0070164

SAF-RC-047
100 & 300 Area Component of the RCBRA Sediment and Tissues
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) H9-02 JDG 7/05/06
INITIAL/DATE

COMMENTS:

SDG K0229 SAF-RC-047

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JUL 12 2006
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Date: 23 June 2006
To: Washington Closure Hanford (technical representative)
From: TechLaw, Inc.
Project: 100 Area and 300 Area Component of the RCBRA Sediment & Tissues
Subject: Radiochemistry - Data Package No. K0229-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0229 prepared by Lionville Laboratory Inc. (LLI). 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	Matrix	Validation	Date
J117R3	2/10/06	Solid	C	See note 1
J117R4	2/10/06	Solid	C	See note 1
J117R5*	2/10/06	Solid	C	See note 1
J117R8	2/10/06	Solid	C	See note 1
J117R9	2/10/06	Solid	C	See note 1
J11869	2/13/06	Solid	C	See note 1
J11870	2/13/06	Solid	C	See note 1
J11871	2/13/06	Solid	C	See note 1
J11872	2/13/06	Solid	C	See note 1
J118B6	2/13/06	Solid	C	See note 2

1 – Total strontium, isotopic thorium, isotopic uranium, gamma spectroscopy.
2 – Total strontium, isotopic thorium, isotopic uranium.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area and 300 Area Component of the RCBRA Sampling & Analysis Plan (DOE/RL-2005-42, Rev. 0, October 2005). 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 Data Requested by Client

DATA QUALITY PARAMETERS

- **Holding Times**

Holding times are calculated from Chain-of-Custody forms to determine the validity of the results. The maximum holding time for radiochemical analysis is 6 months.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Laboratory Blanks

Blank samples are analyzed to determine if positive results are due to laboratory reagent, sample container, or detector contamination. If blank analysis results indicate the presence of an analyte above the minimum detectable activity (MDA), the following qualifiers are applied: All positive sample results less than five times the highest blank concentration are qualified as estimates and flagged "J"; sample results below the MDA are qualified as undetected and flagged "U"; sample results above the MDA and greater than five times the highest blank concentration are not qualified.

All blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is 80-120%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30% and tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

Due to the lack of an LCS analysis, all thorium-228 and thorium-232 results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Laboratory Duplicates**

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of duplicate matrix spike 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 contract required detection limit (CRDL) and the RPD is less than 20%, 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.

All duplicate results were acceptable.

Field Duplicates

No field duplicates were submitted for analysis.

- **Detection Levels**

Reported analytical detection levels for undetected analytes are compared against the 100 & 300 Area RQLs to ensure that laboratory detection levels meet the required criteria. Twenty-nine analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

- **Completeness**

Data package No. K0229 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

Due to the lack of an LCS analysis, all thorium-228 and thorium-232 results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

Twenty-nine analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-2005-42, Rev. 0, October 2005, *100 Area and 300 Area Component of the RCBRA Sampling & Analysis Plan.*

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the WCH statement of work are as follows:

U - Indicates the compound or analyte was analyzed for and not detected above the minimum detectable activity (MDA) in the sample. The value reported is the sample result corrected for sample dilution and moisture content by the laboratory. The data is usable for decision making purposes.

UJ - Indicates the compound or analyte was analyzed for and not detected at concentrations above the minimum detectable activity (MDA) in the sample. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate, but is usable for decision making purposes.

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.

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.

Appendix 2

Summary of Data Qualification

RADIOCHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K0229	REVIEWER: TLT	Project: RCBRA	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Thorium-228 Thorium-232	J	All	No LCS

* - 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: WASHINGTON CLOSURE HANFORD																					
Laboratory: EB																					
Case	SDG: K0229																				
Sample Number		J117R3		J117R4		J117R5		J117R8		J117R9		J11869		J11870		J11871		J11872		J118B6	
Remarks																					
Sample Date		2/10/06		2/10/06		2/10/06		2/10/06		2/10/06		2/13/06		2/13/06		2/13/06		2/13/06		2/13/06	
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Total Strontium	1	0.001	U	0.506		-0.016	U	0.064	U	0.047	U	-0.017	U	0.032	U	-0.070	U	0.044	U	0.007	U
Thorium-228	1	0	UJ	-0.065	UJ	0.236	UJ	0.140	UJ	0	UJ	0.052	UJ	0	UJ	-0.275	UJ	-0.046	UJ	0.152	UJ
Thorium-230		0.068	U	-0.064	U	0.157	U	-0.035	U	0	U	0.052	U	0.041	U	-0.183	U	0	U	-0.076	U
Thorium-232	1	0	UJ	0	UJ	0	UJ	0	UJ	0	UJ	0.052	UJ	0.124	UJ	0.091	UJ	0	UJ	0	UJ
Uranium-233/234	1	0	U	-0.020	U	0.079	U	0.108	U	0.083	U	0.010	U	0.011	U	0.035		0.025	U	0.018	U
Uranium-235	1	0	U	0	U	0	U	0	U	0.100	U	0.013	U	0.013	U	0	U	-0.004	U	-0.011	U
Uranium-238	1	0.016	U	0	U	0.040	U	0.135	U	0.028	U	0.005	U	0.011	U	0.017	U	0.029		0.023	U
Potassium-40		U	U	U	U	2.03		1.60		U	U	U	U	U	U	U	U	4.23		NA	
Cobalt 60	0.05	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	NA	
Cesium 137	0.1	U	U	U	U	U	U	U	U	U	U*	U	U	U	U	U	U	U	U*	NA	
Radium-226		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	NA	
Radium-228		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	NA	
Europium 152	0.1	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	NA	
Europium 154	0.1	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	NA	
Europium 155		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	NA	
Thorium-228		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	NA	
Thorium-232		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	NA	
Uranium-235(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	NA	
Uranium-238(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	NA	
Americium-241		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	NA	
Ruthenium-106		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	NA	
Antimony-125		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	NA	
Beryllium-7		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	NA	
Cesium-134		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	NA	
NA = Not analyzed																					

000010

* - RQL exceeded

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

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0229

R602125-01 J117R3

DATA SHEET

SDG	7391	Client/Case no	Hanford	SDG K0229	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R602125-01	Client sample id	J117R3		
Dept sample id	7391-001	Location/Matrix	300-1, SAMPLE 1	SOLID	
Received	02/17/06	Collected/Weight	02/10/06 09:45	93.7 g	
% solids	100.0	Custody/SAF No	RC-047-130	RC-047	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.001	0.15	0.32	1.0	U	SR
Thorium 228	14274-82-9	0	0.14	0.52	1.0	U J	TH
Thorium 230	14269-63-7	0.068	0.27	0.52	1.0	U	TH
Thorium 232	TH-232	0	0.14	0.52	1.0	U J	TH
Uranium 233/234	U-233/234	0	0.033	0.13	1.0	U	U
Uranium 235	15117-96-1	0	0.040	0.15	1.0	U	U
Uranium 238	U-238	0.016	0.033	0.13	1.0	U	U
Potassium 40	13966-00-2	U		9.4		U	GAM
Cobalt 60	10198-40-0	U		0.082	0.050	U	GAM
Cesium 137	10045-97-3	U		0.072	0.10	U	GAM
Radium 226	13982-63-3	U		0.17	0.10	U	GAM
Radium 228	15262-20-1	U		0.37	0.20	U	GAM
Europium 152	14683-23-9	U		0.18	0.10	U	GAM
Europium 154	15585-10-1	U		0.22	0.10	U	GAM
Europium 155	14391-16-3	U		0.20	0.10	U	GAM
Thorium 228	14274-82-9	U		0.11		U	GAM
Thorium 232	TH-232	U		0.37		U	GAM
Uranium 235	15117-96-1	U		0.27		U	GAM
Uranium 238	U-238	U		8.5		U	GAM
Americium 241	14596-10-2	U		0.23		U	GAM
Beryllium 7	13966-02-4	U		0.59		U	GAM
Ruthenium 106	13967-48-1	U		0.58		U	GAM
Antimony 125	14234-35-6	U		0.15		U	GAM
Cesium 134	13967-70-9	U		0.085		U	GAM

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R 6/22/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/11/06

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SAMPLE DELIVERY GROUP K0229

R602125-02 **J117R4**

DATA SHEET

SDG	7391	Client/Case no	Hanford	SDG K0229	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R602125-02	Client sample id	J117R4		
Dept sample id	7391-002	Location/Matrix	300-1, SAMPLE 2	SOLID	
Received	02/17/06	Collected/Weight	02/10/06 11:30	103.3 g	
% solids	100.0	Custody/SAF No	RC-047-131	RC-047	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.506	0.18	0.25	1.0		SR
Thorium 228	14274-82-9	-0.065	0.13	0.49	1.0	U J	TH
Thorium 230	14269-63-7	-0.064	0.26	0.49	1.0	U	TH
Thorium 232	TH-232	0	0.13	0.49	1.0	U J	TH
Uranium 233/234	U-233/234	-0.020	0.039	0.15	1.0	U	U
Uranium 235	15117-96-1	0	0.048	0.18	1.0	U	U
Uranium 238	U-238	0	0.039	0.15	1.0	U	U
Potassium 40	13966-00-2	U		1.5		U	GAM
Cobalt 60	10198-40-0	U		0.072	0.050	U	GAM
Cesium 137	10045-97-3	U		0.061	0.10	U	GAM
Radium 226	13982-63-3	U		0.12	0.10	U	GAM
Radium 228	15262-20-1	U		0.26	0.20	U	GAM
Europium 152	14683-23-9	U		0.13	0.10	U	GAM
Europium 154	15585-10-1	U		0.17	0.10	U	GAM
Europium 155	14391-16-3	U		0.13	0.10	U	GAM
Thorium 228	14274-82-9	U		0.071		U	GAM
Thorium 232	TH-232	U		0.26		U	GAM
Uranium 235	15117-96-1	U		0.17		U	GAM
Uranium 238	U-238	U		6.3		U	GAM
Americium 241	14596-10-2	U		0.17		U	GAM
Beryllium 7	13966-02-4	U		0.40		U	GAM
Ruthenium 106	13967-48-1	U		0.41		U	GAM
Antimony 125	14234-35-6	U		0.12		U	GAM
Cesium 134	13967-70-9	U		0.065		U	GAM

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K 4/22/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/11/06

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SAMPLE DELIVERY GROUP K0229

R602125-03 J117R5

DATA SHEET

SDG	7391	Client/Case no	Hanford	SDG K0229
Contact	Melissa C. Mannion	Contract	No. 630	
Lab sample id	R602125-03	Client sample id	J117R5	
Dept sample id	7391-003	Location/Matrix	300-1, SAMPLE 3	SOLID
Received	02/17/06	Collected/Weight	02/10/06 12:30	97.8 g
% solids	100.0	Custody/SAF No	RC-047-132	RC-047

