REVIEW COMMENT RECORD (RCR)

1. Date 08/07/06	2. Review No.
3. Project No. 200-UW-1	4. Page 1 of 1

5. Document Number(s)/Title(s)	6. Program/Project/Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
Validation Package for SDG WSCF20060733	Soil between 216-U-8 & 216-U-12 Cribs	RL Weiss	WCH - S&DM	Sigma 1 372-9631

17. Comment Submittal Approval:	10. Agreement with indicated comment disposition(s)	11. Closed
Organization Manager (Optional)	R. L. Weiss Reviewer/Point of Contract 08/07/06 Date R. L. Weiss Author/Originator	Reviewer/Point of Contact Date Author/Originator

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Reviewer Concurrence Required	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	Inorganics, Pages 4, 5, 9, 11, 16, 18, & 26; RPD for Thallium appears to be 7.139% not 37% as reported in validation package (see page 38 of the package). No "J" qualification for Thallium. Note that second Thallium result on page 16 was not flagged by validator.		- rejected - see thallium RPD on page 33 comment accepted note - carr — and resolved per direction from Steve Trent 8/10/06	

Resolution accepted by R. WEISS per Telecon 8/10/06

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Project Hanford Management System
COMMENT RESOLUTION SHEET

Document Number: WSCF20060733 | **Revision Number** N/A | **Date:** Aug 7, 2006

Document Title:
Data Validation for Inorganics Analysis

Reviewer:
Bill Thackaberry

Reviewers, if other than original:

Project/Organization:
FH/GRP/QA

Responsible Manager:
Dana Farwick

COMMENT(S)

Initials (If other than listed reviewer)	Section/ Step	Comments/Discrepancies	Basis	Recommendation	Resolution
	pg 1	Validation Letter, Introduction, Sample ID table, two erroneous sample numbers are presented	Sample numbers don't match the Chain of Custody	Correct the table	

Date: 7 August 2006
To: Fluor Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 200-UW-1 Operable Unit, Soil from Trench Between 216-U-8 & 216-U-12 Cribs
Subject: Inorganics - Data Package No. WSCF20060733 (60733)

INTRODUCTION

This memo presents the results of data validation on Data Package No. 60733 prepared by WSCF Analytical Laboratories (WSCF). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
B1HVM6-A	3/14/06	Soil	C	See note 1
B1HVM8-A	3/14/06	Soil	C	See note 1
B1HVN0-A	3/14/06	Soil	C	See note 1

1 - ICP metals by 6010B and ICP-MS by 200.8.

Data validation was conducted in accordance with the FHI validation statement of work and the Sampling and Analysis Plan for Support Activities to the 200-UW-1 Operable Unit, DOE/RL-2005-75, Rev. 0. Appendices 1 through 6 provide the following information as indicated below:

Appendix 1. Glossary of Data Reporting Qualifiers
Appendix 2. Summary of Data Qualification
Appendix 3. Qualified Data Summary and Annotated Laboratory Reports
Appendix 4. Laboratory Narrative and Chain-of-Custody Documentation
Appendix 5. Data Validation Supporting Documentation
Appendix 6. Additional Documentation Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 6 months for ICP metals.

All holding times were met.

- **Preparation (Method) Blanks**

Preparation Blanks

At least one preparation blank, consisting of deionized distilled water processed through each sample preparation and analysis procedure, must be prepared and analyzed with every sample delivery group. In the case of positive blank results, samples with digestate concentrations less than five times the preparation blank value have had their associated values qualified as non-detected and flagged "U". Samples with concentrations of greater than five times the highest blank concentration do not require qualification.

In the case of negative blank results, if the absolute value exceeds the contract required detection limit (CRDL), all nondetects are rejected and flagged "UR" and all detects that are less than ten times the absolute value of the associated preparation blank result are qualified as estimates and flagged "J". If the absolute value of the negative preparation blank is greater than the instrument detection limit (IDL) and less than or equal to the CRDL, all nondetects are qualified as estimates and flagged "UJ" and all detects less than ten times the absolute value of the blank are qualified as estimates and flagged "J". If the sample results are greater than ten times the absolute value of the preparation blank, no qualification is necessary.

All preparation blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike & Matrix Spike Duplicate

Matrix spike (MS), matrix spike duplicate (MSD) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a spike recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a spike recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a spike recovery of greater than 130% or less than 69% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a spike recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to matrix spike (133%) and matrix spike duplicate (143%) recoveries outside QC limits, all potassium results were qualified as estimates and flagged "J".

Due to matrix spike (357%) and matrix spike duplicate (347%) recoveries outside QC limits, all sodium results were qualified as estimates and flagged "J".

Due to matrix spike (66%) and matrix spike duplicate (69%) recoveries outside QC limits, all silicon results were qualified as estimates and flagged "J".

All other matrix spike/matrix spike duplicate results were acceptable.

Laboratory Control Sample

The LCS is used to monitor the overall performance of all steps in the analysis. Recoveries must fall within the range of 70% to 130% for LCS analysis. Samples with a recovery below 69% and a sample recovery below the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to an LCS recovery outside QC limits (145%), all iron results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (25%), all silicon results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits (14%), all zirconium results were qualified as estimates and flagged "J".

All other LCS results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike and matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than +/- 30%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit,

associated results are qualified as estimated detects or estimated non-detects.

Due to an RPD outside QC limits (37%), all thallium results were qualified as estimates and flagged "J".

All other duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

- **Analytical Detection Limits**

Reported analytical detection levels are compared against the required target quanitiation limits (RTQLs) to ensure that laboratory detection levels meet the required criteria. All results met RTQL.

- **Completeness**

Data package No. 60733 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to matrix spike (133%) and matrix spike duplicate (143%) recovery outside QC limits, all potassium results were qualified as estimates and flagged "J".
- Due to matrix spike (357%) and matrix spike duplicate (347%) recoveries outside QC limits, all sodium results were qualified as estimates and flagged "J".
- Due to matrix spike (66%) and matrix spike duplicate (69%) recovery outside QC limits, all silicon results were qualified as estimates and flagged "J".
- Due to an LCS recovery outside QC limits (145%), all iron results were qualified

as estimates and flagged "J".

- Due to an LCS recovery outside QC limits (25%), all silicon results were qualified as estimates and flagged "J".

- Due to an LCS recovery outside QC limits (14%), all zirconium results were qualified as estimates and flagged "J".

- ~~Due to an RPD outside QC limits (37%), all thallium results were qualified as estimates and flagged "J".~~ JYR 8/10/06

Data flagged "J" is an estimate, but under the FHI validation SOW, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

FHI, Contract #20266, *Validation Statement of Work*, Fluor Hanford Incorporated, July 7, 2003.

DOE/RL-2005-75, Rev. 0, *Sampling and Analysis Plan for Support Activities to the 200-UW-1 Operable Unit*, December 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with FHI validation SOW are as follows:

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the sample quantitation limit corrected for sample dilution and moisture content by the laboratory.

UJ - Indicates the compound or analyte was analyzed for and not detected in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated concentration is an estimate, but the data are usable for decision-making purposes.

BJ - Applied to inorganic analyses only. Indicates the analyte concentration was greater than the IDL but less than the CRDL and is considered an estimated value.

R - Indicates the compound or analyte was analyzed for, detected, and due to an identified major QC deficiency, the data are unusable.

UR - Indicates the compound or analyte was analyzed for and not detected in the sample. Additionally, the data is unusable due to an identified major QC deficiency.

NJ - Indicates presumptive evidence of a compound at an estimated value. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

N - Indicates presumptive evidence of a compound. The data may not be valid for some specific applications (i.e., usable for decision-making purposes).

Appendix 2

Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

SDG: 60733	REVIEWER: TLI	Project: 200-UW-1	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Potassium Sodium Silicon	J	All	MS/MSD recovery
Iron Silicon Zirconium	J	All	LCS recovery
~~Thallium~~	~~J~~	~~All~~	~~RPD~~

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8/10/06

* - The Qualified Data Summary Table includes laboratory applied "U" qualifiers not specifically identified here. The laboratory applied "U" qualifiers are included to minimize misinterpretation of results contained in the table.

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: FLUOR HANFORD							
Laboratory: LLI	SDG: WSCF20060733						
Sample Number		B1HVM6-A		B1HVM8-A		B1HVN0-A	
Remarks							
Sample Date		3/14/06		3/14/06		3/14/06	
Inorganics	RTQL	Result	Q	Result	Q	Result	Q
Aluminum		5360		5700		5450	
Iron		32700	J	34600	J	34300	J
Magnesium		6280		6640		6470	
Potassium		1000	J	1070	J	89.2	J
Sodium		319	J	341	J	317	J
Calcium		9270		9740		9260	
Lithium		7.93		10.9		11.2	
Titanium	1	1870		2040		2120	
Boron		<21.8	U	<21.4	U	<21.5	U
Zirconium		<8.31	UJ	<8.17	UJ	<8.18	UJ
Bismuth		<55.1	U	<54.1	U	<54.2	U
Silicon		127	J	94.8	J	83.0	J
Phosphorous		1030		1090		1100	
Manganese		360		378		365	
Nickel		8.39		9.52		9.62	
Silver	0.2	<0.0413	U	<0.0414	U	<0.0413	U
Antimony	0.6	<0.310	U	<0.310	U	<0.310	U
Barium		81.8		85.2		81.1	
Beryllium		0.216		0.262		0.234	
Cadmium		0.0597		0.0986		0.0869	
Chromium	1	6.01		6.37		6.14	
Cobalt		8.97		9.51		9.45	
Copper		12.7		14.0		13.5	
Vanadium		53.2		57.7		57.1	
Zinc		42.0		46.1		43.9	
Lead		4.30		4.84		4.26	
Mercury	0.2	<0.0413	U	<0.0414	U	<0.0413	U
Molybdenum		0.224		0.353		0.262	
Thorium		2.78		3.38		2.43	
Uranium	1	0.692		0.900		0.604	
Arsenic	2.2	3.01		3.52		3.08	
Selenium	1	<0.413	U	<0.414	U	<0.413	U
Thallium	0.5	0.0315	J	0.424	J	0.132	J
Strontium		21.6		22.7		22.1	
Tin		0.330		0.430		0.380	

JJZ 8/10/06

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Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation.

