/04/10
Phosphate-P	PO4-P		1.97	ug/mL	101.9	80 - 120			D	05/04/10
Sulfate	14808-79-8		4.07	ug/mL	102.7	80 - 120			D	05/04/10
MSD			**QC Sample #28326**							
			Original 100922015					**Paired**	**28325**	
Fluoride	16984-48-8		0.817	ug/mL	81.7	80 - 120	0.10	20	D	05/04/10
Chloride	16887-00-6		2.06	ug/mL	103.2	80 - 120	0.10	20	D	05/04/10
Nitrite-N	NO2-N		1.02	ug/mL	103	80 - 120	3.20	20	D	05/04/10
Bromide	24959-67-9		4.04	ug/mL	102.1	80 - 120	1.80	20	D	05/04/10
Nitrate-N	NO3-N		0.920	ug/mL	102.9	80 - 120	3.50	20	D	05/04/10
Phosphate-P	PO4-P		2.00	ug/mL	103.3	80 - 120	1.40	20	D	05/04/10
Sulfate	14808-79-8		4.04	ug/mL	101.9	80 - 120	0.80	20	D	05/04/10

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Quality Control Report

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF100924

QC Batch 123280
Associated Samples 100924003

Test Extractable Diesel and Petroleum

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #28428**							
Diesel	TPHDIESEL		<80	ug/L					U	05/07/10
LCS			**QC Sample #28429**							
Diesel	TPHDIESEL		2400	ug/L	94.4	65 - 128				05/07/10
MS			**QC Sample #28430**							
			Original 100897001							
Diesel	TPHDIESEL		2200	ug/L	94	73 - 123				05/07/10
MSD			**QC Sample #28431**							
			Original 100897001					**Paired**	**28430**	
Diesel	TPHDIESEL		2400	ug/L	99.2	73 - 123	5.40	20		05/07/10

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Quality Control Report

Attention Michael Neely
Department Wet Chemistry

Group # WSCF100924

QC Batch 125575
Associated Samples 100924003

Test Total Alkalinity as mg/L CaCO3 (Water)

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
DUP			**QC Sample #28681**							
			Original 100891009							
Total Alkalinity as CaCO3	ALKALINITY		110	mg/L			0.00	20		05/06/10
LCS			**QC Sample #28682**							
Total Alkalinity as CaCO3	ALKALINITY		140	mg/L	102.6	80 - 120				05/06/10

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Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF100924

QC Batch 135392
Associated Samples 100924002, 100924003

Test ICP-2008 MS All possible metal

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #29239**							
Aluminum	7429-90-5		<5.0	ug/L					U	05/18/10
Silver	7440-22-4		<0.10	ug/L					U	05/18/10
Antimony	7440-36-0		<0.30	ug/L					U	05/18/10
Barium	7440-39-3		<0.20	ug/L					U	05/18/10
Beryllium	7440-41-7		<0.050	ug/L					U	05/18/10
Cadmium	7440-43-9		<0.10	ug/L					U	05/18/10
Chromium	7440-47-3		<0.50	ug/L					U	05/18/10
Cobalt	7440-48-4		<0.050	ug/L					U	05/18/10
Copper	7440-50-8		<0.10	ug/L					U	05/18/10
Lead	7439-92-1		<0.10	ug/L					U	05/18/10
Mercury	7439-97-6		<0.050	ug/L					U	05/18/10
Molybdenum	7439-98-7		<0.050	ug/L					U	05/18/10
Thallium	7440-28-0		<0.050	ug/L					U	05/18/10
Tin	7440-31-5		<0.050	ug/L					U	05/18/10
Arsenic	7440-38-2		<0.40	ug/L					U	05/18/10
Selenium	7782-49-2		0.313	ug/L					B	05/18/10
LCS			**QC Sample #29240**							
Aluminum	7429-90-5		384	ug/L	95.9	85 - 115				05/18/10

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Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF100924