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.016	0.14	0.29	1.0	U	SR
Thorium 228	14274-82-9	0.236	0.47	0.75	1.0	U J	TH
Thorium 230	14269-63-7	0.157	0.31	0.60	1.0	U	TH
Thorium 232	TH-232	0	0.16	0.60	1.0	U J	TH
Uranium 233/234	U-233/234	0.079	0.079	0.30	1.0	U	U
Uranium 235	15117-96-1	0	0.096	0.37	1.0	U	U
Uranium 238	U-238	0.040	0.079	0.30	1.0	U	U
Potassium 40	13966-00-2	2.03	0.90	0.69			GAM
Cobalt 60	10198-40-0	U		0.071	0.050	U	GAM
Cesium 137	10045-97-3	U		0.056	0.10	U	GAM
Radium 226	13982-63-3	U		0.10	0.10	U	GAM
Radium 228	15262-20-1	U		0.27	0.20	U	GAM
Europium 152	14683-23-9	U		0.14	0.10	U	GAM
Europium 154	15585-10-1	U		0.18	0.10	U	GAM
Europium 155	14391-16-3	U		0.13	0.10	U	GAM
Thorium 228	14274-82-9	U		0.14		U	GAM
Thorium 232	TH-232	U		0.27		U	GAM
Uranium 235	15117-96-1	U		0.20		U	GAM
Uranium 238	U-238	U		7.0		U	GAM
Americium 241	14596-10-2	U		0.13		U	GAM
Beryllium 7	13966-02-4	U		0.51		U	GAM
Ruthenium 106	13967-48-1	U		0.53		U	GAM
Antimony 125	14234-35-6	U		0.14		U	GAM
Cesium 134	13967-70-9	U		0.066		U	GAM

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4/22/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/11/06

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SAMPLE DELIVERY GROUP K0229

R602125-04 **J117R8**

DATA SHEET

SDG	7391	Client/Case no	Hanford SDG K0229
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R602125-04	Client sample id	J117R8
Dept sample id	7391-004	Location/Matrix	300 AREA ELEVATED SAMP.3 SOLID
Received	02/17/06	Collected/Weight	02/10/06 08:30 90.6 g
% solids	100.0	Custody/SAF No	RC-047-135 RC-047

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.064	0.17	0.33	1.0	U	SR
Thorium 228	14274-82-9	0.140	0.21	0.27	1.0	U J	TH
Thorium 230	14269-63-7	-0.035	0.14	0.27	1.0	U	TH
Thorium 232	TH-232	0	0.070	0.27	1.0	U J	TH
Uranium 233/234	U-233/234	0.108	0.11	0.21	1.0	U	U
Uranium 235	15117-96-1	0	0.065	0.25	1.0	U	U
Uranium 238	U-238	0.135	0.11	0.21	1.0	U	U
Potassium 40	13966-00-2	1.60	0.92	0.68			GAM
Cobalt 60	10198-40-0	U		0.057	0.050	U	GAM
Cesium 137	10045-97-3	U		0.053	0.10	U	GAM
Radium 226	13982-63-3	U		0.097	0.10	U	GAM
Radium 228	15262-20-1	U		0.24	0.20	U	GAM
Europium 152	14683-23-9	U		0.14	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Europium 155	14391-16-3	U		0.12	0.10	U	GAM
Thorium 228	14274-82-9	U		0.079		U	GAM
Thorium 232	TH-232	U		0.24		U	GAM
Uranium 235	15117-96-1	U		0.20		U	GAM
Uranium 238	U-238	U		6.8		U	GAM
Americium 241	14596-10-2	U		0.23		U	GAM
Beryllium 7	13966-02-4	U		0.47		U	GAM
Ruthenium 106	13967-48-1	U		0.51		U	GAM
Antimony 125	14234-35-6	U		0.12		U	GAM
Cesium 134	13967-70-9	U		0.056		U	GAM

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4/22/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/11/06

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SAMPLE DELIVERY GROUP K0229

R602125-05

J117R9

DATA SHEET

SDG	7391	Client/Case no	Hanford SDG K0229
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R602125-05	Client sample id	J117R9
Dept sample id	7391-005	Location/Matrix	300 AREA LOW, SAMPLE 1 SOLID
Received	02/17/06	Collected/Weight	02/10/06 09:00 55.5 g
% solids	100.0	Custody/SAF No	RC-047-136 RC-047

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.047	0.21	0.38	1.0	U	SR
Thorium 228	14274-82-9	0	0.11	0.41	1.0	U J	TH
Thorium 230	14269-63-7	0	0.22	0.41	1.0	U	TH
Thorium 232	TH-232	0	0.11	0.41	1.0	U J	TH
Uranium 233/234	U-233/234	0.083	0.11	0.21	1.0	U	U
Uranium 235	15117-96-1	0.100	0.13	0.26	1.0	U	U
Uranium 238	U-238	0.028	0.055	0.21	1.0	U	U
Potassium 40	13966-00-2	U		1.7		U	GAM
Cobalt 60	10198-40-0	U		0.13	0.050	U	GAM
Cesium 137	10045-97-3	U		0.11	0.10	U	GAM
Radium 226	13982-63-3	U		0.21	0.10	U	GAM
Radium 228	15262-20-1	U		0.46	0.20	U	GAM
Europium 152	14683-23-9	U		0.31	0.10	U	GAM
Europium 154	15585-10-1	U		0.34	0.10	U	GAM
Europium 155	14391-16-3	U		0.22	0.10	U	GAM
Thorium 228	14274-82-9	U		0.14		U	GAM
Thorium 232	TH-232	U		0.46		U	GAM
Uranium 235	15117-96-1	U		0.34		U	GAM
Uranium 238	U-238	U		15		U	GAM
Americium 241	14596-10-2	U		0.21		U	GAM
Beryllium 7	13966-02-4	U		0.95		U	GAM
Ruthenium 106	13967-48-1	U		0.97		U	GAM
Antimony 125	14234-35-6	U		0.27		U	GAM
Cesium 134	13967-70-9	U		0.14		U	GAM

100&300Area Compnt RCBRA Sediment&Ti

6/22/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/11/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0229

R602125-06 J11869

DATA SHEET

SDG	7391	Client/Case no	Hanford	SDG K0229	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R602125-06	Client sample id	J11869		
Dept sample id	7391-006	Location/Matrix	VERNITA BRIDGE #1	SOLID	
Received	02/17/06	Collected/Weight	02/13/06 13:00	88.2 g	
% solids	100.0	Custody/SAF No	RC-047-147	RC-047	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.017	0.15	0.31	1.0	U	SR
Thorium 228	14274-82-9	0.052	0.21	0.40	1.0	U J	TH
Thorium 230	14269-63-7	0.052	0.21	0.40	1.0	U	TH
Thorium 232	TH-232	0.052	0.10	0.40	1.0	U J	TH
Uranium 233/234	U-233/234	0.010	0.031	0.057	1.0	U	U
Uranium 235	15117-96-1	0.013	0.025	0.048	1.0	U	U
Uranium 238	U-238	0.005	0.021	0.050	1.0	U	U
Potassium 40	13966-00-2	U		2.4		U	GAM
Cobalt 60	10198-40-0	U		0.088	0.050	U	GAM
Cesium 137	10045-97-3	U		0.072	0.10	U	GAM
Radium 226	13982-63-3	U		0.17	0.10	U	GAM
Radium 228	15262-20-1	U		0.37	0.20	U	GAM
Europium 152	14683-23-9	U		0.18	0.10	U	GAM
Europium 154	15585-10-1	U		0.22	0.10	U	GAM
Europium 155	14391-16-3	U		0.20	0.10	U	GAM
Thorium 228	14274-82-9	U		0.10		U	GAM
Thorium 232	TH-232	U		0.37		U	GAM
Uranium 235	15117-96-1	U		0.26		U	GAM
Uranium 238	U-238	U		9.0		U	GAM
Americium 241	14596-10-2	U		0.24		U	GAM
Beryllium 7	13966-02-4	U		0.56		U	GAM
Ruthenium 106	13967-48-1	U		0.62		U	GAM
Antimony 125	14234-35-6	U		0.16		U	GAM
Cesium 134	13967-70-9	U		0.083		U	GAM

100&300Area Compnt RCBRA Sediment&Ti

K 6/22/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/11/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0229

R602125-07 J11870

DATA SHEET

SDG	7391	Client/Case no	Hanford	SDG K0229	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R602125-07	Client sample id	J11870		
Dept sample id	7391-007	Location/Matrix	VERNITA BRIDGE #2	SOLID	
Received	02/17/06	Collected/Weight	02/13/06 13:15	82.8 g	
% solids	100.0	Custody/SAF No	RC-047-148	RC-047	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.032	0.16	0.31	1.0	U	SR
Thorium 228	14274-82-9	0	0.17	0.40	1.0	U J	TH
Thorium 230	14269-63-7	0.041	0.17	0.32	1.0	U	TH
Thorium 232	TH-232	0.124	0.17	0.32	1.0	U J	TH
Uranium 233/234	U-233/234	0.011	0.021	0.040	1.0	U	U
Uranium 235	15117-96-1	0.013	0.026	0.049	1.0	U	U
Uranium 238	U-238	0.011	0.021	0.040	1.0	U	U
Potassium 40	13966-00-2	U		2.0		U	GAM
Cobalt 60	10198-40-0	U		0.084	0.050	U	GAM
Cesium 137	10045-97-3	U		0.078	0.10	U	GAM
Radium 226	13982-63-3	U		0.15	0.10	U	GAM
Radium 228	15262-20-1	U		0.34	0.20	U	GAM
Europium 152	14683-23-9	U		0.16	0.10	U	GAM
Europium 154	15585-10-1	U		0.23	0.10	U	GAM
Europium 155	14391-16-3	U		0.18	0.10	U	GAM
Thorium 228	14274-82-9	U		0.095		U	GAM
Thorium 232	TH-232	U		0.34		U	GAM
Uranium 235	15117-96-1	U		0.23		U	GAM
Uranium 238	U-238	U		8.7		U	GAM
Americium 241	14596-10-2	U		0.22		U	GAM
Beryllium 7	13966-02-4	U		0.52		U	GAM
Ruthenium 106	13967-48-1	U		0.53		U	GAM
Antimony 125	14234-35-6	U		0.16		U	GAM
Cesium 134	13967-70-9	U		0.084		U	GAM

100&300Area Compnt RCBRA Sediment&Ti

6/22/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
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Report date	04/11/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0229