WSCF
ANALYTICAL RESULTS REPORT

Attention: D KLAGES **Group #:** 20060733

Sample #	Client ID		CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
Inorganic														
W060001923	B1HVM6-A	KLAGES	7429-90-5	Aluminum by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.04e+003	38	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7439-89-6	Iron by ICP	SOLID	LA-505-411	J	3.27e+04	ug/g	1.04e+003	34	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7439-95-4	Magnesium by ICP	SOLID	LA-505-411		6.28e+03	ug/g	1.04e+003	16	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7439-96-5	Manganese by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.04e+003	3.1	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-02-0	Nickel by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.04e+003	5.2	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-09-7	Potassium by ICP	SOLID	LA-505-411	U 3/14/06 J	1.00e+03	ug/g	1.04e+003	2.3e+02	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-22-4	Silver by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.04e+003	11	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-23-5	Sodium by ICP	SOLID	LA-505-411	U 3/14/06 J	319	ug/g	1.04e+003	1.2e+02	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-36-0	Antimony by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.04e+003	75	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-39-3	Barium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.04e+003	1.0	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-43-9	Cadmium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.04e+003	3.1	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-47-3	Chromium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.04e+003	7.3	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-48-4	Cobalt by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.04e+003	7.3	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-50-8	Copper by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.04e+003	7.3	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-62-2	Vanadium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.04e+003	15	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-66-6	Zinc by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.04e+003	2.1	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-70-2	Calcium by ICP	SOLID	LA-505-411		9.27e+03	ug/g	1.04e+003	32	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7439-92-1	Lead by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.04e+003	49	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7439-93-2	Lithium by ICP	SOLID	LA-505-411	E	7.93	ug/g	1.04e+003	6.2	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7439-98-7	Molybdenum, ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.04e+003	11	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-24-6	Strontium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.04e+003	1.0	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-28-0	Thallium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.04e+003	78	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-31-5	Tin	SOLID	LA-505-411		see ICP-MS	ug/g	1.04e+003	59	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-32-6	Titanium by ICP	SOLID	LA-505-411		1.87e+03	ug/g	1.04e+003	4.2	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-38-2	Arsenic by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.04e+003	82	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-41-7	Beryllium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.04e+003	1.0	07/25/06	03/14/06	07/10/06

MDL = Minimum Detection Limit
RQ = Result Qualifier

C - The Analyte was found in the Associated Blank.
U - Analyzed for but not detected above limiting criteria.
E - Analyte is an estimate, has potentially larger errors

JR 8/6/06

DF = Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

WSCF
ANALYTICAL RESULTS REPORT

Attention: D KLAGES **Group #:** 20060733

Sample #	Client ID		CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
W060001923	B1HVM6-A	KLAGES	7440-42-8	Boron by ICP	SOLID	LA-505-411	U	< 21.8	ug/g	1.04e+003	22	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-67-7	Zirconium by ICP	SOLID	LA-505-411	U J	< 8.31	ug/g	1.04e+003	8.3	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-69-9	Bismuth by ICP	SOLID	LA-505-411	U	< 55.1	ug/g	1.04e+003	55	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-21-3	Silicon by ICP	SOLID	LA-505-411	J	127	ug/g	1.04e+003	78	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7704-34-9	Sulfur by ICP	SOLID	LA-505-411		NA	ug/g	1.00	0.0	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7723-14-0	Phosphorus by ICP	SOLID	LA-505-411		1.03e+03	ug/g	1.04e+003	98	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7782-49-2	Selenium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.04e+003	53	07/25/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7429-90-5	Aluminum by ICP-MS	SOLID	LA-505-412		5.36e+03	ug/g	1.03	2.06	07/18/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7439-96-5	Manganese by ICP-MS	SOLID	LA-505-412		360	ug/g	1.03	0.0206	07/18/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-02-0	Nickel by ICP-MS	SOLID	LA-505-412		8.39	ug/g	1.03	0.0619	07/18/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-22-4	Silver by ICP-MS	SOLID	LA-505-412	U	< 0.0413	ug/g	1.03	0.0413	07/18/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-36-0	Antimony by ICP-MS	SOLID	LA-505-412	U	< 0.310	ug/g	1.03	0.310	07/18/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-39-3	Barium by ICP-MS	SOLID	LA-505-412		81.8	ug/g	1.03	0.206	07/18/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-41-7	Beryllium by ICP-MS	SOLID	LA-505-412	C	0.216	ug/g	1.03	0.0206	07/18/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-43-9	Cadmium by ICP-MS	SOLID	LA-505-412		0.0597	ug/g	1.03	0.0413	07/18/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-47-3	Chromium by ICP-MS	SOLID	LA-505-412		6.01	ug/g	1.03	0.722	07/18/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-48-4	Cobalt by ICP-MS	SOLID	LA-505-412		8.97	ug/g	1.03	0.0206	07/18/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-50-8	Copper by ICP-MS	SOLID	LA-505-412		12.7	ug/g	1.03	0.206	07/18/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-62-2	Vanadium by ICP-MS	SOLID	LA-505-412		53.2	ug/g	1.03	0.516	07/18/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-66-6	Zinc by ICP-MS	SOLID	LA-505-412		42.0	ug/g	1.03	0.310	07/18/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7439-92-1	Lead by ICP-MS	SOLID	LA-505-412		4.30	ug/g	1.03	0.0516	07/18/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7439-97-6	Mercury by ICP-MS	SOLID	LA-505-412	U	< 0.0413	ug/g	1.03	0.0413	07/18/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7439-98-7	Molybdenum by ICP-MS	SOLID	LA-505-412		0.224	ug/g	1.03	0.103	07/18/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-29-1	Thorium by ICP-MS	SOLID	LA-505-412		2.78	ug/g	1.03	0.0516	07/18/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-61-1	Uranium by ICP-MS	SOLID	LA-505-412	C	0.692	ug/g	1.03	0.0206	07/18/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-38-2	Arsenic by ICP-MS	SOLID	LA-505-412		3.01	ug/g	1.03	1.03	07/18/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7782-49-2	Selenium by ICP-MS	SOLID	LA-505-412	U	< 0.413	ug/g	1.03	0.413	07/18/06	03/14/06	07/10/06

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8/4/06

000013

WSCF
ANALYTICAL RESULTS REPORT

Attention: D KLAGES **Group #:** 20060733

Sample #	Client ID		CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
W060001923	B1HVM6-A	KLAGES	7440-28-0	Thallium by ICP-MS	SOLID	LA-505-412	~~J~~ UQ	0.0315	ug/g	1.03	0.0310	07/18/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-24-6	Strontium by ICP-MS	SOLID	LA-505-412		21.6	ug/g	1.03	0.0310	07/18/06	03/14/06	07/10/06
W060001923	B1HVM6-A	KLAGES	7440-31-5	Tin	SOLID	LA-505-412		0.330	ug/g	1.03	0.0516	07/18/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7429-90-5	Aluminum by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	38	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7439-89-6	Iron by ICP	SOLID	LA-505-411	J	3.46e+04	ug/g	1.02e+003	34	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7439-95-4	Magnesium by ICP	SOLID	LA-505-411		6.64e+03	ug/g	1.02e+003	15	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7439-96-5	Manganese by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	3.1	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-02-0	Nickel by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	5.1	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-09-7	Potassium by ICP	SOLID	LA-505-411	J	1.07e+03	ug/g	1.02e+003	2.2e+02	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-22-4	Silver by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	11	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-23-5	Sodium by ICP	SOLID	LA-505-411	J	341	ug/g	1.02e+003	1.2e+02	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-36-0	Antimony by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	74	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-39-3	Barium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	1.0	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-43-9	Cadmium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	3.1	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-47-3	Chromium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	7.1	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-48-4	Cobalt by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	7.1	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-50-8	Copper by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	7.1	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-62-2	Vanadium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	14	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-66-6	Zinc by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	2.0	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-70-2	Calcium by ICP	SOLID	LA-505-411		9.74e+03	ug/g	1.02e+003	32	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7439-92-1	Lead by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	48	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7439-93-2	Lithium by ICP	SOLID	LA-505-411	E	10.9	ug/g	1.02e+003	6.1	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7439-98-7	Molybdenum, ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	11	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-24-6	Strontium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	1.0	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-28-0	Thallium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	77	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-31-5	Tin	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	58	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-32-6	Titanium by ICP	SOLID	LA-505-411		2.04e+03	ug/g	1.02e+003	4.1	07/25/06	03/14/06	07/10/06