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Silver	7440-22-4		40.3	ug/L	100.7	85 - 115				05/18/10
Antimony	7440-36-0		40.4	ug/L	100.9	85 - 115				05/18/10
Barium	7440-39-3		40.5	ug/L	101.4	85 - 115				05/18/10
Beryllium	7440-41-7		37.5	ug/L	93.8	85 - 115				05/18/10
Cadmium	7440-43-9		39.4	ug/L	98.4	85 - 115				05/18/10
Chromium	7440-47-3		38.4	ug/L	96	85 - 115				05/18/10
Cobalt	7440-48-4		38.8	ug/L	97	85 - 115				05/18/10
Copper	7440-50-8		38.4	ug/L	96	85 - 115				05/18/10
Lead	7439-92-1		40.7	ug/L	101.7	85 - 115				05/18/10
Mercury	7439-97-6		1.89	ug/L	94.4	85 - 115				05/18/10
Molybdenum	7439-98-7		40.0	ug/L	100	85 - 115				05/18/10
Thallium	7440-28-0		41.2	ug/L	103	85 - 115				05/18/10
Tin	7440-31-5		40.6	ug/L	101.5	85 - 115				05/18/10
Arsenic	7440-38-2		37.9	ug/L	94.8	85 - 115				05/18/10
Selenium	7782-49-2		37.8	ug/L	94.4	85 - 115				05/18/10
MS			**QC Sample #29241**							
			Original 100982001							
Aluminum	7429-90-5		394	ug/L	98.6	70 - 130				05/18/10
Silver	7440-22-4		38.5	ug/L	96.2	70 - 130				05/18/10
Antimony	7440-36-0		38.7	ug/L	96.8	70 - 130				05/18/10
Barium	7440-39-3		38.7	ug/L	96.8	70 - 130				05/18/10
Beryllium	7440-41-7		37.4	ug/L	93.4	70 - 130				05/18/10
Cadmium	7440-43-9		37.7	ug/L	94.2	70 - 130				05/18/10
Chromium	7440-47-3		37.8	ug/L	94.6	70 - 130				05/18/10
Cobalt	7440-48-4		38.2	ug/L	95.5	70 - 130				05/18/10

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Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF100924

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Copper	7440-50-8		43.9	ug/L	109.6	70 - 130				05/18/10
Lead	7439-92-1		37.4	ug/L	93.6	70 - 130				05/18/10
Mercury	7439-97-6		1.81	ug/L	90.6	70 - 130				05/18/10
Molybdenum	7439-98-7		38.4	ug/L	96	70 - 130				05/18/10
Thallium	7440-28-0		39.5	ug/L	98.8	70 - 130				05/18/10
Tin	7440-31-5		39.3	ug/L	98.2	70 - 130				05/18/10
Arsenic	7440-38-2		36.1	ug/L	90.2	70 - 130				05/18/10
Selenium	7782-49-2		32.9	ug/L	82.2	70 - 130				05/18/10
MSD			**QC Sample #29242**							
			Original 100982001						**Paired 29241**	
Aluminum	7429-90-5		372	ug/L	93.1	70 - 130	5.70	20		05/18/10
Silver	7440-22-4		38.4	ug/L	96.1	70 - 130	0.10	20		05/18/10
Antimony	7440-36-0		38.9	ug/L	97.2	70 - 130	0.40	20		05/18/10
Barium	7440-39-3		39.1	ug/L	97.8	70 - 130	1.00	20		05/18/10
Beryllium	7440-41-7		35.9	ug/L	89.8	70 - 130	3.90	20		05/18/10
Cadmium	7440-43-9		38.0	ug/L	94.9	70 - 130	0.70	20		05/18/10
Chromium	7440-47-3		37.4	ug/L	93.5	70 - 130	1.20	20		05/18/10
Cobalt	7440-48-4		37.7	ug/L	94.2	70 - 130	1.40	20		05/18/10
Copper	7440-50-8		40.5	ug/L	101.2	70 - 130	8.00	20		05/18/10
Lead	7439-92-1		34.2	ug/L	85.4	70 - 130	9.20	20		05/18/10
Mercury	7439-97-6		1.81	ug/L	90.4	70 - 130	0.20	20		05/18/10
Molybdenum	7439-98-7		38.3	ug/L	95.8	70 - 130	0.20	20		05/18/10
Thallium	7440-28-0		40.0	ug/L	100.1	70 - 130	1.30	20		05/18/10
Tin	7440-31-5		39.0	ug/L	97.6	70 - 130	0.60	20		05/18/10
Arsenic	7440-38-2		36.2	ug/L	90.5	70 - 130	0.30	20		05/18/10