R602125-08

J11871

DATA SHEET

SDG	7391	Client/Case no	Hanford	SDG K0229	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R602125-08	Client sample id	J11871		
Dept sample id	7391-008	Location/Matrix	VERNITA BRIDGE #3	SOLID	
Received	02/17/06	Collected/Weight	02/13/06 13:45	87.0 g	
% solids	100.0	Custody/SAF No	RC-047-149	RC-047	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	-0.070	0.15	0.32	1.0	U	SR
Thorium 228	14274-82-9	-0.275	0.37	1.0	1.0	U J	TH
Thorium 230	14269-63-7	-0.183	0.18	0.70	1.0	U	TH
Thorium 232	TH-232	0.091	0.18	0.70	1.0	U J	TH
Uranium 233/234	U-233/234	0.035	0.026	0.033	1.0		U
Uranium 235	15117-96-1	0	0.011	0.040	1.0	U	U
Uranium 238	U-238	0.017	0.026	0.033	1.0	U	U
Potassium 40	13966-00-2	U		1.2		U	GAM
Cobalt 60	10198-40-0	U		0.084	0.050	U	GAM
Cesium 137	10045-97-3	U		0.081	0.10	U	GAM
Radium 226	13982-63-3	U		0.14	0.10	U	GAM
Radium 228	15262-20-1	U		0.29	0.20	U	GAM
Europium 152	14683-23-9	U		0.20	0.10	U	GAM
Europium 154	15585-10-1	U		0.27	0.10	U	GAM
Europium 155	14391-16-3	U		0.15	0.10	U	GAM
Thorium 228	14274-82-9	U		0.095		U	GAM
Thorium 232	TH-232	U		0.29		U	GAM
Uranium 235	15117-96-1	U		0.24		U	GAM
Uranium 238	U-238	U		9.3		U	GAM
Americium 241	14596-10-2	U		0.14		U	GAM
Beryllium 7	13966-02-4	U		0.60		U	GAM
Ruthenium 106	13967-48-1	U		0.68		U	GAM
Antimony 125	14234-35-6	U		0.18		U	GAM
Cesium 134	13967-70-9	U		0.093		U	GAM

100&300Area Compnt RCBRA Sediment&Ti

6/22/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0229

R602125-09 J11872

DATA SHEET

SDG	7391	Client/Case no	Hanford	SDG K0229	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R602125-09	Client sample id	J11872		
Dept sample id	7391-009	Location/Matrix	VERNITA BRIDGE #4	SOLID	
Received	02/17/06	Collected/Weight	02/13/06 14:00	74.1 g	
% solids	100.0	Custody/SAF No	RC-047-150	RC-047	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.044	0.13	0.26	1.0	U	SR
Thorium 228	14274-82-9	-0.046	0.19	0.44	1.0	U J	TH
Thorium 230	14269-63-7	0	0.18	0.35	1.0	U	TH
Thorium 232	TH-232	0	0.092	0.35	1.0	U J	TH
Uranium 233/234	U-233/234	0.025	0.021	0.027	1.0	U	U
Uranium 235	15117-96-1	-0.004	0.009	0.033	1.0	U	U
Uranium 238	U-238	0.029	0.021	0.027	1.0		U
Potassium 40	13966-00-2	4.23	2.0	1.7			GAM
Cobalt 60	10198-40-0	U		0.18	0.050	U	GAM
Cesium 137	10045-97-3	U		0.15	0.10	U	GAM
Radium 226	13982-63-3	U		0.26	0.10	U	GAM
Radium 228	15262-20-1	U		0.62	0.20	U	GAM
Europium 152	14683-23-9	U		0.35	0.10	U	GAM
Europium 154	15585-10-1	U		0.50	0.10	U	GAM
Europium 155	14391-16-3	U		0.32	0.10	U	GAM
Thorium 228	14274-82-9	U		0.19		U	GAM
Thorium 232	TH-232	U		0.62		U	GAM
Uranium 235	15117-96-1	U		0.50		U	GAM
Uranium 238	U-238	U		18		U	GAM
Americium 241	14596-10-2	U		0.32		U	GAM
Beryllium 7	13966-02-4	U		1.2		U	GAM
Ruthenium 106	13967-48-1	U		1.3		U	GAM
Antimony 125	14234-35-6	U		0.38		U	GAM
Cesium 134	13967-70-9	U		0.15		U	GAM

100&300Area Compnt RCBRA Sediment&Ti

6/22/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/11/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0229

R602125-10 **J118B6**

DATA SHEET

SDG	7391	Client/Case no	Hanford SDG K0229
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R602125-10	Client sample id	J118B6
Dept sample id	7391-010	Location/Matrix	VERNITA BRIDGE #1, LIVER SOLID
Received	02/17/06	Collected/Weight	02/13/06 17:00 3.3 g
% solids	100.0	Custody/SAF No	RC-047-169 RC-047

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.007	0.14	0.30	1.0	U	SR
Thorium 228	14274-82-9	0.152	0.15	0.58	1.0	U J	TH
Thorium 230	14269-63-7	-0.076	0.15	0.58	1.0	U	TH
Thorium 232	TH-232	0	0.15	0.58	1.0	U J	TH
Uranium 233/234	U-233/234	0.018	0.027	0.050	1.0	U	U
Uranium 235	15117-96-1	-0.011	0.022	0.053	1.0	U	U
Uranium 238	U-238	0.023	0.027	0.035	1.0	U	U

100&300Area Compnt RCBRA Sediment&Ti

6/22/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/11/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K0229 was composed of ten solid (other solid) samples designated under SAF No. RC-047 with a Project Designation of: 100 & 300 Area Component of the RCBRA Sediment and Ti.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to WCH via e-mail on April 11, 2006.

2.0 ANALYSIS NOTES

2.1 Total Strontium Analysis

No problems were encountered during the course of the analyses.

2.2 Isotopic Thorium Analysis

No problems were encountered during the course of the analyses.

2.3 Isotopic Uranium Analysis

No problems were encountered during the course of the analyses.

2.4 Gamma Spectroscopy

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

"I 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 obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa Mannion

Melissa C. Mannion
Senior Program Manager

4/14/6

Date

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-130	Page 1 of 1

Collector: TILLER, B.	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: 300-1, SAMPLE 1 K0229 (7391)	SAF No.: RC-047	
Ice Chest No.: AFS-04-122	Field Logbook No.: EL-1597/5	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE ~~EBERLINE SERVICES~~ ~~LIONVILLE~~	Offsite Property No.: A060304	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	aG	G/P	G/P	aG	aG	aG					
No. of Container(s)	1	0	0	0	0	0					
Volume	750g	5g	15g	50g	50g	50g					

SAMPLE ANALYSIS				Gamma Spec - (Full List)	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)				
Sample No.	Matrix *	Sample Date	Sample Time										
J117R3	OTHER SOLID	02-10-06	09:45	X		X							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: BRETT TILLER	Date/Time: 02-10-06 1030	Received By/Stored In: EAS LOCKED STORAGE	Date/Time: 02-10-06 1032
Relinquished By/Removed From: EAS LOCKED STORAGE	Date/Time: 02-13-06 0745	Received By/Stored In: RZ Steffler R.J. Steffler	Date/Time: 2-13-06 0745
Relinquished By/Removed From: RZ Steffler R.J. Steffler	Date/Time: 2-13-06 0900	Received By/Stored In: 3728/2A	Date/Time: 2-13-06 / 0900
Relinquished By/Removed From: 3728/2A 2-16-06	Date/Time: 1030	Received By/Stored In: RZ Steffler R.J. Steffler	Date/Time: 2-16-06 1030
Relinquished By/Removed From: RZ Steffler R.J. Steffler	Date/Time: 2-16-06 1600	Received By/Stored In: Fed Ex	Date/Time
Relinquished By/Removed From: FED EX	Date/Time	Received By/Stored In: Rex Killeen	Date/Time: 2/17/06 10:00

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec, ~~Iso-Uranium and Iso-Strontium~~ then transhipto Lionville Labs, if possible maintain 4 C cooling. NOTE: Lionville- contact ~~Rich-Weiss~~ JOAN KESSNER upon receipt.

gamma - Sb125, Be7, Co134, Ru106

mcm 3/23/06

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

0000023

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-130	Page 1 of 1

Collector TILLER, B.	**Company Contact** JOAN KESSNER **Telephone No.** 375-4688	**Project Coordinator** KESSNER, JH	**Price Code** 9N **Data Turnaround** 45 Days
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	**Sampling Location** 300-1, SAMPLE 1 K0229 (7341)	**SAF No.** RC-047	**Air Quality** ☐
Ice Chest No. AFS-04-122	**Field Logbook No.** EL-15976 @ 02-10-06 **COA** BESRAS6520	**Method of Shipment** FED EX	
Shipped To EBERLINE SERVICES/ LIONVILLE	**Offsite Property No.** A060304	**Bill of Lading/Air Bill No.** See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

000024

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	aG	G/P	G/P	aG	aG	aG					
No. of Container(s)	0	1	0	0	0	0					
Volume	750g	5g	15g	50g	50g	50g					
SAMPLE ANALYSIS	Gamma Spec - (Full List)	Strontium-89,90 -- Total Sr; ~~Isotopic Thorium~~; Isotopic Uranium 130 Thorium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)					
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**								
J117R3	OTHER SOLID	02-10-06	09:45	X	X						

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From BRETT TILLER	Date/Time 1030	Received By/Stored In EAS LOCKED STORAGE	Date/Time 1030
Relinquished By/Removed From EAS LOCKED STORAGE	Date/Time 0745	Received By/Stored In RZ Stoffler	Date/Time 0745 2-13-06
Relinquished By/Removed From RZ Stoffler	Date/Time 0900 2-13-06	Received By/Stored In 3728/24	Date/Time 2-13-06 / 0900
Relinquished By/Removed From 3728/24 2-16-06	Date/Time 1030	Received By/Stored In RZ Stoffler	Date/Time 1030 2-16-06
Relinquished By/Removed From RZ Stoffler	Date/Time 1600 2-16-06	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time	Received By/Stored In Alex Keller	Date/Time 2/17/06 AK

SPECIAL INSTRUCTIONS

~~NOTE: Eberline- perform Gamma Spec, Iso Uranium and Iso Strontium then transfer to Lionville Labs, if possible, maintain 4 C cooling.~~ ~~NOTE: Lionville- contact Rich Weiss upon receipt.~~ A/A 21406

gamma- Sb125, Be7, Co134, Ru106.

mcm 3/23/6

Matrix *

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

10:00

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-131	Page 1 of 1

Collector TILLER, B.	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 9N	Data Turnaround 45 Days	Air Quality ☐	
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location 300-1, SAMPLE 2 K0229 (7391)	SAF No. RC-047	
Ice Chest No. AFS-04-122	Field Logbook No. EL-1597 5 2/10 2/14/06	COA BESRAS6520	Method of Shipment FED EX
Shipped To ~~EBERLINE SERVICES~~ EBERLINE LIONVILLE 2/14/06	Offsite Property No. A060304		Bill of Lading/Air Bill No. See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	aG	G/P	G/P	aG	aG	aG					
No. of Container(s)	1	0	0	0	0	0					
Volume	750g	5g	15g	50g	50g	50g					
SAMPLE ANALYSIS	Gamma Spec - (Full List)	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)					

000025

Sample No.	Matrix *	Sample Date	Sample Time									
J117R4	OTHER SOLID	02-10-06	11:30	XX		X						

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
BRETT TILLER	02-10-06 1200	EAS LOCKED STORAGE	02-10-06 1200
EAS LOCKED STORAGE	02-13-06 0745	RZ Steffler	2-13-06 0745
RZ Steffler	2-13-06 0900	3728 / 2A	2-13-06 0900
3728 / 2A	2-16-06 1030	RZ Steffler	2-16-06 1030
RZ Steffler	2-16-06 1600	Fed Ex	
Fed Ex		Alex Kelly	2/17/06 10:00

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec, ~~Iso Uranium and Iso Strontium~~ then tranship to Lionville Labs, if possible maintain 4 C cooling. NOTE: Lionville- contact ~~Rich Weiss~~ JOAN upon receipt.