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8/6/06

WSCF
ANALYTICAL RESULTS REPORT

Attention: D KLAGES **Group #:** 20060733

Sample #	Client ID		CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
W060001924	B1HVM8-A	KLAGES	7440-38-2	Arsenic by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	81	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-41-7	Beryllium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	1.0	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-42-8	Boron by ICP	SOLID	LA-505-411	U	< 21.4	ug/g	1.02e+003	21	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-67-7	Zirconium by ICP	SOLID	LA-505-411	U J	< 8.17	ug/g	1.02e+003	8.2	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-69-9	Bismuth by ICP	SOLID	LA-505-411	U	< 54.1	ug/g	1.02e+003	54	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-21-3	Silicon by ICP	SOLID	LA-505-411	E J	94.8	ug/g	1.02e+003	77	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7704-34-9	Sulfur by ICP	SOLID	LA-505-411		NA	ug/g	1.00	0.0	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7723-14-0	Phosphorus by ICP	SOLID	LA-505-411		1.09e+03	ug/g	1.02e+003	96	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7782-49-2	Selenium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	52	07/25/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7429-90-5	Aluminum by ICP-MS	SOLID	LA-505-412		5.70e+03	ug/g	1.03	2.07	07/18/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7439-96-5	Manganese by ICP-MS	SOLID	LA-505-412		378	ug/g	1.03	0.0207	07/18/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-02-0	Nickel by ICP-MS	SOLID	LA-505-412		9.52	ug/g	1.03	0.0620	07/18/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-22-4	Silver by ICP-MS	SOLID	LA-505-412	U	< 0.0414	ug/g	1.03	0.0414	07/18/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-36-0	Antimony by ICP-MS	SOLID	LA-505-412	U	< 0.310	ug/g	1.03	0.310	07/18/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-39-3	Barium by ICP-MS	SOLID	LA-505-412		85.2	ug/g	1.03	0.207	07/18/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-41-7	Beryllium by ICP-MS	SOLID	LA-505-412	C	0.262	ug/g	1.03	0.0207	07/18/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-43-9	Cadmium by ICP-MS	SOLID	LA-505-412		0.0986	ug/g	1.03	0.0414	07/18/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-47-3	Chromium by ICP-MS	SOLID	LA-505-412		6.37	ug/g	1.03	0.724	07/18/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-48-4	Cobalt by ICP-MS	SOLID	LA-505-412		9.51	ug/g	1.03	0.0207	07/18/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-50-8	Copper by ICP-MS	SOLID	LA-505-412		14.0	ug/g	1.03	0.207	07/18/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-62-2	Vanadium by ICP-MS	SOLID	LA-505-412		57.7	ug/g	1.03	0.517	07/18/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-66-6	Zinc by ICP-MS	SOLID	LA-505-412		46.1	ug/g	1.03	0.310	07/18/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7439-92-1	Lead by ICP-MS	SOLID	LA-505-412		4.84	ug/g	1.03	0.0517	07/18/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7439-97-6	Mercury by ICP-MS	SOLID	LA-505-412	U	< 0.0414	ug/g	1.03	0.0414	07/18/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7439-98-7	Molybdenum by ICP-MS	SOLID	LA-505-412		0.353	ug/g	1.03	0.103	07/18/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-29-1	Thorium by ICP-MS	SOLID	LA-505-412		3.38	ug/g	1.03	0.0517	07/18/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-61-1	Uranium by ICP-MS	SOLID	LA-505-412	C	0.900	ug/g	1.03	0.0207	07/18/06	03/14/06	07/10/06

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8/6/06

WSCF
ANALYTICAL RESULTS REPORT

Attention: D KLAGES **Group #:** 20060733

Sample #	Client ID		CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
W060001924	B1HVM8-A	KLAGES	7440-38-2	Arsenic by ICP-MS	SOLID	LA-505-412		3.52	ug/g	1.03	1.03	07/18/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7782-49-2	Selenium by ICP-MS	SOLID	LA-505-412	U	< 0.414	ug/g	1.03	0.414	07/18/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-28-0	Thallium by ICP-MS	SOLID	LA-505-412		0.424	ug/g	1.03	0.0310	07/18/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-24-6	Strontium by ICP-MS	SOLID	LA-505-412		22.7	ug/g	1.03	0.0310	07/18/06	03/14/06	07/10/06
W060001924	B1HVM8-A	KLAGES	7440-31-5	Tin	SOLID	LA-505-412		0.430	ug/g	1.03	0.0517	07/18/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7429-90-5	Aluminum by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	38	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7439-89-6	Iron by ICP	SOLID	LA-505-411	J	3.43e+04	ug/g	1.02e+003	34	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7439-95-4	Magnesium by ICP	SOLID	LA-505-411		6.47e+03	ug/g	1.02e+003	15	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7439-96-5	Manganese by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	3.1	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-02-0	Nickel by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	5.1	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-09-7	Potassium by ICP	SOLID	LA-505-411	J	892	ug/g	1.02e+003	2.2e+02	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-22-4	Silver by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	11	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-23-5	Sodium by ICP	SOLID	LA-505-411	J	317	ug/g	1.02e+003	1.2e+02	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-36-0	Antimony by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	74	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-39-3	Barium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	1.0	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-43-9	Cadmium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	3.1	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-47-3	Chromium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	7.2	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-48-4	Cobalt by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	7.2	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-50-8	Copper by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	7.2	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-62-2	Vanadium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	14	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-66-6	Zinc by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	2.0	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-70-2	Calcium by ICP	SOLID	LA-505-411		9.26e+03	ug/g	1.02e+003	32	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7439-92-1	Lead by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	48	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7439-93-2	Lithium by ICP	SOLID	LA-505-411	E	11.2	ug/g	1.02e+003	6.1	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7439-98-7	Molybdenum, ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	11	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-24-6	Strontium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	1.0	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-28-0	Thallium by ICP	SOLID	LA-505-411	J	see ICP-MS	ug/g	1.02e+003	77	07/25/06	03/14/06	07/10/06

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8/6/06

WSCF
ANALYTICAL RESULTS REPORT

Attention: D KLAGES **Group #:** 20060733

Sample #	Client ID		CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receive
W060001925	B1HVN0-A	KLAGES	7440-31-5	Tin	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	58	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-32-6	Titanium by ICP	SOLID	LA-505-411		2.12e+03	ug/g	1.02e+003	4.1	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-38-2	Arsenic by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	81	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-41-7	Beryllium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	1.0	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-42-8	Boron by ICP	SOLID	LA-505-411	U	< 21.5	ug/g	1.02e+003	21	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-67-7	Zirconium by ICP	SOLID	LA-505-411	U J	< 8.18	ug/g	1.02e+003	8.2	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-69-9	Bismuth by ICP	SOLID	LA-505-411	U	< 54.2	ug/g	1.02e+003	54	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-21-3	Silicon by ICP	SOLID	LA-505-411	E J	83.0	ug/g	1.02e+003	77	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7704-34-9	Sulfur by ICP	SOLID	LA-505-411		NA	ug/g	1.00	0.0	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7723-14-0	Phosphorus by ICP	SOLID	LA-505-411		1.10e+03	ug/g	1.02e+003	96	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7782-49-2	Selenium by ICP	SOLID	LA-505-411		see ICP-MS	ug/g	1.02e+003	52	07/25/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7429-90-5	Aluminum by ICP-MS	SOLID	LA-505-412		5.45e+03	ug/g	1.03	2.07	07/18/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7439-96-5	Manganese by ICP-MS	SOLID	LA-505-412		365	ug/g	1.03	0.0207	07/18/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-02-0	Nickel by ICP-MS	SOLID	LA-505-412		9.62	ug/g	1.03	0.0620	07/18/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-22-4	Silver by ICP-MS	SOLID	LA-505-412	U	< 0.0413	ug/g	1.03	0.0413	07/18/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-36-0	Antimony by ICP-MS	SOLID	LA-505-412	U	< 0.310	ug/g	1.03	0.310	07/18/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-39-3	Barium by ICP-MS	SOLID	LA-505-412		81.1	ug/g	1.03	0.207	07/18/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-41-7	Beryllium by ICP-MS	SOLID	LA-505-412	C	0.234	ug/g	1.03	0.0207	07/18/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-43-9	Cadmium by ICP-MS	SOLID	LA-505-412		0.0869	ug/g	1.03	0.0413	07/18/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-47-3	Chromium by ICP-MS	SOLID	LA-505-412		6.14	ug/g	1.03	0.723	07/18/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-48-4	Cobalt by ICP-MS	SOLID	LA-505-412		9.45	ug/g	1.03	0.0207	07/18/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-50-8	Copper by ICP-MS	SOLID	LA-505-412		13.5	ug/g	1.03	0.207	07/18/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-62-2	Vanadium by ICP-MS	SOLID	LA-505-412		57.1	ug/g	1.03	0.516	07/18/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-66-6	Zinc by ICP-MS	SOLID	LA-505-412		43.9	ug/g	1.03	0.310	07/18/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7439-92-1	Lead by ICP-MS	SOLID	LA-505-412		4.26	ug/g	1.03	0.0516	07/18/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7439-97-6	Mercury by ICP-MS	SOLID	LA-505-412	U	< 0.0413	ug/g	1.03	0.0413	07/18/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7439-98-7	Molybdenum by ICP-MS	SOLID	LA-505-412		0.262	ug/g	1.03	0.103	07/18/06	03/14/06	07/10/06

MDL=Minimum Detection Limit C - The Analyte was found in the Associated Blank. E - Analyte is an estimate, has potentially larger errors

RQ=Result Qualifier U - Analyzed for but not detected above limiting criteria.