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Quality Control Report

Attention Michael Neely
Department Inorganic

Group # WSCF100924

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
Selenium	7782-49-2		35.2	ug/L	88	70 - 130	6.80	20		05/18/10

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Quality Control Report

Attention Michael Neely
Department Radiochemistry

Group # WSCF100924

QC Batch 122678
Associated Samples 100924003

Test Tritium by LSC

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #28238**							
Tritium	10028-17-8		54	pCi/L					U	05/07/10
LCS			**QC Sample #28239**							
Tritium	10028-17-8		3400	pCi/L	101.7	80 - 120				05/07/10
DUP			**QC Sample #28240**							
			Original 100920005							
Tritium	10028-17-8		640	pCi/L			4.80	-20 - 20		05/07/10
MS			**QC Sample #28241**							
			Original 100920005							
Tritium	10028-17-8		19000	pCi/L	94.7	75 - 125				05/07/10

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Quality Control Report

Attention Michael Neely
Department Radiochemistry

Group # WSCF100924

QC Batch 122980
Associated Samples 100924003

Test Strontium 89/90 (GPC/GEA)

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
BLANK			**QC Sample #28306**							
Strontium-89/90	SR-RAD		-4.3	pCi/L					U	05/25/10
LCS			**QC Sample #28307**							
Strontium-89/90	SR-RAD		110	pCi/L	99.1	80 - 120				05/25/10
DUP			**QC Sample #28308**							
			Original 100922018							
Strontium-89/90	SR-RAD		-3.2	pCi/L			-19.70	-20 - 20	U	05/25/10

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Quality Control Report

Attention Michael Neely
Department Radiochemistry

Group # WSCF100924

QC Batch 122997
Associated Samples 100924003

Test Gross Alpha/Gross Beta

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
BLANK			**QC Sample #28357**								
Gross Alpha	12587-46-1		-0.26	pCi/L						U	05/20/10
Gross Beta	12587-47-2		1.5	pCi/L						U	05/20/10
LCS			**QC Sample #28358**								
Gross Alpha	12587-46-1		56	pCi/L	86.6	80 - 120					05/20/10
Gross Beta	12587-47-2		230	pCi/L	106.6	80 - 120					05/20/10
DUP			**QC Sample #28359**								
			Original 100924003								
Gross Alpha	12587-46-1	2.8	2.1	pCi/L			28.60	-20 - 20	*	U	05/20/10
Gross Beta	12587-47-2	78	77	pCi/L			1.30	-20 - 20			05/20/10

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Quality Control Report

Attention Michael Neely
Department Radiochemistry

Group # WSCF100924

QC Batch 134280
Associated Samples 100924003

Test Americium/Curium (AEA)

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit		RQ	Analyzed
BLANK			**QC Sample #28963**								
Americium-241	14596-10-2		9.1E-3	pCi/L						U	05/28/10
LCS			**QC Sample #28964**								
Americium-241	14596-10-2		5.5	pCi/sample	99.1	80 - 120					05/28/10
DUP			**QC Sample #28965**								
			Original 100940003								
Americium-241	14596-10-2		0.088	pCi/L			52.10	-20 - 20	*	U	05/28/10