KESSNER 2/14/06 BOTTLE

gamma - Sb125, Be7, Co134, Ru106

MCM 3/28/06

Matrix *

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-131	Page 1 of 1

Collector: TILLER, B.	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: 300-1, SAMPLE 2 K0229 (7391)	SAF No.: RC-047	
Ice Chest No.: AFS-04-122	Field Logbook No.: EL-1597 5 ICG (E) D2-10-06	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A060304		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	aG	G/P	G/P	aG	aG	aG				
No. of Container(s)	~~1~~ 0	~~0~~ 1	0	0	0	0				
Volume	750g	5g	15g	50g	50g	50g				
SAMPLE ANALYSIS	Gamma Spec - (Full List)	Strontium-89,90 -- Total Sr; ~~Isotopic Thorium~~; Isotopic Uranium ISO THORIUM	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)				
Sample No.	Matrix *	Sample Date	Sample Time								
J117R4	OTHER SOLID	D2-10-06	11:30	X	X						

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
BRETT TILLER	1200 02-10-06	EAS LOCKED STORAGE	1200 02-10-06
EAS LOCKED STORAGE	0745 02-13-06	RZ Stoffler	0745 2-13-06
RZ Stoffler	0900 2-13-06	3728/2A	0900 2-13-06
3728/2A	1070 2-16-06	RZ Stoffler	1070 2-16-06
RZ Stoffler	1600 WXH 2-16-06	FED EX	
FED EX		Rex Kellerd	2/17/06 10:00

SPECIAL INSTRUCTIONS

~~NOTE: Eberline, perform Gamma Spec, Iso Uranium and Iso Strontium then tranship to Lionville Labs, if possible maintain 4 C cooling. NOTE: Lionville contact Rich Weiss upon receipt~~

21406

gamma - Sb125, Be7, Co134, Ru106.

mcm 3/23/6

Matrix *

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

000026

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-132	Page 1 of 1

Collector TILLER, B.	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 9N Data Turnaround 45 Days
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location 300-1, SAMPLE 3 K0229 (7341)		SAF No. RC-047	Air Quality ☐
Ice Chest No. AFS-04-122	Field Logbook No. ICG-(E) EL-1597 5 02-10-06	COA BESRAS6520	Method of Shipment FED EX	
Shipped To EBERLINE SERVICES, LIONVILLE	Offsite Property No. A060304		Bill of Lading/Air Bill No. See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	aG	G/P 02-10-06	G/P	aG	aG	aG				
No. of Container(s)	1	1	0	0	0	0				
Volume	750g	5g	15g	50g	50g	50g				
SAMPLE ANALYSIS	Gamma Spec - (Full List)	Strontium-89,90 -- Total Sr; ~~Isotopic Thorium~~; Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)				
Sample No.	Matrix *	Sample Date	Sample Time							
J117R5	OTHER SOLID	02-10-06	12:30	X	X					
				X	X	ICG 02-10-06				

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
BRETT TILLER	02-10-06 1330	EAS LOCKED STORAGE	02-10-06 1330
EAS LOCKED STORAGE	02-13-06 0745	RZ Steffler	2-13-06 0745
RZ Steffler	2-13-06 0900	3728/2A	2-13-06 0900
RZ Steffler 3728/2A	2-16-06 1030	RZ Steffler	2-16-06 1030
RZ Steffler	2-16-06 1600	Fed Ex	
Fed Ex			2/17/06 10:00

SPECIAL INSTRUCTIONS

~~NOTE: Eberline perform Gamma Spec, Iso Uranium and Iso Strontium then tranship to Lionville Labs, if possible maintain 4 C cooling. Weiss upon receipt.~~ ~~NOTE: Lionville contact Rich~~

SAA 21406

gamma - Sb125, Be7, Co134, Ru106.

mcm 3/23/6

Matrix *

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

000027

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-135	Page 1 of 1

Collector TILLER, B.	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 9N	Data Turnaround 45 Days	Air Quality ☐	
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location 300 AREA ELEVATED, SAMPLE 3 K0229 (7391)	SAF No. RC-047	
Ice Chest No. AFS-04-122	Field Logbook No. EL-1592 5	COA BESRAS6520	Method of Shipment FED EX
Shipped To EBERLINE ~~EBERLINE SERVICES LIONVILLE~~	Offsite Property No. 4060304	Bill of Lading/Air Bill No. See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	aG	G/P	G/P	aG	aG	aG				
No. of Container(s)	1	0	1	0	0	0				
Volume	750g	5g	15g	50g	50g	50g				
SAMPLE ANALYSIS	Gamma Spec - (Full List)	Strontium-89,90 – Total Sr; Isotopic Thorium; Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)				
Sample No. / Matrix * / Sample Date / Sample Time										
J117R8 / OTHER SOLID / ~~02-08-06~~ / ~~1200~~	X		X							
/ / 02-10-06 / 08:30										

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
BRETT TILLER	02-10-06 0900	EAS LOCKED STORAGE	02-10-06 0900
EAS LOCKED STORAGE	02-13-06 0745	R2 Steffler	2-13-06 0745
R2 Steffler	2-13-06 0900	3728 / 2A	2-13-06 / 0900
3728 / 2A	2-16-06 1030	R2 Steffler	2-16-06 1030
R2 Steffler	2-16-06 1600	Fed Ex	
FED EX		Alex Kelly	2/17/06 10:00

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec, ~~Iso-Uranium and Iso-Strontium~~ then tranship to Lionville Labs, if possible maintain 4 C cooling. NOTE: Lionville- contact ~~Richard Weiss~~ JOAN KESSNER upon receipt.

gamma - Sb125, Be7, Co134, Ru106

mm 3/23/06

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

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Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-135	Page 1 of 1

Collector: TILLER, B.	Company Contact: JOAN KESSNER; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 9N; Data Turnaround: 45 Days
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: 300 AREA ELEVATED, SAMPLE 3 K0229 (7391)	SAF No.: RC-047	Air Quality ☐
Ice Chest No.: AFS-04-122	Field Logbook No.: EL-159 15 ICG (E) 02-10-06; COA: BESRAS6520	Method of Shipment: FED EX	
Shipped To: EBERLINE SERVICES, LIONVILLE	Offsite Property No.: A060304	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	aG	G/P	G/P	aG	aG	aG					
No. of Container(s)	1	1	0	0	0	0					
Volume	750g	5g	15g	50g	50g	50g					

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Gamma Spec - (Full List)	Strontium-89,90 -- Total Sr; ~~Isotopic Thorium~~ Isotopic Uranium 120 THORIUM	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)				
J117R8	OTHER SOLID	~~02-08-06~~	~~1200~~	X	X								
		~~02-07-06~~	~~11:15~~										
	ICE (E) 02-10-06	02-10-06	08:30	X	ICE								

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From: BRETT TILLER	Received By/Stored In: EAS LOCKED STORAGE	02-10-06 0900
Relinquished By/Removed From: EAS LOCKED STORAGE	Received By/Stored In: RZ Stettler	02-13-06 0745
Relinquished By/Removed From: RZ Stettler	Received By/Stored In: 3128/2A	2-13-06 0900
Relinquished By/Removed From: 3128/2A	Received By/Stored In: RZ Stettler	2-16-06 1030
Relinquished By/Removed From: RZ Stettler	Received By/Stored In: FED EX	2-16-06 1100
Relinquished By/Removed From: FED EX	Received By/Stored In: Alex Kelleel	2/17/06 10:00

SPECIAL INSTRUCTIONS

~~NOTE: Eberline perform Gamma Spec, Iso Uranium and Iso Strontium then tranship to Lionville Labs, if possible maintain 4 C cooling. Weiss upon receipt~~ ~~NOTE: Lionville contact Rich~~

gamma - Sb125, Be7, Co134, Ru106

mcm 3/23/06

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

000029

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-136	Page 1 of 1

Collector TILLER, B.	**Company Contact** JOAN KESSNER **Telephone No.** 375-4688	**Project Coordinator** KESSNER, JH	**Price Code** 9N **Data Turnaround** 45 Days
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	**Sampling Location** 300 AREA LOW, SAMPLE 1 K0229 (7391)	**SAF No.** RC-047	**Air Quality** ☐
Ice Chest No. AFS-04-122	**Field Logbook No.** EL-1597 5 1/13/2006 **COA** BESRAS6520	**Method of Shipment** FED EX	
Shipped To ~~EBERLINE SERVICES/LIONVILLE~~ EBERLINE 1/13/2006	**Offsite Property No.** A060304	**Bill of Lading/Air Bill No.** See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C 'MATRIX COMPOSED OF FISH"

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	aG	G/P	G/P	aG	aG	aG				
No. of Container(s)	~~1~~ 0 1/13/2006	0	~~1~~ 0 1/13/2006	0	0	0				
Volume	750g	5g	15g	50g	50g	50g				

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	Gamma Spec - (Full List)	Strontium-89,90 – Total Sr; Isotopic Thorium; Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)				
J117R9	OTHER SOLID	02-10-06	09:00	X ~~X~~ 1/10/2006		~~X~~ 1/13/2006							

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
BRETT TILLER	02-10-06 1030	EAS LOCKED STORAGE	02-10-06 1030
EAS LOCKED STORAGE	02-13-06 0745	RZ Steffler	2-13-06 0745
RZ Steffler	2-13-06 0900	3728 / 2A	2-13-06 / 0900
3728 / 2A	2-16-06 1030	RZ Steffler	2-16-06 1030
RZ Steffler	2-16-06 1600	FED EX	
FED EX		Fex Received	2/17/06 10:00

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec, ~~Iso-Uranium and Iso-Strontium~~ then tranship to Lionville Labs, if possible maintain 4 C cooling. ~~Weiss~~ upon receipt.