8/4/06

DF=Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

WSCF
ANALYTICAL RESULTS REPORT

Attention: D KLAGES **Group #:** 20060733

Sample #	Client ID		CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze	Sample	Receiv
W060001925	B1HVN0-A	KLAGES	7440-29-1	Thorium by ICP-MS	SOLID	LA-505-412		2.43	ug/g	1.03	0.0516	07/18/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-61-1	Uranium by ICP-MS	SOLID	LA-505-412	C	0.604	ug/g	1.03	0.0207	07/18/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-38-2	Arsenic by ICP-MS	SOLID	LA-505-412		3.08	ug/g	1.03	1.03	07/18/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7782-49-2	Selenium by ICP-MS	SOLID	LA-505-412	U	< 0.413	ug/g	1.03	0.413	07/18/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-28-0	Thallium by ICP-MS	SOLID	LA-505-412	~~U~~ J2	0.132	ug/g	1.03	0.0310	07/18/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-24-6	Strontium by ICP-MS	SOLID	LA-505-412		22.1	ug/g	1.03	0.0310	07/18/06	03/14/06	07/10/06
W060001925	B1HVN0-A	KLAGES	7440-31-5	Tin	SOLID	LA-505-412		0.380	ug/g	1.03	0.0516	07/18/06	03/14/06	07/10/06

000018

MDL=Minimum Detection Limit C - The Analyte was found in the Associated Blank. E - Analyte is an estimate, has potentially larger errors

RQ=Result Qualifier U - Analyzed for but not detected above limiting criteria.

JL 8/4/06

DF=Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

Sample Delivery Group	**WSCF20060733**
Sample Matrix	**SOLID**
Sample Visual	**N/A**
SAF Number	**R06-013**
Data Deliverable	**Summary Report**

Introduction

Three (3) soil samples (B1HVM6-A, B1HVM8-A and B1HVN0-A) from the 200-UW-1 Operable Unit Trench were received at the WSCF Laboratory on April 12, 2006. The samples were received in a cool condition with ice present in the coolers. The samples were analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *200-UW-1 Operable Unit Letter of Instruction*, referenced in the cover letter.

All samples were taken using the Multi-Increment Sampling Program, which requires the entire sample submitted to be analyzed.

The narrative (Attachment 1) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 2) includes analytical results, a comment report detailing method abnormalities, method references, and Laboratory QC information. Copies of the chain of custody and sample receipt are included as Attachment 3.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report,* page 27, for a complete listing of approved analytical methods used.

Inorganic Comments

ICP-AES Metals – The holding time for this analysis was met. A Blank, Laboratory Control Sample (LCS), Matrix Spike and Matrix Spike Duplicate were analyzed with this delivery group of less than 20 samples. See pages 14 through 19 for QC details. Analytical Notes:

- Lithium LCS, Matrix Spike and Matrix Spike Duplicate were biased high which resulted in an "E" flag.
- Potassium and Sodium Matrix Spike and Matrix Spike Duplicate were biased high resulting in an "E" flag.
- Silicon Matrix Spike and Matrix Spike Duplicate were low, resulting in an "E" flag.
- Zirconium LCS was biased low resulting in an "E" flag.
- Iron, Calcium, Magnesium, Phosphorous and Titanium sample results were above effective spike range which resulted in "NA" being reported.

Note: Analytes analyzed by both ICP- AES and ICP – MS were not reported for both methods. Data generated by ICP-MS was reported in these cases.

All other QC controls are within the established limits.

ICP-MS Metals – The holding time for this analysis was met, with the exception of mercury. A Blank, Laboratory Control Sample, Matrix Spike and Matrix Spike Duplicate were analyzed with this batch of less than 20 samples. See pages 20 through 24. Analytical Notes:

- Thorium results listed in the report represent Th-232 exclusively.
- Beryllium and Uranium preparation blanks yielded negative values with greater than an absolute value of 5% on the sample result, resulting in "C" flags.

All other QC controls are within the established limits.

This Summary Report is in compliance with the SOW, both technically and for completeness. Release of the data contained in this hard copy report has been authorized by the WSCF Laboratory Analytical Manager and Client Services, as verified by the following signature.

John E. Trechter
WSCF Client Services

Abbreviations

Hg – mercury
IC – ion chromatography
ICP – inductively coupled plasma
ICP/AES – ICP/atomic emission spectroscopy
ICP/MS – ICP/mass spectrometry
Total U – total uranium
AT/TB – total alpha/total beta
AEA – Alpha Energy Analysis
WTPH-G – Total Hydrocarbons-Gasoline
Am – americium
Cm - curium
Pu – plutonium
Np – neptunium
GEA – gamma energy analysis
H3 – Tritium
Sr – Strontium 89, 90
WTPH-D – Total Hydrocarbons-Diesel
TSS – Total Suspended Solids

Fluor Hanford Inc. 7/24	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	R06-013-010	PAGE 1 OF 1

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 9C	DATA TURNAROUND
HOGAN, JG	TRECHTER, JE	373-7046	TRECHTER, JE		
SAMPLING LOCATION	**PROJECT DESIGNATION**		**SAF NO.**	**AIR QUALITY** ☐	15 Days / 15 Days
200-W-42	200-UW-1 Operable Unit, Soil from Trench between 216-U-8 and 216-U-12		R06-013		
ICE CHEST NO. N/A	**FIELD LOGBOOK NO.** N/A	**COA** 121600ES20	**METHOD OF SHIPMENT** GOVERNMENT VEHICLE		
SHIPPED TO Waste Sampling & Characterization	**OFFSITE PROPERTY NO.** N/A		**BILL OF LADING/AIR BILL NO.** N/A		

MATRIX*
OL = OTHER LIQUID
OS = OTHER SOLID
S = SOIL
W = WATER

SPECIAL HANDLING AND/OR STORAGE 20060733

POSSIBLE SAMPLE HAZARDS/ REMARKS

SAMPLE NO.	LAB ID	MATRIX*	SAMPLE DATE	SAMPLE TIME	NO./TYPE CONTAINER(S)	ANALYSIS	PRESERVATION
B1HVM6-A	W06000923	S	3-14-06	0950	5X60mL G/P	ICP Metals - 6010A (Add-on) {B, Bi, La, Li, Si, Sm, Tl} ICP Metals - 6010A (TAL) {Al, Ca, Fe, K, Mg, Na}	Cool 4C
B1HVM6-A		S		0950	5X60mL G/P	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	None
B1HVM8-A	1924	S		1010	5X60mL G/P	ICP Metals - 6010A (Add-on) {B, Bi, La, Li, Si, Sm, Tl} ICP Metals - 6010A (TAL) {Al, Ca, Fe, K, Mg, Na}	Cool 4C
B1HVM8-A		S		1010	5X60mL G/P	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	None
B1HVN0-A	1925	S		1020	5X60mL G/P	ICP Metals - 6010A (Add-on) {B, Bi, La, Li, Si, Sm, Tl} ICP Metals - 6010A (TAL) {Al, Ca, Fe, K, Mg, Na}	Cool 4C
B1HVN0-A		S		1020	5X60mL G/P	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	None

CHAIN OF POSSESSION — **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
DURATEK J. G. HOGAN	0715 7/10/06		07/ 07/10/06

SPECIAL INSTRUCTIONS

Reporting format the same as GPP, including QC. All samples, except VOAs, have been taken using the multiple-increment sampling program. This requires the entire sample provided in each bottle to be used in analysis. VOAs will be analyzed as usual.
(1)ICP/MS - 200.8 (Add-on) {As, Be, Mo, Pb, Se, Sn, Sr, Tl, U} ICP/MS - 200.8 (TAL) {Ag, Ba, Cd, Co, Cr, Cu, Mn, Ni, Sb, V, Zn} ICP/MS - 200.8 (Hg) {Hg} Isotopic Thorium {Th-232}

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

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 200-UW-1			DATA PACKAGE: 60733		
VALIDATOR: TLI		LAB: WSCF		DATE: 8/2/06	
			SDG: 60733		

ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide	200.8	

SAMPLES/MATRIX		
B1HVM6-A	B1HVM8-A	B1HVN0-A
		Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

Technical verification documentation present? ..... Yes No N/A

Comments:

2. INSTRUMENT PERFORMANCE AND CALIBRATIONS (Levels D and E)

Initial calibrations performed on all instruments? ..... Yes No N/A

Initial calibrations acceptable? ..... Yes No N/A

ICP interference checks acceptable? ..... Yes No N/A

ICV and CCV checks performed on all instruments? ..... Yes No N/A

ICV and CCV checks acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Calculation check acceptable? ..... Yes No N/A

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

3. BLANKS (Levels B, C, D, and E)

ICB and CCB checks performed for all applicable analyses? (Levels D, E) ..... Yes No N/A

ICB and CCB results acceptable? (Levels D, E) ..... Yes No N/A

Laboratory blanks analyzed? ..... Yes No N/A

Laboratory blank results acceptable? ..... Yes No N/A

Field blanks analyzed? (Levels C, D, E) ..... Yes No N/A

Field blank results acceptable? (Levels C, D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: no FB