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Quality Control Report

Attention Michael Neely
Department Radiochemistry

Group # WSCF100924

QC Batch 122980
Associated Samples 100924003

Test Strontium 89/90 (GPC/GEA)

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
SAMPLE			**Sample #100924003**							
Strontium-85	13967-73-2				79.7	25 - 105				05/25/10
BLANK			**QC Sample #28306**							
Strontium-85	13967-73-2				93.4	25 - 105				05/25/10
LCS			**QC Sample #28307**							
Strontium-85	13967-73-2				93.8	25 - 105				05/25/10
DUP			**QC Sample #28308**							
			Original 100922018							
Strontium-85	13967-73-2				79.9	25 - 105	11.10			05/25/10

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Quality Control Report

Attention Michael Neely
Department Organic, Semivolatiles

Group # WSCF100924

QC Batch 123280
Associated Samples 100924003

Test Extractable Diesel and Petroleum

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
SAMPLE			**Sample #100924003**							
o-Terphenyl	84-15-1				80.2	70 - 130				05/07/10
BLANK			**QC Sample #28428**							
o-Terphenyl	84-15-1				94	70 - 130				05/07/10
LCS			**QC Sample #28429**							
o-Terphenyl	84-15-1				99.9	70 - 130				05/07/10
MS			**QC Sample #28430**							
			Original 100897001							
o-Terphenyl	84-15-1				92.1	70 - 130				05/07/10
MSD			**QC Sample #28431**							
			Original 100897001						**Paired 28430**	
o-Terphenyl	84-15-1				102.7	70 - 130	10.90	20		05/07/10

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Quality Control Report

Attention Michael Neely
Department Radiochemistry

Group # WSCF100924

QC Batch 134280
Associated Samples 100924003

Test Americium/Curium (AEA)

Analyte	CAS #	Original Found	QC Found	Units	% Recov	Limits	RPD	RPD Limit	RQ	Analyzed
SAMPLE			**Sample #100924003**							
Americium-243 Tracer	14993-75-0				79.9	25 - 105				05/28/10
BLANK			**QC Sample #28963**							
Americium-243 Tracer	14993-75-0				86.5	25 - 105				05/28/10
LCS			**QC Sample #28964**							
Americium-243 Tracer	14993-75-0				97.1	25 - 105				05/28/10
DUP			**QC Sample #28965**							
			Original 100940003							
Americium-243 Tracer	14993-75-0				89.7	25 - 105	0.00			05/28/10

REVISED100924 -

Attention: Michael Neely **Group #** WSCF100924

Quality Control Comments

Department Inorganic

28267 B230T0(100913004MS)

Analyte Calcium - ICP-6010 - All possible metals
[1] X5: Sample concentration exceed spiking level by a factor of 4. Spike recoveries are not valid.
[2] X-Flag

Analyte Magnesium - ICP-6010 - All possible metals
[1] X-Flag
[2] X5: Sample concentration exceed spiking level by a factor of 4. Spike recoveries are not valid.

Analyte Silicon - ICP-6010 - All possible metals
[1] X5: Sample concentration exceed spiking level by a factor of 4. Spike recoveries are not valid.
[2] X-Flag

Analyte Sodium - ICP-6010 - All possible metals
[1] X5: Sample concentration exceed spiking level by a factor of 4. Spike recoveries are not valid.
[2] X-Flag

28268 B230T0(100913004MSD)

Analyte Calcium - ICP-6010 - All possible metals
[1] X5: Sample concentration exceed spiking level by a factor of 4. Spike recoveries are not valid.
[2] X-Flag

Analyte Magnesium - ICP-6010 - All possible metals
[1] X5: Sample concentration exceed spiking level by a factor of 4. Spike recoveries are not valid.
[2] X-Flag

Analyte Silicon - ICP-6010 - All possible metals
[1] X-Flag
[2] X5: Sample concentration exceed spiking level by a factor of 4. Spike recoveries are not valid.