NOTE: Lionville- contact ~~Rich~~ JOAN KESSNER 1/13 2006

gamma - Sb125, Be7, Co134, Ru106

MCM 5/23/6

Matrix *

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

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Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-136	Page 1 of 1

Collector TILLER, B.	**Company Contact** JOAN KESSNER **Telephone No.** 375-4688	**Project Coordinator** KESSNER, JH	**Price Code** 9N **Data Turnaround** 45 Days
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	**Sampling Location** 300 AREA LOW, SAMPLE 1 K0229 (7391)	**SAF No.** RC-047	**Air Quality** ☐
Ice Chest No. AFS-04-122	**Field Logbook No.** EL-15975 @ 02-10-06 **COA** BESRAS6520	**Method of Shipment** FED EX	
Shipped To EBERLINE SERVICES / LIONVILLE	**Offsite Property No.** A060304	**Bill of Lading/Air Bill No.** See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C 'MATRIX COMPOSED OF FISH"

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	aG	G/P	G/P	aG	aG	aG					
No. of Container(s)	0	1	0	0	0	0					
Volume	750g	5g	15g	50g	50g	50g					
SAMPLE ANALYSIS	Gamma Spec - (Full List) JP 2406	Strontium-89,90 – Total Sr, ~~Isotopic Thorium~~ Isotopic Uranium ISO THORIUM	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)					
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**								
J117R9	OTHER SOLID	02-10-06	09:00	X	X						

0000031

CHAIN OF POSSESSION	Sign/Print Names	
Relinquished By/Removed From BRETT TILLER	Date/Time 02-10-06 1030	Received By/Stored In EAS LOCKED STORAGE	Date/Time 02-10-06 1030
Relinquished By/Removed From EAS LOCKED STORAGE	Date/Time 02-13-06 0745	Received By/Stored In RZ Steffler	Date/Time 2-13-06 0745
Relinquished By/Removed From RZ Steffler	Date/Time 2-13-06 0900	Received By/Stored In 3728/24	Date/Time 2-13-06 0900
Relinquished By/Removed From 3728/24	Date/Time 2-16-06 1030	Received By/Stored In RZ Steffler	Date/Time 2-16-06 1030
Relinquished By/Removed From RZ Steffler	Date/Time 2-16-06 1600	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time	Received By/Stored In Alex Kellel	Date/Time 2/17/06 10:00

SPECIAL INSTRUCTIONS

~~NOTE: Eberline- perform Gamma Spec, Iso Uranium and Iso Strontium then tranship to Lionville Labs, if possible maintain 4 C cooling. NOTE: Lionville- contact Rich Weise upon receipt.~~ JP 2406

gamma- Sb125, Be7, Co134, Ru106

mcm 3/23/06

Matrix *

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-147	Page 1 of 1

Collector TILLER, B.	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 9N
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location VERNITA BRIDGE #1 K0229 (7391)		SAF No. RC-047	Air Quality ☐
Ice Chest No. AFS-04-122	Field Logbook No. EL-15975 p.p. 02-14-06	COA BESRAS6520	Method of Shipment FED EX	
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A060304		Bill of Lading/Air Bill No. SEE OSPC	

Data Turnaround: 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

Preservation	COOL 4C ~~None~~ AJ 2/14/06	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G/P	aG	aG	aG					
No. of Container(s)	1	1	0	0	0	0					
Volume	750g	5g	15g	50g	50g	50g					
SAMPLE ANALYSIS	Gamma Spec - (Full List)	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)					

Sample No.	Matrix *	Sample Date	Sample Time										
J11869	OTHER SOLID	02-13-06	1300	X	X								

000032

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From BRETT TILLER AJ	02-13-06 1430	EAS LOCKED STORAGE AJ	02-13-06 1430
Relinquished By/Removed From EAS JAMES BERNHARD	2-16-06 1000	Received By/Stored In RZ Stoffler RZ Stoffler	2-16-06 1000
Relinquished By/Removed From RZ Stoffler RZ Stoffler	2-16-06 1600	Received By/Stored In FedEx	Date/Time
Relinquished By/Removed From FED EX	Date/Time	Received By/Stored In Rex Kellum	2/17/06 10:00
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec then tranship bottle to Lionville Labs, if possible maintain 4 C cooling.

NOTE: Lionville- contact ~~Rich Weiss~~ JOAN KESSNER upon receipt.

gamma - Sb125, Be7, Co134, Ru106 AJ 2/14/06

MCM 3/23/06

Matrix *

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-148	Page 1 of 1

Collector: TILLER, B.	Company Contact: JOAN KESSNER — Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 9N — Data Turnaround: 45 Days
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: VERNITA BRIDGE #2 K0229 (7391)	SAF No.: RC-047	Air Quality ☐
Ice Chest No.: AFS-04-122	Field Logbook No.: EL-15915 B.T. 02-14-06 — COA: BESRAS6520	Method of Shipment: FED EX	
Shipped To: EBERLINE SERVICES, LIONVILLE	Offsite Property No.: A060304	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

Preservation	COOL 4C ~~None~~ 02-21-06	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G/P	aG	aG	aG					
No. of Container(s)	1	1	0	0	0	0					
Volume	750g	5g	15g	50g	50g	50g					
SAMPLE ANALYSIS	Gamma Spec - (Full List)	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)					
Sample No. / Matrix * / Sample Date / Sample Time											
J11870 / OTHER SOLID / 02-13-06 / 1315	X	X									

0000033

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: BRETT TILLER	02-13-06 1430	Received By/Stored In: EAS LOCKED STORAGE	02-13-06 1430
Relinquished By/Removed From: JAMES BERNHARD EAS I.S.	2-16-06 1600	Received By/Stored In: RZ Stoffler	2-16-06 1600
Relinquished By/Removed From: RZ Stoffler	2-16-06 1600	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: FED EX		Received By/Stored In: Flex Released	2/17/06 10:00
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec then tranship bottle to Lionville Labs, if possible maintain 4 C cooling.

NOTE: Lionville- contact ~~Rich Weiss~~ JOAN KELSNER upon receipt.

gamma - Sb125, Be7, Co154, Ru106 JA 21406

mm 3/23/06

Matrix *

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-149	Page 1 of 1

Collector TILLER, B.	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 9N	Data Turnaround 45 Days	Air Quality ☐	
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location VERNITA BRIDGE #3 K0229 (7391)	SAF No. RC-047	
Ice Chest No. AFS-04-122	Field Logbook No. EL-15975 BT-02-14-06	COA BESRAS6520	Method of Shipment FED EX
Shipped To EBERLINE SERVICES, LIONVILLE	Offsite Property No. A060304		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

Preservation	COOL 4C ~~None~~ AP 21406	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	G/P	G/P	G/P	aG	aG	aG				
No. of Container(s)	1	1	0	0	0	0				
Volume	750g	5g	15g	50g	50g	50g				
SAMPLE ANALYSIS	Gamma Spec - (Full List)	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)				

Sample No.	Matrix *	Sample Date	Sample Time										
J11871	OTHER SOLID	02-13-06	1345	X	X								

000034

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From BRETT TILLER	02-13-06 1430	EAS LOCKED STORAGE	02-13-06 1430
JAMES BERNHARD EBELS	2-16-06 1000	RZ Steffler	2-16-06 1000
RZ Steffler	2-16-06 1600	Fed Ex	
FED EX		Rex Reed	2/17/06 10:00
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec then tranship bottle to Lionville Labs, if possible maintain 4 C cooling.

NOTE: Lionville- contact ~~Rich Weiss~~ JOAN KESSNER upon receipt.

gamma-Sb125, Be7, Co134, Ru106 AP 21406

mcm 8/23/6

Matrix *

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-150	Page 1 of 1

Collector TILLER, B.	**Company Contact** JOAN KESSNER **Telephone No.** 375-4688	**Project Coordinator** KESSNER, JH	**Price Code** 9N **Data Turnaround** 45 Days
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	**Sampling Location** VERNITA BRIDGE #4 K0229 (7391)	**SAF No.** RC-047	**Air Quality** ☐
Ice Chest No. AFS-04-122	**Field Logbook No.** EL-15975 6.T 02-14-06 **COA** BESRAS6520	**Method of Shipment** FED EX	
Shipped To EBERLINE SERVICES LIONVILLE	**Offsite Property No.** A060304	**Bill of Lading/Air Bill No.** SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

Preservation	COOL 4C ~~None~~ AP 2/14/06	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G/P	aG	aG	aG					
No. of Container(s)	1	1	0	0	0	0					
Volume	750g	5g	15g	50g	50g	50g					
SAMPLE ANALYSIS	Gamma Spec - (Full List)	Strontium-89,90 – Total Sr; Isotopic Thorium; Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)					
Sample No. / **Matrix *** / **Sample Date** / **Sample Time**											
J11872 / OTHER SOLID / 02-13-06 / 1400	X	X									

000035

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From BRETT TILLER	1430 02-13-06	EAS LOCKED STORAGE	1430 2-13-06
Relinquished By/Removed From JAMES BERNHARD EAS C.S.	1000 2-16-06	RZ Steffler RZ Steffler	1000 2-16-06
Relinquished By/Removed From RZ Steffler RZ Steffler	1600 2-16-06	Fed Ex	
Relinquished By/Removed From FED EX		Rex Kelley	2/17/06 10:00
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec then tranship bottle to Lionville Labs, if possible maintain 4 C cooling.