4. ACCURACY (Levels C, D, and E)

MS/MSD samples analyzed? ..... Yes No N/A

MS/MSD results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

LCS/BSS samples analyzed? ..... Yes No N/A

LCS/BSS results acceptable? ..... Yes No N/A

Standards traceable? (Levels D, E) ..... Yes No N/A

Standards expired? (Levels D, E) ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Performance audit sample(s) analyzed? ..... Yes No N/A

Performance audit sample results acceptable? ..... Yes No N/A

Comments: Potasium 133 + 143% – ms/msD – J all no PAS

Sodium 357 + 347% – ms/msD – J all

Silicon 66' + 69% – ms/msD – J all

Iron – 145% LCS – J all

Silica – 259% – LCS – J all

Zirconium 147% LCS J all

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

5. PRECISION (Levels C, D, and E)

Duplicate RPD values acceptable? ..... Yes No N/A

Duplicate results acceptable? ..... Yes No N/A

MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A

MS/MSD standards expired? (Levels D, E) ..... Yes No N/A

Field duplicate RPD values acceptable? ..... Yes No N/A

Field split RPD values acceptable? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: thallium - 37% - J all

6. ICP QUALITY CONTROL (Levels D and E)

ICP serial dilution samples analyzed? ..... Yes No N/A

ICP serial dilution %D values acceptable? ..... Yes No N/A

ICP post digestion spike required? ..... Yes No N/A

ICP post digestion spike values acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

Transcription/calculation errors? ..... Yes No N/A

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

7. FURNACE AA QUALITY CONTROL (Levels D and E)

Duplicate injections performed as required? ..... Yes No N/A

Duplicate injection %RSD values acceptable? ..... Yes No N/A

Analytical spikes performed as required? ..... Yes No N/A

Analytical spike recoveries acceptable? ..... Yes No N/A

Standards traceable? ..... Yes No N/A

Standards expired? ..... Yes No N/A

MSA performed as required? ..... Yes No N/A

MSA results acceptable? ..... Yes No N/A

Transcription/calculation errors? ..... Yes No N/A

Comments: _____

8. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A

Sample holding times acceptable? ..... Yes No N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

Results reported for all requested analyses? ..... Yes No N/A

Results supported in the raw data? (Levels D, E) ..... Yes No N/A

Samples properly prepared? (Levels D, E) ..... Yes No N/A

Detection limits meet RDL? ..... Yes No N/A

Transcription/calculation errors? (Levels D, E) ..... Yes No N/A

Comments: _____

Appendix 6

Additional Documentation Requested by Client

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: 20060733
Matrix: SOLID
Test: ICP Metals Analysis, Grd H20 P

SAF Number: R06-013
Sample Date: 03/14/06
Receive Date:07/10/06

Lab ID: W060001923
BATCH QC ASSOCIATED WITH SAMPLE

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
MS	Aluminum by ICP	7429-90-5	NA	n/a	% Recov	07/25/06	75.000	125.000	
MS	Arsenic by ICP	7440-38-2	NA	n/a	% Recov	07/25/06	75.000	125.000	
MS	Boron by ICP	7440-42-8	226.2	110.882	% Recov	07/25/06	75.000	125.000	
MS	Barium by ICP	7440-39-3	NA	n/a	% Recov	07/25/06	75.000	125.000	
MS	Beryllium by ICP	7440-41-7	NA	n/a	% Recov	07/25/06	75.000	125.000	
MS	Bismuth by ICP	7440-69-9	203.1	99.559	% Recov	07/25/06	75.000	125.000	
MS	Calcium by ICP	7440-70-2	NA	n/a	% Recov	07/25/06	75.000	125.000	
MS	Cadmium by ICP	7440-43-9	NA	n/a	% Recov	07/25/06	75.000	125.000	
MS	Cobalt by ICP	7440-48-4	NA	n/a	% Recov	07/25/06	75.000	125.000	
MS	Chromium by ICP	7440-47-3	NA	n/a	% Recov	07/25/06	75.000	125.000	
MS	Copper by ICP	7440-50-8	NA	n/a	% Recov	07/25/06	75.000	125.000	
MS	Iron by ICP	7439-89-6	NA	n/a	% Recov	07/25/06	75.000	125.000	
MS	Potassium by ICP	7440-09-7	2719	133.284	% Recov	07/25/06	75.000	125.000	
MS	Lithium by ICP	7439-93-2	131.972	129.384	% Recov	07/25/06	70.000	130.000	
MS	Magnesium by ICP	7439-95-4	NA	n/a	% Recov	07/25/06	75.000	125.000	
MS	Manganese by ICP	7439-96-5	NA	n/a	% Recov	07/25/06	75.000	125.000	
MS	Molybdenum, ICP	7439-98-7	NA	n/a	% Recov	07/25/06	75.000	125.000	
MS	Sodium by ICP	7440-23-5	729.3	357.500	% Recov	07/25/06	75.000	125.000	
MS	Nickel by ICP	7440-02-0	NA	n/a	% Recov	07/25/06	75.000	125.000	
MS	Phosphorus by ICP	7723-14-0	NA	n/a	% Recov	07/25/06	70.000	130.000	
MS	Lead by ICP	7439-92-1	NA	n/a	% Recov	07/25/06	75.000	125.000	
MS	Antimony by ICP	7440-36-0	NA	n/a	% Recov	07/25/06	75.000	125.000	
MS	Selenium by ICP	7782-49-2	NA	n/a	% Recov	07/25/06	75.000	125.000	
MS	Silicon by ICP	7440-21-3	134.6	65.980	% Recov	07/25/06	70.000	130.000	
MS	Tin	7440-31-5	NA	n/a	% Recov	07/25/06	75.000	125.000	
MS	Strontium by ICP	7440-24-6	NA	n/a	% Recov	07/25/06	70.000	130.000	

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: 20060733
Matrix: SOLID
Test: ICP Metals Analysis, Grd H20 P

SAF Number: R06-013
Sample Date: 03/14/06
Receive Date:07/10/06

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
MS	Titanium by ICP	7440-32-6	NA	n/a	% Recov	07/25/06	75.000	125.000	
MS	Thallium by ICP	7440-28-0	NA	n/a	% Recov	07/25/06	75.000	125.000	
MS	Vanadium by ICP	7440-62-2	NA	n/a	% Recov	07/25/06	75.000	125.000	
MS	Zinc by ICP	7440-66-6	NA	n/a	% Recov	07/25/06	75.000	125.000	
MS	Zirconium by ICP	7440-67-7	206.6	101.275	% Recov	07/25/06	75.000	125.000	
MSD	Aluminum by ICP	7429-90-5	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Arsenic by ICP	7440-38-2	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Boron by ICP	7440-42-8	238.2	113.429	% Recov	07/25/06	75.000	125.000	
MSD	Barium by ICP	7440-39-3	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Beryllium by ICP	7440-41-7	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Bismuth by ICP	7440-69-9	200.7	95.571	% Recov	07/25/06	75.000	125.000	
MSD	Calcium by ICP	7440-70-2	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Cadmium by ICP	7440-43-9	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Cobalt by ICP	7440-48-4	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Chromium by ICP	7440-47-3	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Copper by ICP	7440-50-8	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Iron by ICP	7439-89-6	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Potassium by ICP	7440-09-7	3017	143.667	% Recov	07/25/06	75.000	125.000	*
MSD	Lithium by ICP	7439-93-2	135.272	128.830	% Recov	07/25/06	75.000	125.000	*
MSD	Magnesium by ICP	7439-95-4	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Manganese by ICP	7439-96-5	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Molybdenum, ICP	7439-98-7	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Sodium by ICP	7440-23-5	730.3	347.762	% Recov	07/25/06	75.000	125.000	*
MSD	Nickel by ICP	7440-02-0	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Phosphorus by ICP	7723-14-0	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Lead by ICP	7439-92-1	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Antimony by ICP	7440-36-0	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Selenium by ICP	7782-49-2	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Silicon by ICP	7440-21-3	144.4	68.762	% Recov	07/25/06	75.000	125.000	*
MSD	Tin	7440-31-5	NA	n/a	% Recov	07/25/06	75.000	125.000	

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: 20060733
Matrix: SOLID
Test: ICP Metals Analysis, Grd H20 P