Analyte Sodium - ICP-6010 - All possible metals
[1] X5: Sample concentration exceed spiking level by a factor of 4. Spike recoveries are not valid.
[2] X-Flag

28271 B24LY2(100924003MS)

Analyte Calcium - ICP-6010 - All possible metals

REVISED100924 -

Attention: Michael Neely **Group #** WSCF100924

Quality Control Comments

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

Analyte Magnesium - ICP-6010 - All possible metals
[1] X5: Sample concentration exceed spiking level by a factor of 4. Spike recoveries are not valid.
[2] X-Flag

Analyte Silicon - ICP-6010 - All possible metals
[1] X5: Sample concentration exceed spiking level by a factor of 4. Spike recoveries are not valid.
[2] X-Flag

Analyte Sodium - ICP-6010 - All possible metals
[1] X5: Sample concentration exceed spiking level by a factor of 4. Spike recoveries are not valid.
[2] X-Flag

28272 B24LY2(100924003MSD)

Analyte Calcium - ICP-6010 - All possible metals
[1] X-Flag
[2] 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.
[2] X-Flag

Analyte Silicon - ICP-6010 - All possible metals
[1] X-Flag
[2] X5: Sample concentration exceed spiking level by a factor of 4. Spike recoveries are not valid.

Analyte Sodium - ICP-6010 - All possible metals
[1] X5: Sample concentration exceed spiking level by a factor of 4. Spike recoveries are not valid.
[2] X-Flag

REVISED100924 -

ATTACHMENT4

SAMPLE RECEIPT

Consisting of 4 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: CHPRC
PO #: 401922
Work Order #: 100924
Profile #: X10-039-227
Proj. Mgr.:
Phone:

The following samples were received from you on 5/4/2010 2:35:00 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		
100924001	B24M67	WATER	5/4/2010 10:07	5/4/2010 14:35
		IC-W		
100924002	B24LY1	WATER	5/4/2010 10:07	5/4/2010 14:35
		2008-W; 6010-W		
100924003	B24LY2	WATER	5/4/2010 10:07	5/4/2010 14:35
		2008-W; 6010-W; AEA-AM-W; ALK-W; GAB-AO-W; GAB-BO-W; H3-COL-W; SR89/90-W; TPHDWA-W		

Test Acronym Description

Test Acronym	Description
2008-W	ICP-MS (W)
6010-W	ICP-AES (W)
AEA-AM-W	Americium (AEA) (W)
ALK-W	Total Alkalinity (W)
GAB-AO-W	Gross Alpha/Beta (A only)(W)
GAB-BO-W	Gross Alpha/Beta (B only)(W)
H3-COL-W	Tritium by EICHROM Column (W)
IC-W	Anions by IC (W)
SR89/90-W	Strontium 89/90 (GPC) (W)
TPHDWA-W	TPHD-WA (W)

CHPRC	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C.# X10-039-227 Page 1 of 1

Collector: D. R. Williamson	Contact/Requester: Karen Waters/Tucker	Telephone No.: 376-4650
SAF No.: CHPRC X10-039	Sampling Origin: Hanford Site	Purchase Order/Charge Code: 106113EA20
Project Title: HF HISTORICAL APRIL 2010	Logbook No.: HNF-N-506 28 193	Ice Chest No.: N/A
Shipped To/Lab: Waste Sampling & Characterization	Method of Shipment: Government Vehicle	Bill of Lading/Air Bill No.: N/A
Protocol: CERCLA	Priority: 45 Days	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 (09/09/1993)

M0924

SPECIAL INSTRUCTIONS: Hold Time — Total Actinide Extraction: Yes ✓ No
Do not combine samples from this SAF with other Events. Need SDG to be stand alone.
Use Sample Generator Knowledge Information Form/spreadsheet
Use COC# for all analytical work in WSCF is 100924
SIC's are required 8260 VOA method
Record sample results