NOTE: Lionville- contact ~~Rich Weiss~~ JOAN KESSNER upon receipt.

gamma- Sb125, Be7, Co134, Ru106 AP 2/14/06

mcm 3/23/06

Matrix *

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-169	Page 1 of 1

Collector TILLER, B. / JE Bernhard	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 9N	Data Turnaround 45 Days	Air Quality [ ]	
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location VERNITA BRIDGE #1, LIVER K0229 (7391)		SAF No. RC-047
Ice Chest No. AFS-04-122	Field Logbook No. EL-15975	COA BESRAS6520	Method of Shipment FED EX
Shipped To EBERLINE SERVICES, LIONVILLE	Offsite Property No. A060304		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

Preservation	None	Cool 4C									
Type of Container	G/P	G/P									
No. of Container(s)	1	1									
Volume	5g	15g									
SAMPLE ANALYSIS 1/3 2006	Strontium-89,90 -- Total Sr, ~~Isotopic Thorium~~, Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)									
Sample No. / Matrix * / Sample Date / Sample Time											
J118B6 / OTHER SOLID / 2-14-06 / 1700	X										

CHAIN OF POSSESSION — **Sign/Print Names**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JC JAMES BERNHARD	JC 1800 2-14-06	JC EAS LOCKED STORAGE	1800 2-14-06
EAS L.S. JAMES BERNHARD	1000 2-16-06	RZ Steffler RJ Steffler	1000 2-16-06
RZ Steffler RJ Steffler	1600 2-16-06	Fed Ex	
FED EX		Rex Lelewelly	2/17/06 10:00

SPECIAL INSTRUCTIONS

gamma - Sb125, Be7, Co134, Ru106

mcm 3/23/6

Matrix *

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

000039

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	RCBRA	FISWC	DATA PACKAGE:	K0229	
VALIDATOR:	TLI	LAB: EB		DATE: 6/10/06	
			SDG:	K0229	

ANALYSES PERFORMED

Gross Alpha/Beta	Strontium-90	Technetium-99	Alpha Spectroscopy	Gamma Spectroscopy
Total Uranium	Radium-22	Tritium		

SAMPLES/MATRIX

J117R3	J117R4	J117R5A	J117R8	J117R9
J11864	J11970	~~J11871~~	J11871	J11872	J118D4
				Solid

1. Completeness ..... ☐ N/A

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

Comments: _____

2. Initial Calibration (Levels D, E) ..... ☒ N/A

Instruments/detectors calibrated? ..... Yes No N/A

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

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

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

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

Comments: _____

3. Continuing Calibration (Levels D, E) ☒ N/A

Calibration checked within required frequency? ..... Yes No N/A

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

Calibration check standards traceable? ..... Yes No N/A

Calibration check standards expired? ..... Yes No N/A

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

Comments: _____

4. Background Counts (Levels D, E) ..... ☒ N/A

Background Counts checked within required frequency? ..... Yes No N/A

Background Counts acceptable? ..... Yes No N/A

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

Comments: _____

5. Blanks (Levels B, C, D, E) ..... ☐ N/A

Method blank analyzed within required frequency? ..... Yes No N/A

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

Analytes detected in method blank? ..... Yes No N/A

Field blank(s) analyzed? ..... Yes No N/A

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

Analytes detected in field blank(s)? ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: _____

6. Laboratory Control Samples or Blank Spike Samples (Levels C, D, E) ..... ☐ N/A

LCS /BSS analyzed within required frequency? ..... Yes No N/A

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

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

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

LCS/BSS levels correct? (Levels D,E) ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: no th 228 or 232 LCS - J all

7. Chemical Carrier Recovery (Levels C, D, E) ..... ☒ N/A

Chemical carrier added? ..... Yes No N/A

Chemical recovery acceptable? ..... Yes No N/A

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

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

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

Comments: _____

8. Tracer Recovery (Levels C, D, E) ..... ☐ N/A

Tracer added? ..... Yes No N/A

Tracer recovery acceptable? ..... Yes No N/A

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

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

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

Comments: _____

9. Matrix Spikes (Levels C, D, E) ..... ☒ N/A

Matrix spike analyzed? ..... Yes No N/A

Spike recoveries acceptable? ..... Yes No N/A

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

Spike source expired? Levels D, E) ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: _____

10. Duplicates (Levels C, D, E) ..... ☐ N/A

Duplicates Analyzed at required frequency? ..... Yes No N/A

RPD Values Acceptable? ..... Yes No N/A

Transcription/Calculation Errors? (Levels D, E) ..... Yes No N/A

Comments: ~~potassium = 40 = 36.9 = [illegible] 11/01~~

11. Field QC Samples (Levels C, D E) ..... ☐ N/A

Field duplicate sample(s) analyzed? ..... Yes No N/A

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

Field split sample(s) analyzed? ..... Yes No N/A

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

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

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

Comments: no Field QC

12. Holding Times (All levels)

Are sample holding times acceptable? ..... Yes No N/A

Comments:

13. Results and Detection Limits (All Levels) ☐ N/A

Results reported for all required sample analyses? Yes No N/A

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

Results Acceptable? (Levels D, E) Yes No N/A

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

MDA's meet required detection limits? Yes No N/A

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

Comments: 29 over

Appendix 6

Additional Documentation Requested by Client

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0229

R602125-12 **Method Blank**

METHOD BLANK

SDG	7391	Client/Case no	Hanford	SDG_K0229	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R602125-12	Client sample id	Method Blank		
Dept sample id	7391-012	Material/Matrix		SOLID	
		SAF No	RC-047		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Strontium	SR-RAD	0.022	0.15	0.29	1.0	U	SR
Thorium 228	14274-82-9	-0.117	0.70	1.6	1.0	U	TH
Thorium 230	14269-63-7	0.233	0.47	0.89	1.0	U	TH
Thorium 232	TH-232	0	0.23	0.89	1.0	U	TH
Uranium 233/234	U-233/234	0.008	0.023	0.036	1.0	U	U
Uranium 235	15117-96-1	0	0.018	0.035	1.0	U	U
Uranium 238	U-238	-0.008	0.015	0.036	1.0	U	U
Potassium 40	13966-00-2	U		0.43		U	GAM
Cobalt 60	10198-40-0	U		0.027	0.050	U	GAM
Cesium 137	10045-97-3	U		0.023	0.10	U	GAM
Radium 226	13982-63-3	U		0.047	0.10	U	GAM
Radium 228	15262-20-1	U		0.11	0.20	U	GAM
Europium 152	14683-23-9	U		0.061	0.10	U	GAM
Europium 154	15585-10-1	U		0.083	0.10	U	GAM
Europium 155	14391-16-3	U		0.055	0.10	U	GAM
Thorium 228	14274-82-9	U		0.034		U	GAM
Thorium 232	TH-232	U		0.11		U	GAM
Uranium 235	15117-96-1	U		0.083		U	GAM
Uranium 238	U-238	U		2.9		U	GAM
Americium 241	14596-10-2	U		0.060		U	GAM
Beryllium 7	13966-02-4	U		0.19		U	GAM
Ruthenium 106	13967-48-1	U		0.21		U	GAM
Antimony 125	14234-35-6	U		0.061		U	GAM
Cesium 134	13967-70-9	U		0.031		U	GAM

100&300Area Compnt RCBRA Sediment&Ti

QC-BLANK #56171

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/11/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0229

R602125-11

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7391

Contact Melissa C. Mannion

Client/Case no Hanford SDG K0229

Contract No. 630

Lab sample id R602125-11

Dept sample id 7391-011

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No RC-047

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Strontium	9.66	0.52	0.28	1.0		SR	9.83	0.39	98	82-118	80-120
Thorium 230	43.5	5.8	0.47	1.0		TH	40.4	1.6	108	76-124	80-120
Uranium 233/234	17.3	0.66	0.30	1.0		U	18.6	0.74	93	89-111	80-120
Uranium 235	14.4	0.59	0.027	1.0		U	15.1	0.60	95	89-111	80-120
Uranium 238	18.2	0.68	0.28	1.0		U	20.2	0.81	90	90-110	80-120
Cobalt 60	1.08	0.11	0.062	0.050		GAM	1.23	0.049	88	75-125	80-120
Cesium 137	1.15	0.10	0.080	0.10		GAM	1.25	0.050	92	75-125	80-120

100&300Area Compnt RCBRA Sediment&Ti

QC-LCS #56170

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 04/11/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0229

R602125-13

J11870

DUPLICATE

SDG	7391			Client/Case no	Hanford SDG K0229
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R602125-13	Lab sample id	R602125-07	Client sample id	J11870
Dept sample id	7391-013	Dept sample id	7391-007	Location/Matrix	VERNITA BRIDGE #2 SOLID
		Received	02/17/06	Collected/Weight	02/13/06 13:15 82.8 g
% solids	100.0	% solids	100.0	Custody/SAF No	RC-047-148 RC-047

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Total Strontium	-0.104	0.11	0.26	1.0	U	SR	0.032	0.16	0.31	U	-		1.4
Thorium 228	-0.080	0.32	0.89	1.0	U	TH	0	0.17	0.40	U	-		0.4
Thorium 230	0	0.16	0.61	1.0	U	TH	0.041	0.17	0.32	U	-		0.4
Thorium 232	0.160	0.16	0.61	1.0	U	TH	0.124	0.17	0.32	U	-		0.3
Uranium 233/234	0.031	0.031	0.030	1.0		U	0.011	0.021	0.040	U	95	268	1.1
Uranium 235	-0.005	0.009	0.036	1.0	U	U	0.013	0.026	0.049	U	-		1.3
Uranium 238	0.016	0.016	0.030	1.0	U	U	0.011	0.021	0.040	U	-		0.4
Potassium 40	1.39	0.78	0.58			GAM	U		2.0	U	36	193	0.6
Cobalt 60	U		0.055	0.050	U	GAM	U		0.084	U	-		0.6
Cesium 137	U		0.049	0.10	U	GAM	U		0.078	U	-		0.6
Radium 226	U		0.095	0.10	U	GAM	U		0.15	U	-		0.6
Radium 228	U		0.23	0.20	U	GAM	U		0.34	U	-		0.5
Europium 152	U		0.12	0.10	U	GAM	U		0.16	U	-		0.4
Europium 154	U		0.16	0.10	U	GAM	U		0.23	U	-		0.5
Europium 155	U		0.12	0.10	U	GAM	U		0.18	U	-		0.5
Thorium 228	U		0.072		U	GAM	U		0.095	U	-		0.4
Thorium 232	U		0.23		U	GAM	U		0.34	U	-		0.5
Uranium 235	U		0.17		U	GAM	U		0.23	U	-		0.4
Uranium 238	U		5.9		U	GAM	U		8.7	U	-		0.5
Americium 241	U		0.13		U	GAM	U		0.22	U	-		0.7
Beryllium 7	U		0.43		U	GAM	U		0.52	U	-		0.3
Ruthenium 106	U		0.45		U	GAM	U		0.53	U	-		0.2
Antimony 125	U		0.12		U	GAM	U		0.16	U	-		0.4
Cesium 134	U		0.064		U	GAM	U		0.084	U	-		0.4

100&300Area Compnt RCBRA Sediment&Ti

QC-DUP#7 56172

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	04/11/06

Date: 23 June 2006
To: Washington Closure Hanford (technical representative)
From: TechLaw, Inc.
Project: 100 Area and 300 Area Component of the RCBRA Sediment & Tissues
Subject: Inorganics - Data Package No. K0229-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0229 prepared by Lionville Laboratory Inc. (LLI). 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	Matrix	Validation	Date
J117R3	2/10/06	Solid	C	See note 1
J117R4	2/10/06	Solid	C	See note 1
J117R5A	2/10/06	Solid	C	See note 1
J117R8	2/10/06	Solid	C	See note 1
J117R9	2/10/06	Solid	C	See note 1
J11869	2/13/06	Solid	C	See note 1
J11870	2/13/06	Solid	C	See note 1
J11871	2/13/06	Solid	C	See note 1
J11872	2/13/06	Solid	C	See note 1
J117R5	2/10/06	Solid	C	See note 1
J118B6	2/14/06	Solid	C	See note 1
J118B7	2/14/06	Solid	C	See note 1
J118C0	2/14/06	Solid	C	See note 1
J118C1	2/14/06	Solid	C	See note 1 *

1 – ICP metals by 6010B and mercury by 7471A.
* No mercury analysis.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area and 300 Area Component of the RCBRA Sampling & Analysis Plan (DOE/RL-2005-42, Rev. 0, October 2005). 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 acceptable.