SAF Number: R06-013
Sample Date: 03/14/06
Receive Date:07/10/06

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
MSD	Strontium by ICP	7440-24-6	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Titanium by ICP	7440-32-6	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Thallium by ICP	7440-28-0	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Vanadium by ICP	7440-62-2	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Zinc by ICP	7440-66-6	NA	n/a	% Recov	07/25/06	75.000	125.000	
MSD	Zirconium by ICP	7440-67-7	214.8	102.286	% Recov	07/25/06	75.000	125.000	
SPK-RPD	Aluminum by ICP	7429-90-5		n/a	RPD	07/25/06	0.000	20.000	
SPK-RPD	Arsenic by ICP	7440-38-2	102.095	4.930	RPD	07/25/06	0.000	20.000	
SPK-RPD	Boron by ICP	7440-42-8	113.429	2.271	RPD	07/25/06	0.000	20.000	
SPK-RPD	Barium by ICP	7440-39-3	130.571	1.059	RPD	07/25/06	0.000	20.000	
SPK-RPD	Beryllium by ICP	7440-41-7	118.952	0.522	RPD	07/25/06	0.000	20.000	
SPK-RPD	Bismuth by ICP	7440-69-9	95.571	4.088	RPD	07/25/06	0.000	20.000	
SPK-RPD	Calcium by ICP	7440-70-2		n/a	RPD	07/25/06	0.000	20.000	
SPK-RPD	Cadmium by ICP	7440-43-9	108.190	0.358	RPD	07/25/06	0.000	20.000	
SPK-RPD	Cobalt by ICP	7440-48-4	107.971	1.924	RPD	07/25/06	0.000	20.000	
SPK-RPD	Chromium by ICP	7440-47-3	114.476	1.305	RPD	07/25/06	0.000	20.000	
SPK-RPD	Copper by ICP	7440-50-8	108.733	1.177	RPD	07/25/06	0.000	20.000	
SPK-RPD	Iron by ICP	7439-89-6		n/a	RPD	07/25/06	0.000	20.000	
SPK-RPD	Potassium by ICP	7440-09-7	143.667	7.498	RPD	07/25/06	0.000	20.000	
SPK-RPD	Lithium by ICP	7439-93-2	128.830	0.429	RPD	07/25/06	0.000	20.000	
SPK-RPD	Magnesium by ICP	7439-95-4		n/a	RPD	07/25/06	0.000	20.000	
SPK-RPD	Manganese by ICP	7439-96-5	125.762	0.608	RPD	07/25/06	0.000	20.000	
SPK-RPD	Molybdenum, ICP	7439-98-7	105.667	1.400	RPD	07/25/06	0.000	20.000	
SPK-RPD	Sodium by ICP	7440-23-5	347.762	2.762	RPD	07/25/06	0.000	20.000	
SPK-RPD	Nickel by ICP	7440-02-0	109.845	1.488	RPD	07/25/06	0.000	20.000	
SPK-RPD	Phosphorus by ICP	7723-14-0		n/a	RPD	07/25/06	0.000	20.000	
SPK-RPD	Lead by ICP	7439-92-1	115.286	3.058	RPD	07/25/06	0.000	20.000	
SPK-RPD	Antimony by ICP	7440-36-0	120.381	13.185	RPD	07/25/06	0.000	20.000	
SPK-RPD	Selenium by ICP	7782-49-2	113.143	3.353	RPD	07/25/06	0.000	20.000	
SPK-RPD	Silicon by ICP	7440-21-3	68.762	4.129	RPD	07/25/06	0.000	20.000	

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: 20060733
Matrix: SOLID
Test: ICP Metals Analysis, Grd H20 P

SAF Number: R06-013
Sample Date: 03/14/06
Receive Date:07/10/06

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
SPK-RPD	Tin	7440-31-5	103.762	4.282	RPD	07/25/06	0.000	20.000	
SPK-RPD	Strontium by ICP	7440-24-6	123.000	0.628	RPD	07/25/06	0.000	20.000	
SPK-RPD	Titanium by ICP	7440-32-6		n/a	RPD	07/25/06	0.000	20.000	
SPK-RPD	Thallium by ICP	7440-28-0	69.619	37.141	RPD	07/25/06	0.000	20.000	
SPK-RPD	Vanadium by ICP	7440-62-2	103.538	6.092	RPD	07/25/06	0.000	20.000	
SPK-RPD	Zinc by ICP	7440-66-6	106.938	0.007	RPD	07/25/06	0.000	20.000	
SPK-RPD	Zirconium by ICP	7440-67-7	102.286	0.993	RPD	07/25/06	0.000	20.000	

BATCH QC

BLANK	Silver by ICP	7440-22-4	<1.1e-2	n/a	ppm	07/25/06			U
BLANK	Aluminum by ICP	7429-90-5	<3.7e-2	n/a	ppm	07/25/06			U
BLANK	Arsenic by ICP	7440-38-2	<7.9e-2	n/a	ppm	07/25/06			U
BLANK	Boron by ICP	7440-42-8	<2.1e-2	n/a	ppm	07/25/06			U
BLANK	Barium by ICP	7440-39-3	<1e-3	n/a	ppm	07/25/06			U
BLANK	Beryllium by ICP	7440-41-7	<1e-3	n/a	ppm	07/25/06			U
BLANK	Bismuth by ICP	7440-69-9	<5.3e-2	n/a	ppm	07/25/06			U
BLANK	Calcium by ICP	7440-70-2	<3.1e-2	n/a	ppm	07/25/06			U
BLANK	Cadmium by ICP	7440-43-9	<3e-3	n/a	ppm	07/25/06			U
BLANK	Cobalt by ICP	7440-48-4	<7e-3	n/a	ppm	07/25/06			U
BLANK	Chromium by ICP	7440-47-3	8.3e-3	0.008	ppm	07/25/06			
BLANK	Copper by ICP	7440-50-8	<7e-3	n/a	ppm	07/25/06			U
BLANK	Iron by ICP	7439-89-6	<3.3e-2	n/a	ppm	07/25/06			U
BLANK	Potassium by ICP	7440-09-7	<0.22	n/a	ppm	07/25/06			U
BLANK	Lithium by ICP	7439-93-2	<6e-3	n/a	ppm	07/25/06			U
BLANK	Magnesium by ICP	7439-95-4	<1.5e-2	n/a	ppm	07/25/06			U
BLANK	Manganese by ICP	7439-96-5	<3e-3	n/a	ppm	07/25/06			U
BLANK	Molybdenum, ICP	7439-98-7	<1.1e-2	n/a	ppm	07/25/06			U
BLANK	Sodium by ICP	7440-23-5	<0.115	n/a	ppm	07/25/06			U
BLANK	Nickel by ICP	7440-02-0	<5e-3	n/a	ppm	07/25/06			U
BLANK	Phosphorus by ICP	7723-14-0	<9.4e-2	n/a	ppm	07/25/06			U

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: 20060733
Matrix: SOLID
Test: ICP Metals Analysis, Grd H20 P

SAF Number: R06-013
Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
BLANK	Lead by ICP	7439-92-1	<4.7e-2	n/a	ppm	07/25/06			U
BLANK	Antimony by ICP	7440-36-0	<7.2e-2	n/a	ppm	07/25/06			U
BLANK	Selenium by ICP	7782-49-2	<5.1e-2	n/a	ppm	07/25/06			U
BLANK	Silicon by ICP	7440-21-3	<7.5e-2	n/a	ppm	07/25/06			U
BLANK	Tin	7440-31-5	<5.7e-2	n/a	ppm	07/25/06			U
BLANK	Strontium by ICP	7440-24-6	<1e-3	n/a	ppm	07/25/06			U
BLANK	Titanium by ICP	7440-32-6	<4e-3	n/a	ppm	07/25/06			U
BLANK	Thallium by ICP	7440-28-0	<7.5e-2	n/a	ppm	07/25/06			U
BLANK	Vanadium by ICP	7440-62-2	<1.4e-2	n/a	ppm	07/25/06			U
BLANK	Zinc by ICP	7440-66-6	3.4e-3	0.003	ppm	07/25/06			
BLANK	Zirconium by ICP	7440-67-7	<8e-3	n/a	ppm	07/25/06			U
LCS	Silver by ICP	7440-22-4	NA	n/a	% Recov	07/25/06	45.000	155.000	
LCS	Aluminum by ICP	7429-90-5	NA	n/a	% Recov	07/25/06	44.000	157.000	
LCS	Arsenic by ICP	7440-38-2	NA	n/a	% Recov	07/25/06	79.000	121.000	
LCS	Boron by ICP	7440-42-8	100.3	102.977	% Recov	07/25/06	45.000	156.000	
LCS	Barium by ICP	7440-39-3	NA	n/a	% Recov	07/25/06	80.000	120.000	
LCS	Beryllium by ICP	7440-41-7	NA	n/a	% Recov	07/25/06	81.000	119.000	
LCS	Bismuth by ICP	7440-69-9	212.2	105.572	% Recov	07/25/06	80.000	120.000	
LCS	Calcium by ICP	7440-70-2	3758	113.193	% Recov	07/25/06	76.000	124.000	
LCS	Cadmium by ICP	7440-43-9	NA	n/a	% Recov	07/25/06	80.000	120.000	
LCS	Cobalt by ICP	7440-48-4	NA	n/a	% Recov	07/25/06	85.000	115.000	
LCS	Chromium by ICP	7440-47-3	NA	n/a	% Recov	07/25/06	77.000	122.000	
LCS	Copper by ICP	7440-50-8	NA	n/a	% Recov	07/25/06	80.000	120.000	
LCS	Iron by ICP	7439-89-6	16290	145.446	% Recov	07/25/06	47.000	152.000	
LCS	Potassium by ICP	7440-09-7	2044	106.458	% Recov	07/25/06	64.000	136.000	
LCS	Lithium by ICP	7439-93-2	7.418	124.463	% Recov	07/25/06	80.000	120.000	
LCS	Magnesium by ICP	7439-95-4	2446	119.902	% Recov	07/25/06	71.000	129.000	
LCS	Manganese by ICP	7439-96-5	NA	n/a	% Recov	07/25/06	76.000	124.000	
LCS	Molybdenum, ICP	7439-98-7	NA	n/a	% Recov	07/25/06	79.000	121.000	
LCS	Sodium by ICP	7440-23-5	520.4	116.944	% Recov	07/25/06	51.000	149.000	

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: 20060733
Matrix: SOLID
Test: ICP Metals Analysis, Grd H20 P