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B26M67	N	W	5/4/10	1607	1x500-mL P	300.0_ANIONS_IC; List-1 + Bromide, Phosphate (7)	28 Days/48 Hours	Cool<4C

Relinquished By	Date/Time	Received By	Date/Time
D. R. Williamson CHPRC (Sign)	MAY 04 2010 1431	(Sign)	MAY 04 2010 1435
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; SE = Sediment; SO = Solid; SL = Sludge; W = Water; O = Oil; A = Air; DS = Drum Solid; DL = Drum Liquid; T = Tissue; WI = Wipe; L = Liquid; V = Vegetation; X = Other

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

CHPRC	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C.# X10-039-137 Page: 1 of 1

Collector: D. R. Williamson	Contact/Requestor: Karen Waters Hunter	Telephone No. 376-4650
SAF No. CHPRC X10-039	Sampling Origin: Hanford Site	Purchase Order/Charge Code 2601180820
Project Title: HE R-60/DRA APRIL 2010	Logbook No: HNF-N-506 39 / 43	Ice Chest No. N/A
Shipped To (Lab): Pacific Sunshine A Chromatogram	Method of Shipment: Government Vehicle	BBI of Lading/Air Bill No. N/A
Protocol: CERCLA	Priority: 45 Days	Offsite Property No. N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
** Uranium Radioactive Material at concentrations that are not regulated for transportation per 49 CFR but are not releasable per DOE Order 5400.5 (1990-2011)

SPECIAL INSTRUCTIONS Hold Time Total Activity Exemption? Yes ✓ No
Do not combine samples from this SAF with other data sets. Send SDG to be stored alone
HE Area Generator Knowledge Information Form applies
The CALN for all analytical work is WSCF to 06010
VOCs are required 8260 VOA method
Do not combine samples

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
824LY1	Y	W	5/4/10	1007	1x500-mL G/P	200.8_HG - ICPMS	6 Months	HNO3 to pH <2
824LY1	Y	W			1x500-mL G/P	200.8_METALS_ICPMS: DURA LIST (10)	6 Months	HNO3 to pH <2
824LY1	Y	W			1x500-mL G/P	6010_METALS_ICP: DURA LIST (29)	6 Months	HNO3 to pH <2
824LY2	N	W			1x500-mL G/P	200.8_HG - ICPMS	6 Months	HNO3 to pH <2
824LY2	N	W			1x500-mL G/P	200.8_METALS_ICPMS: DURA LIST (10)	6 Months	HNO3 to pH <2
824LY2	N	W			1x500-mL G/P	6010_METALS_ICP: DURA LIST (29)	6 Months	HNO3 to pH <2
824LY2	N	W			1x250-mL G/P	2320_ALKALINITY: Alkalinity (1)	14 Days	Cool~4C
824LY2	N	W			1x1-L G/P	Strontium-89,90 -- Total Sr	6 Months	HNO3 to pH <2
824LY2	N	W			1x250-mL G	TRITIUM_EIE_LSC: Tritium (1)	6 Months	None
824LY2	N	W			1x500-mL G/P	ALPHABETA_GPC: Alpha discrete + Beta (2); ALPHABETA_GPC: Alpha discrete + Beta (2)	6 Months	HNO3 to pH <2
824LY2	N	W			1x1000-mL G/P	AMCMISO_III_PREC_AEA: Am-241 (1)	180 Days	HNO3 to pH <2
824LY2	N	W	✓	✓	3x1000-mL aG	TPH-Diesel Range - WTPH-D	14/40 Days	HCl to pH <2 Cool~4C

Relinquished By	Date/Time	Received By	Date/Time
D. R. Williamson CHPRC	MAY 0 4 2010 1435		MAY 0 4 2010 1435
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; SS = Sediment; SD = Solid; SL = Sludge; W = Water; O = Oil; A = Air; DS = Drum Solid; DL = Drum Liquid; T = Tissue; WI = Wipe; L = Liquid; V = Vegetation; X = Other

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