- **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.

Due to method blank contamination, all detected tin results were qualified as an estimate and flagged "UJ".

Due to method blank contamination, the titanium result in sample J118B7 was qualified as an estimate and flagged "UJ".

Due to method blank contamination, the chromium, copper and lithium results in samples J117R3, J117R4, J117R5A, J117R8, J117R9, J11869, J11870, J11871 and J11872 were qualified as estimates and flagged "UJ".

Due to method blank contamination, the silicon result in samples J117R3,

J117R4, J117R5A, J117R8, J117R9, J11869 and J11870 were qualified as estimates and flagged "UJ".

All other preparation blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data . The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 80% to 120%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 79% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 120% or less than 80% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 120% and a sample result less than the IDL, no qualification is required.

Due to a matrix spike recovery outside QC limits (53.8%), all zinc result in samples J117R5, J118B6, J118B7, J118C0 and J118C1 were qualified as estimates and flagged "J".

Due to a matrix spike recovery outside QC limits, the calcium (135%) and iron (60.8%) result in samples J117R3, J117R4, J117R5A, J117R8, J117R9, J11869, J11870, J11871 and J11872 were qualified as estimates and flagged "J".

Due to matrix spike recoveries outside QC limits (65% & 61%), all zirconium result were qualified as an estimate and flagged "J".

Due to LCS recoveries outside QC limits (64% & 36%), all silicon result were qualified as an estimate and flagged "J".

All other accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of 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 RPDS outside QC limits (30.8% & 142%), all zinc results were qualified as estimates and flagged "J".

All other laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 and 300 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data package No. K0229 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 method blank contamination, all detected tin results were qualified as an estimate and flagged "UJ".

- Due to method blank contamination, the titanium result in sample J118B7 was qualified as an estimate and flagged "UJ".

- Due to method blank contamination, the chromium, copper and lithium results in samples J117R3, J117R4, J117R5A, J117R8, J117R9, J11869, J11870, J11871 and J11872 were qualified as estimates and flagged "UJ".

- Due to method blank contamination, the silicon result in samples J117R3, J117R4, J117R5A, J117R8, J117R9, J11869 and J11870 were qualified as estimates and flagged "UJ".

- Due to a matrix spike recovery outside QC limits (53.8%), all zinc result in samples J117R5, J118B6, J118B7, J118C0 and J118C1 were qualified as estimates and flagged "J".

- Due to a matrix spike recovery outside QC limits, the calcium (135%) and iron (60.8%) result in samples J117R3, J117R4, J117R5A, J117R8, J117R9, J11869, J11870, J11871 and J11872 were qualified as estimates and flagged "J".

- Due to matrix spike recoveries outside QC limits (65% & 61%), all zirconium result were qualified as an estimate and flagged "J".

- Due to LCS recoveries outside QC limits (64% & 36%), all silicon result were qualified as an estimate and flagged "J".

- Due to RPDs outside QC limits (30.8% & 142%), all zinc results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, 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

WCH, Contract #20266, *Validation Statement of Work*, Washington Closure Hanford Incorporated, July 7, 2003.

DOE/RL-2005-42, Rev. 0, October 2005, *100 Area and 300 Area Component of the RCBRA Sampling & Analysis Plan*.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with WCH 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: K0229	REVIEWER: [illegible]	[illegible]	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Tin	UJ	All detected	Blank contamination
Titanium	UJ	J118B7	Blank contamination
Chromium Copper Lithium	UJ	J117R3, J117R4 J117R5A, J117R8 J117R9, J11869 J117870, J11871 J11872	Blank contamination
Silicon	UJ	J117R3, J117R4 J117R5A, J117R8 J117R9, J11869 J117870	Blank contamination
Zinc	J	J117R5, J118B6 J118B7, J118C0 J118C1	Matrix spike recovery
Calcium Iron	J	J117R3, J117R4 J117R5A, J117R8 J117R9, J11869 J117870, J11871 J11872	Matrix spike recovery
Zirconium	J	All	MS recovery
Silicon	J	All	LCS recovery
Zinc	J	All	RPD

* - 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: WASHINGTON CLOSURE HANFORD																			
Laboratory: LLI	SDG: K0229																		
Sample Number		J117R3		J117R4		J117R5A		J117R8		J117R9		J11869		J11870		J11871		J11872	
Remarks																			
Sample Date		2/10/06		2/10/06		2/10/06		2/10/06		2/10/06		2/13/06		2/13/06		2/13/06		2/13/06	
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Silver	1	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07		0.07	U	0.07	U	0.07	U
Aluminum	5	15.1		15.7		7.4		8.5		6.9		15.9		23.7		53.7		52.5	
Arsenic	10	0.58	U	0.59	U	0.58	U	0.57	U	0.59	U	0.58	U	0.58	U	0.59	U	0.58	U
Boron		0.23	U	0.32		0.23	U	0.22	U	0.23	U	0.23	U	0.23	U	0.23	U	0.23	U
Barium	2	2.3		2.5		3.4		3.5		2.7		3.7		3.7		3.7		4.1	
Beryllium	0.05	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U
Bismuth		0.49	U	0.50	U	0.48	U	0.48	U	0.49	U	0.48	U	0.49	U	0.49	U	0.48	U
Calcium		6090	J	6080	J	9700	J	10500	J	7750	J	9750	J	8790	J	8500	J	7180	J
Cadmium	0.5	0.11		0.09		0.10		0.09		0.17		0.15		0.17		0.35		0.28	
Cobalt		0.13	U	0.14	U	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U	0.13	U
Chromium		0.63	UJ	0.37	UJ	0.40	UJ	0.42	UJ	0.34	UJ	0.45	UJ	0.42	UJ	0.57	UJ	0.57	UJ
Copper	1	1.4	UJ	1.6	UJ	1.1	UJ	1.4	UJ	1.1	UJ	0.91	UJ	1.0	UJ	1.0	UJ	1.0	UJ
Iron	5	56.4	J	45.9	J	19.6	J	25.6	J	21.0	J	38.8	J	73.0	J	111	J	118	J
Mercury	0.2	0.02		0.02	U	0.02		0.05	U	0.02		0.02	U	0.01	U	0.02		0.02	U
Potassium		2180		2150		1980		1930		2020		2110		2140		2150		2090	
Lithium	2	0.06	UJ	0.05	UJ	0.05	UJ	0.05	UJ	0.05	UJ	0.06	UJ	0.05	UJ	0.09	UJ	0.1	UJ
Magnesium		225		222		262		279		235		244		308		301		252	
Manganese	5	4.1		3.7		3.6		3.6		3.1		4.7		6.3		6.6		8.4	
Molybdenum		0.28	U	0.28	U	0.27	U	0.27	U	0.28	U	0.27	U	0.28	U	0.28	U	0.27	U
Sodium		889		890		1040		957		1010		944		955		1000		965	
Nickel	40	0.42		0.23	U	0.23	U	0.36		0.23	U	0.23	U	0.45		0.40		0.23	U
Phosphorous		4520		4520		6290		6720		5360		6220		6290		5970		5300	
Lead	5	0.30		0.33		0.39		0.29	U	0.43		0.42		0.49		0.41		0.47	
Antimony	6	0.42	U	0.43	U	0.41	U	0.41	U	0.42	U	0.41	U	0.42	U	0.42	U	0.41	U
Selenium		0.68		0.77		0.60		0.61		0.83		0.76		0.58		0.73		0.78	
Silicon		24.2	UJ	27.7	UJ	21.2	UJ	29.1	UJ	22.8	UJ	26.7	UJ	37.4	UJ	46.9	J	64.2	J
Tin	5	1.1	UJ	1.0	U	1.0	U	1.1	UJ	1.0	U	1.0	U	1.0	U	1.1	UJ	1.0	U
Titanium		1.9		1.5		0.18		0.40		0.27		1.2		3.4		3.5		3.9	
Thallium		0.67	U	0.68	U	0.66	U	0.65	U	0.67	U	0.66	U	0.67	U	0.67	U	0.66	U
Uranium	30	0.84	U	0.85	U	0.83	U	0.82	U	0.85	U	0.83	U	0.84	U	0.85	U	0.83	U
Vanadium	2.5	0.19		0.11		0.08	U	0.13		0.09	U	0.14		0.19		0.21		0.32	
Zinc	1	31.1	J	24.9	J	37.6	J	44.6	J	46.8	J	27.2	J	29.6	J	32.4	J	33.0	J
Zirconium		1.0	UJ	1.0	UJ	1.0	UJ	0.99	UJ	1.0	UJ	1.0	UJ	1.0	UJ	1.0	UJ	1.0	UJ

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.