SAF Number: R06-013
Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
LCS	Nickel by ICP	7440-02-0	NA	n/a	% Recov	07/25/06	74.000	121.000	
LCS	Phosphorus by ICP	7723-14-0	427.5	96.719	% Recov	07/25/06	78.000	123.000	
LCS	Lead by ICP	7439-92-1	NA	n/a	% Recov	07/25/06	77.000	123.000	
LCS	Antimony by ICP	7440-36-0	NA	n/a	% Recov	07/25/06	53.000	205.000	
LCS	Selenium by ICP	7782-49-2	NA	n/a	% Recov	07/25/06	74.000	126.000	
LCS	Silicon by ICP	7440-21-3	184.9	25.364	% Recov	07/25/06	80.000	120.000	
LCS	Tin	7440-31-5	NA	n/a	% Recov	07/25/06	80.000	121.000	
LCS	Strontium by ICP	7440-24-6	NA	n/a	% Recov	07/25/06	74.000	126.000	
LCS	Titanium by ICP	7440-32-6	342.2	110.387	% Recov	07/25/06	9.000	191.000	
LCS	Thallium by ICP	7440-28-0	NA	n/a	% Recov	07/25/06	71.000	128.000	
LCS	Vanadium by ICP	7440-62-2	NA	n/a	% Recov	07/25/06	70.000	129.000	
LCS	Zinc by ICP	7440-66-6	NA	n/a	% Recov	07/25/06	77.000	123.000	
LCS	Zirconium by ICP	7440-67-7	27.87	13.866	% Recov	07/25/06	80.000	120.000	

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WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: 20060733
Matrix: SOLID
Test: ICP-2008 MS All possible metal

SAF Number: R06-013
Sample Date: 03/14/06
Receive Date:07/10/06

Lab ID: W060001923
BATCH QC ASSOCIATED WITH SAMPLE

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
MS	Silver by ICP-MS	7440-22-4	211.7	105.850	% Recov	07/18/06	70.000	130.000	
MS	Aluminum by ICP-MS	7429-90-5	1971	98.550	% Recov	07/18/06	70.000	130.000	
MS	Arsenic by ICP-MS	7440-38-2	187.688	93.844	% Recov	07/18/06	70.000	130.000	
MS	Barium by ICP-MS	7440-39-3	223.07	111.535	% Recov	07/18/06	70.000	130.000	
MS	Beryllium by ICP-MS	7440-41-7	210.7841	105.392	% Recov	07/18/06	70.000	130.000	
MS	Cadmium by ICP-MS	7440-43-9	217.04031	108.520	% Recov	07/18/06	70.000	130.000	
MS	Cobalt by ICP-MS	7440-48-4	202.73	101.365	% Recov	07/18/06	70.000	130.000	
MS	Chromium by ICP-MS	7440-47-3	201.994	100.997	% Recov	07/18/06	70.000	130.000	
MS	Copper by ICP-MS	7440-50-8	204.26	102.130	% Recov	07/18/06	70.000	130.000	
MS	Mercury by ICP-MS	7439-97-6	2.362	118.100	% Recov	07/18/06	70.000	130.000	
MS	Manganese by ICP-MS	7439-96-5	160.8	80.400	% Recov	07/18/06	70.000	130.000	
MS	Molybdenum by ICP-MS	7439-98-7	187.7761	93.888	% Recov	07/18/06	70.000	130.000	
MS	Nickel by ICP-MS	7440-02-0	207.914	103.957	% Recov	07/18/06	70.000	130.000	
MS	Lead by ICP-MS	7439-92-1	217.098	108.549	% Recov	07/18/06	70.000	130.000	
MS	Antimony by ICP-MS	7440-36-0	211.9	105.950	% Recov	07/18/06	70.000	130.000	
MS	Selenium by ICP-MS	7782-49-2	187.5	93.750	% Recov	07/18/06	70.000	130.000	
MS	Tin	7440-31-5	224.37	112.185	% Recov	07/18/06	70.000	130.000	
MS	Strontium by ICP-MS	7440-24-6	181.91	90.955	% Recov	07/18/06	70.000	130.000	
MS	Thorium by ICP-MS	7440-29-1	218.317	109.159	% Recov	07/18/06	70.000	130.000	
MS	Thallium by ICP-MS	7440-28-0	213.26853	106.634	% Recov	07/18/06	70.000	130.000	
MS	Uranium by ICP-MS	7440-61-1	214.8075	107.404	% Recov	07/18/06	70.000	130.000	
MS	Vanadium by ICP-MS	7440-62-2	177.17	88.585	% Recov	07/18/06	70.000	130.000	
MS	Zinc by ICP-MS	7440-66-6	200.78	100.390	% Recov	07/18/06	70.000	130.000	
MSD	Silver by ICP-MS	7440-22-4	198.2	99.100	% Recov	07/18/06	70.000	130.000	
MSD	Aluminum by ICP-MS	7429-90-5	1806	90.300	% Recov	07/18/06	70.000	130.000	
MSD	Arsenic by ICP-MS	7440-38-2	176.688	88.344	% Recov	07/18/06	70.000	130.000	

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: 20060733
Matrix: SOLID
Test: ICP-2008 MS All possible metal

SAF Number: R06-013
Sample Date: 03/14/06
Receive Date:07/10/06

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
MSD	Barium by ICP-MS	7440-39-3	199.57	99.785	% Recov	07/18/06	70.000	130.000	
MSD	Beryllium by ICP-MS	7440-41-7	204.1841	102.092	% Recov	07/18/06	70.000	130.000	
MSD	Cadmium by ICP-MS	7440-43-9	207.04031	103.520	% Recov	07/18/06	70.000	130.000	
MSD	Cobalt by ICP-MS	7440-48-4	197.43	98.715	% Recov	07/18/06	70.000	130.000	
MSD	Chromium by ICP-MS	7440-47-3	195.394	97.697	% Recov	07/18/06	70.000	130.000	
MSD	Copper by ICP-MS	7440-50-8	195.96	97.980	% Recov	07/18/06	70.000	130.000	
MSD	Mercury by ICP-MS	7439-97-6	2.23	111.500	% Recov	07/18/06	70.000	130.000	
MSD	Manganese by ICP-MS	7439-96-5	165.4	82.700	% Recov	07/18/06	70.000	130.000	
MSD	Molybdenum by ICP-MS	7439-98-7	178.7761	89.388	% Recov	07/18/06	70.000	130.000	
MSD	Nickel by ICP-MS	7440-02-0	199.514	99.757	% Recov	07/18/06	70.000	130.000	
MSD	Lead by ICP-MS	7439-92-1	206.698	103.349	% Recov	07/18/06	70.000	130.000	
MSD	Antimony by ICP-MS	7440-36-0	200.7	100.350	% Recov	07/18/06	70.000	130.000	
MSD	Selenium by ICP-MS	7782-49-2	178.9	89.450	% Recov	07/18/06	70.000	130.000	
MSD	Tin	7440-31-5	212.97	106.485	% Recov	07/18/06	70.000	130.000	
MSD	Strontium by ICP-MS	7440-24-6	172.71	86.355	% Recov	07/18/06	70.000	130.000	
MSD	Thorium by ICP-MS	7440-29-1	208.317	104.159	% Recov	07/18/06	70.000	130.000	
MSD	Thallium by ICP-MS	7440-28-0	198.56853	99.284	% Recov	07/18/06	70.000	130.000	
MSD	Uranium by ICP-MS	7440-61-1	202.9075	101.454	% Recov	07/18/06	70.000	130.000	
MSD	Vanadium by ICP-MS	7440-62-2	169.57	84.785	% Recov	07/18/06	70.000	130.000	
MSD	Zinc by ICP-MS	7440-66-6	192.28	96.140	% Recov	07/18/06	70.000	130.000	
SPK-RPD	Silver by ICP-MS	7440-22-4	99.100	6.587	RPD	07/18/06	0.000	20.000	
SPK-RPD	Aluminum by ICP-MS	7429-90-5	90.300	8.737	RPD	07/18/06	0.000	20.000	
SPK-RPD	Arsenic by ICP-MS	7440-38-2	88.344	6.038	RPD	07/18/06	0.000	20.000	
SPK-RPD	Barium by ICP-MS	7440-39-3	99.785	11.121	RPD	07/18/06	0.000	20.000	
SPK-RPD	Beryllium by ICP-MS	7440-41-7	102.092	3.181	RPD	07/18/06	0.000	20.000	
SPK-RPD	Cadmium by ICP-MS	7440-43-9	103.520	4.716	RPD	07/18/06	0.000	20.000	
SPK-RPD	Cobalt by ICP-MS	7440-48-4	98.715	2.649	RPD	07/18/06	0.000	20.000	
SPK-RPD	Chromium by ICP-MS	7440-47-3	97.697	3.322	RPD	07/18/06	0.000	20.000	
SPK-RPD	Copper by ICP-MS	7440-50-8	97.980	4.148	RPD	07/18/06	0.000	20.000	
SPK-RPD	Mercury by ICP-MS	7439-97-6	111.500	5.749	RPD	07/18/06	0.000	20.000	

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: 20060733
Matrix: SOLID
Test: ICP-2008 MS All possible metal

SAF Number: R06-013
Sample Date: 03/14/06
Receive Date:07/10/06

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
SPK-RPD	Manganese by ICP-MS	7439-96-5	82.700	2.820	RPD	07/18/06	0.000	20.000	
SPK-RPD	Molybdenum by ICP-MS	7439-98-7	89.388	4.911	RPD	07/18/06	0.000	20.000	
SPK-RPD	Nickel by ICP-MS	7440-02-0	99.757	4.123	RPD	07/18/06	0.000	20.000	
SPK-RPD	Lead by ICP-MS	7439-92-1	103.349	4.908	RPD	07/18/06	0.000	20.000	
SPK-RPD	Antimony by ICP-MS	7440-36-0	100.350	5.429	RPD	07/18/06	0.000	20.000	
SPK-RPD	Selenium by ICP-MS	7782-49-2	89.450	4.694	RPD	07/18/06	0.000	20.000	
SPK-RPD	Tin	7440-31-5	106.485	5.213	RPD	07/18/06	0.000	20.000	
SPK-RPD	Strontium by ICP-MS	7440-24-6	86.355	5.189	RPD	07/18/06	0.000	20.000	
SPK-RPD	Thorium by ICP-MS	7440-29-1	104.159	4.688	RPD	07/18/06	0.000	20.000	
SPK-RPD	Thallium by ICP-MS	7440-28-0	99.284	7.139	RPD	07/18/06	0.000	20.000	
SPK-RPD	Uranium by ICP-MS	7440-61-1	101.454	5.698	RPD	07/18/06	0.000	20.000	
SPK-RPD	Vanadium by ICP-MS	7440-62-2	84.785	4.384	RPD	07/18/06	0.000	20.000	
SPK-RPD	Zinc by ICP-MS	7440-66-6	96.140	4.325	RPD	07/18/06	0.000	20.000	

BATCH QC

BLANK	Silver by ICP-MS	7440-22-4	<4e-2	n/a	ug/L	07/18/06			U
BLANK	Aluminum by ICP-MS	7429-90-5	6.646	6.646	ug/L	07/18/06			
BLANK	Arsenic by ICP-MS	7440-38-2	<1	n/a	ug/L	07/18/06			U
BLANK	Barium by ICP-MS	7440-39-3	<0.2	n/a	ug/L	07/18/06			U
BLANK	Beryllium by ICP-MS	7440-41-7	<2e-2	n/a	ug/L	07/18/06			U
BLANK	Cadmium by ICP-MS	7440-43-9	<4e-2	n/a	ug/L	07/18/06			U
BLANK	Cobalt by ICP-MS	7440-48-4	<2e-2	n/a	ug/L	07/18/06			U
BLANK	Chromium by ICP-MS	7440-47-3	<0.7	n/a	ug/L	07/18/06			U
BLANK	Copper by ICP-MS	7440-50-8	<0.2	n/a	ug/L	07/18/06			U
BLANK	Mercury by ICP-MS	7439-97-6	<4e-2	n/a	ug/L	07/18/06			U
BLANK	Manganese by ICP-MS	7439-96-5	<2e-2	n/a	ug/L	07/18/06			U
BLANK	Molybdenum by ICP-MS	7439-98-7	<0.1	n/a	ug/L	07/18/06			U
BLANK	Nickel by ICP-MS	7440-02-0	<6e-2	n/a	ug/L	07/18/06			U
BLANK	Lead by ICP-MS	7439-92-1	<5e-2	n/a	ug/L	07/18/06			U
BLANK	Antimony by ICP-MS	7440-36-0	<0.3	n/a	ug/L	07/18/06			U

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: 20060733
Matrix: SOLID
Test: ICP-2008 MS All possible metal

SAF Number: R06-013
Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
BLANK	Selenium by ICP-MS	7782-49-2	<0.4	n/a	ug/L	07/18/06			U
BLANK	Tin	7440-31-5	<5e-2	n/a	ug/L	07/18/06			U
BLANK	Strontium by ICP-MS	7440-24-6	<3e-2	n/a	ug/L	07/18/06			U
BLANK	Thorium by ICP-MS	7440-29-1	<5e-2	n/a	ug/L	07/18/06			U
BLANK	Thallium by ICP-MS	7440-28-0	<3e-2	n/a	ug/L	07/18/06			U
BLANK	Uranium by ICP-MS	7440-61-1	<2e-2	n/a	ug/L	07/18/06			U
BLANK	Vanadium by ICP-MS	7440-62-2	<0.5	n/a	ug/L	07/18/06			U
BLANK	Zinc by ICP-MS	7440-66-6	0.3242	0.324	ug/L	07/18/06			
LCS	Silver by ICP-MS	7440-22-4	152	116.923	% Recov	07/18/06	98.000	134.000	
LCS	Aluminum by ICP-MS	7429-90-5	6230	98.576	% Recov	07/18/06	49.000	125.000	
LCS	Arsenic by ICP-MS	7440-38-2	171.8	106.708	% Recov	07/18/06	75.000	134.000	
LCS	Barium by ICP-MS	7440-39-3	262.7	104.246	% Recov	07/18/06	87.000	121.000	
LCS	Beryllium by ICP-MS	7440-41-7	98.14	103.962	% Recov	07/18/06	70.000	153.000	
LCS	Cadmium by ICP-MS	7440-43-9	137.3	107.266	% Recov	07/18/06	95.000	124.000	
LCS	Cobalt by ICP-MS	7440-48-4	35.85	101.847	% Recov	07/18/06	88.000	119.000	
LCS	Chromium by ICP-MS	7440-47-3	71.07	102.259	% Recov	07/18/06	77.000	125.000	
LCS	Copper by ICP-MS	7440-50-8	150.6	101.757	% Recov	07/18/06	84.000	122.000	
LCS	Mercury by ICP-MS	7439-97-6	17.55	103.846	% Recov	07/18/06	71.000	132.000	
LCS	Manganese by ICP-MS	7439-96-5	419.4	102.794	% Recov	07/18/06	83.000	118.000	
LCS	Molybdenum by ICP-MS	7439-98-7	90.32	107.396	% Recov	07/18/06	71.000	130.000	
LCS	Nickel by ICP-MS	7440-02-0	155.2	105.578	% Recov	07/18/06	90.000	121.000	
LCS	Lead by ICP-MS	7439-92-1	150.5	105.986	% Recov	07/18/06	92.000	123.000	
LCS	Antimony by ICP-MS	7440-36-0	103.6	170.115	% Recov	07/18/06	114.000	260.000	
LCS	Selenium by ICP-MS	7782-49-2	72.69	113.224	% Recov	07/18/06	52.000	157.000	
LCS	Tin	7440-31-5	64.61	105.918	% Recov	07/18/06	86.000	123.000	
LCS	Strontium by ICP-MS	7440-24-6	84.48	100.571	% Recov	07/18/06	68.000	123.000	
LCS	Thorium by ICP-MS	7440-29-1	412.4	103.100	% Recov	07/18/06	77.000	121.000	
LCS	Thallium by ICP-MS	7440-28-0	84.24	100.286	% Recov	07/18/06	92.000	123.000	
LCS	Uranium by ICP-MS	7440-61-1	421.2	105.300	% Recov	07/18/06	81.000	125.000	
LCS	Vanadium by ICP-MS	7440-62-2	102.6	105.447	% Recov	07/18/06	81.000	122.000	

WSCF ANALYTICAL LABORATORY QC REPORT

SDG Number: 20060733
Matrix: SOLID
Test: ICP-2008 MS All possible metal

SAF Number: R06-013
Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Analysis Date	Lower Limit	Upper Limit	RQ
LCS	Zinc by ICP-MS	7440-66-6	183	110.909	% Recov	07/18/06	85.000	130.000	

000040

Christian, Bruce

From: Trent, Stephen J [Stephen_J_Trent@RL.gov] **Sent:** Fri 8/4/2006 8:22 AM
To: Christian, Bruce
Cc: Lynch, Sherry A
Subject: IR#1 and IR#2 WSCF20060733
Attachments:

Bruce,

See labs response below for evaluating the units reported in ug/L. For those reported in PPM, that is equivalent to mg/kg. The sample results reported in ug/g is equivalent to mg/kg.

Steve

From: Mix, Pauline D
Sent: Friday, August 04, 2006 8:14 AM
To: Trent, Stephen J
Cc: Dale, Troy F
Subject: FW: Metals: Units for ICP-AES & ICP-MS

Steve

See Bill's explanation below. Call if you have any questions, thx

Pauline D. Mix
WSCF Client Services
Phone 372-1488
Cell 947-0751
FAX 372-0456
MSIN S3-30
Pauline_D_@rl.gov

From: Baird, William W (Bill)
Sent: Thursday, August 03, 2006 4:03 PM
To: Mix, Pauline D
Subject: Metals: Units for ICP-AES & ICP-MS

Pauline: See me re this Friday morning before sending to Steve
Bill

Re: WSCF 20060733 SAF R06-013

Because blanks are run in a clean water matrix, the natural or raw units are typically ug/L (ppb), ug/mL (ppm) or mg/L (also ppm). All of these units are the weight of the analyte per unit volume of the sample.

However, when solid samples are analyzed the sample results are typically reported in ug/g (ppm), mg/Kg (ppm) or ug/Kg (ppb). These units are the weight of the analyte per unit weight of the sample.

Two schools of thought regarding reporting of blanks: Either the raw weight/volume units or after first converting the raw units to weight/weight units.

In this particular case (SAF) we have done both. The BLANK data for the ICP-AES shows units of ppm whereas the same data for the ICP-MS shows units of ug/L (ppb).

Here is the guideline for comparing the BLANK data to the SAMPLE data for both ICP-AES and ICP-MS on this report.

Divide the SAMPLE result by the DF and compare directly to the BLANK result. Disregard units.