Project: WASHINGTON CLOSURE HANFORD																			
Laboratory: LLI	SDG: K0229																		
Sample Number		J117R5		J118B6		J118B7		J118C0		J118C1									
Remarks																			
Sample Date		2/10/06		2/14/06		2/14/06		2/14/06		2/14/06									
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Silver	1	0.14	U	0.14	U	0.14	U	0.14	U	0.21	U								
Aluminum	5	9.4		21.7		1.8	U	8.6		5.9									
Arsenic	10	1.0		0.81		1.2		0.77		1.3									
Boron		0.26	U	0.27	U	0.26	U	0.27	U	0.40	U								
Barium	2	3.5		0.26		0.16		0.44		0.35									
Beryllium	0.05	0.01		0.01		0.03		0.02		0.04									
Bismuth		0.59	U	0.60	U	0.60	U	0.60	U	0.90	U								
Calcium		9680		186		163		248		229									
Cadmium	0.5	0.08		1.4		0.83		1.3		0.65									
Cobalt		0.12	U	0.14		0.12	U	0.12	U	0.18	U								
Chromium		0.36		9.2		0.18		0.31		0.87									
Copper	1	1.6		6.2		4.9		1.5		1.3									
Iron	5	34.7		118		51.2		94.4		89.9									
Mercury	0.2	0.03		0.04		0.02		0.08	U	NA									
Potassium		2080		2290		1780		2860		2650									
Lithium	2	0.1		0.08		0.06		0.07		0.08									
Magnesium		305		210		167		212		198									
Manganese	5	4.4		3.5		2.0		2.1		2.6									
Molybdenum		0.13	U	0.54		0.16		0.19		0.47									
Sodium		1100		1150		1180		1580		1180									
Nickel	40	0.13	U	4.4		0.13	U	0.18		0.19	U								
Phosphorous		5930		3080		2450		3350		2750									
Lead	5	0.30	U	0.31	U	0.30	U	0.31	U	0.46	U								
Antimony	6	0.39	U	0.40	U	0.39	U	0.40	U	0.59	U								
Selenium		0.56		1.2		1.2		2.1		1.6									
Silicon		17.5	J	13.8	J	5.2	J	13.9	J	14.4	J								
Tin	5	0.95	UJ	1.1	UJ	1.0	UJ	0.60	UJ	0.79	UJ								
Titanium		1.5		0.93		0.14	UJ	0.67		0.73									
Thallium		0.62	U	0.63	U	0.63	U	0.63	U	0.94	U								
Uranium	30	2.0	U	2.0	U	2.0	U	2.0	U	3.0	U								
Vanadium	2.5	0.09	U	0.15		0.09	U	0.09		0.13	U								
Zinc	1	53.2	J	24.5	J	21.5	J	74.9	J	61.7	J								
Zirconium		0.52	UJ	0.71	J	0.53	UJ	0.53	UJ	0.79	UJ								
NA = Not analyzed																			

000013

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.

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/28/06

CLIENT: TNUHANFORD RC-047 K0229 LVL LOT #: 0603L379

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J117R3	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	15.1	MG/KG	2.2	1.0
		Arsenic, Total	0.58 u	MG/KG	0.58	1.0
		Boron, Total	0.23 u	MG/KG	0.23	1.0
		Barium, Total	2.3	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.49 u	MG/KG	0.49	1.0
		Calcium, Total	6090 J	MG/KG	2.1	1.0
		Cadmium, Total	0.11	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.63 UJ	MG/KG	0.12	1.0
		Copper, Total	1.4 UJ	MG/KG	0.21	1.0
		Iron, Total	56.4 J	MG/KG	0.51	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	2180	MG/KG	73.4	1.0
		Lithium, Total	0.06 UJ	MG/KG	0.03	1.0
		Magnesium, Total	225	MG/KG	3.7	1.0
		Manganese, Total	4.1	MG/KG	0.30	1.0
		Molybdenum, Total	0.28 u	MG/KG	0.28	1.0
		Sodium, Total	889	MG/KG	2.4	1.0
		Nickel, Total	0.42	MG/KG	0.23	1.0
		Phosphorus, Total	4520	MG/KG	0.86	1.0
		Lead, Total	0.30	MG/KG	0.30	1.0
		Antimony, Total	0.42 u	MG/KG	0.42	1.0
		Selenium, Total	0.68	MG/KG	0.45	1.0
		Silicon, Total	24.2 UJ	MG/KG	2.2	1.0
		Tin, Total	1.1 UJ	MG/KG	1.0	1.0
		Titanium, Total	1.9	MG/KG	0.03	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	0.84 u	MG/KG	0.84	1.0
		Vanadium, Total	0.19	MG/KG	0.09	1.0
		Zinc, Total	31.1 J	MG/KG	0.15	1.0
		Zirconium, Total	1.0 u J	MG/KG	1.0	1.0

Rd 22/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/28/06

CLIENT: TNUHANFORD RC-047 K0229 LVL LOT #: 0603L379

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J117R4	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	15.7	MG/KG	2.3	1.0
		Arsenic, Total	0.59 u	MG/KG	0.59	1.0
		Boron, Total	0.32	MG/KG	0.23	1.0
		Barium, Total	2.5	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.50 u	MG/KG	0.50	1.0
		Calcium, Total	6080 J	MG/KG	2.1	1.0
		Cadmium, Total	0.09	MG/KG	0.07	1.0
		Cobalt, Total	0.14 u	MG/KG	0.14	1.0
		Chromium, Total	0.37 UJ	MG/KG	0.13	1.0
		Copper, Total	1.6 UJ	MG/KG	0.21	1.0
		Iron, Total	45.9 J	MG/KG	0.52	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	2150	MG/KG	74.9	1.0
		Lithium, Total	0.05 UJ	MG/KG	0.03	1.0
		Magnesium, Total	222	MG/KG	3.8	1.0
		Manganese, Total	3.7	MG/KG	0.31	1.0
		Molybdenum, Total	0.28 u	MG/KG	0.28	1.0
		Sodium, Total	890	MG/KG	2.4	1.0
		Nickel, Total	0.23 u	MG/KG	0.23	1.0
		Phosphorus, Total	4520	MG/KG	0.87	1.0
		Lead, Total	0.33	MG/KG	0.30	1.0
		Antimony, Total	0.43 u	MG/KG	0.43	1.0
		Selenium, Total	0.77	MG/KG	0.46	1.0
		Silicon, Total	27.7 UJ	MG/KG	2.2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Titanium, Total	1.5	MG/KG	0.03	1.0
		Thallium, Total	0.68 u	MG/KG	0.68	1.0
		Uranium, Total	0.85 u	MG/KG	0.85	1.0
		Vanadium, Total	0.11	MG/KG	0.09	1.0
		Zinc, Total	24.9 J	MG/KG	0.16	1.0
		Zirconium, Total	1.0 uJ	MG/KG	1.0	1.0

R 4/22/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/28/06

CLIENT: TNUHANFORD RC-047 K0229 LVL LOT #: 0603L379

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J117R5-A	Silver, Total	0.07 u	MG/KG	0.07	1.0
	JK 4/26/06	Aluminum, Total	7.4	MG/KG	2.2	1.0
		Arsenic, Total	0.58 u	MG/KG	0.58	1.0
		Boron, Total	0.23 u	MG/KG	0.23	1.0
		Barium, Total	3.4	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.48 u	MG/KG	0.48	1.0
		Calcium, Total	9700 J	MG/KG	2.1	1.0
		Cadmium, Total	0.10	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.40 UJ	MG/KG	0.12	1.0
		Copper, Total	1.1 UJ	MG/KG	0.21	1.0
		Iron, Total	19.6 J	MG/KG	0.51	1.0
		Mercury, Total	0.02	MG/KG	0.02	1.0
		Potassium, Total	1980	MG/KG	72.7	1.0
		Lithium, Total	0.05 UJ	MG/KG	0.03	1.0
		Magnesium, Total	262	MG/KG	3.7	1.0
		Manganese, Total	3.6	MG/KG	0.30	1.0
		Molybdenum, Total	0.27 u	MG/KG	0.27	1.0
		Sodium, Total	1040	MG/KG	2.4	1.0
		Nickel, Total	0.23 u	MG/KG	0.23	1.0
		Phosphorus, Total	6290	MG/KG	0.85	1.0
		Lead, Total	0.39	MG/KG	0.29	1.0
		Antimony, Total	0.41 u	MG/KG	0.41	1.0
		Selenium, Total	0.60	MG/KG	0.44	1.0
		Silicon, Total	21.2 UJ	MG/KG	2.1	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Titanium, Total	0.18	MG/KG	0.03	1.0
		Thallium, Total	0.66 u	MG/KG	0.66	1.0
		Uranium, Total	0.83 u	MG/KG	0.83	1.0
		Vanadium, Total	0.08 u	MG/KG	0.08	1.0
		Zinc, Total	37.6 J	MG/KG	0.15	1.0
		Zirconium, Total	1.0 UJ	MG/KG	1.0	1.0

4/22/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/28/06

CLIENT: TNUHANFORD RC-047 K0229 LVL LOT #: 0603L379

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	J117R8	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	8.5	MG/KG	2.2	1.0
		Arsenic, Total	0.57 u	MG/KG	0.57	1.0
		Boron, Total	0.22 u	MG/KG	0.22	1.0
		Barium, Total	3.5	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.48 u	MG/KG	0.48	1.0
		Calcium, Total	10500 J	MG/KG	2.0	1.0
		Cadmium, Total	0.09	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.42 UJ	MG/KG	0.12	1.0
		Copper, Total	1.4 UJ	MG/KG	0.21	1.0
		Iron, Total	25.6 J	MG/KG	0.50	1.0
		Mercury, Total	0.05	MG/KG	0.01	1.0
		Potassium, Total	1930	MG/KG	72.1	1.0
		Lithium, Total	0.05 UJ	MG/KG	0.03	1.0
		Magnesium, Total	279	MG/KG	3.7	1.0
		Manganese, Total	3.6	MG/KG	0.30	1.0
		Molybdenum, Total	0.27 u	MG/KG	0.27	1.0
		Sodium, Total	957	MG/KG	2.3	1.0
		Nickel, Total	0.36	MG/KG	0.22	1.0
		Phosphorus, Total	6720	MG/KG	0.84	1.0
		Lead, Total	0.29 u	MG/KG	0.29	1.0
		Antimony, Total	0.41 u	MG/KG	0.41	1.0
		Selenium, Total	0.61	MG/KG	0.44	1.0
		Silicon, Total	29.1 UJ	MG/KG	2.1	1.0
		Tin, Total	1.1 UJ	MG/KG	1.0	1.0
		Titanium, Total	0.40	MG/KG	0.03	1.0
		Thallium, Total	0.65 u	MG/KG	0.65	1.0
		Uranium, Total	0.82 u	MG/KG	0.82	1.0
		Vanadium, Total	0.13	MG/KG	0.08	1.0
		Zinc, Total	44.6 J	MG/KG	0.15	1.0
		Zirconium, Total	0.99 uJ	MG/KG	0.99	1.0

6/22/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/28/06

CLIENT: TNUHANFORD RC-047 K0229 LVL LOT #: 0603L379

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	J117R9	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	6.9	MG/KG	2.3	1.0
		Arsenic, Total	0.59 u	MG/KG	0.59	1.0
		Boron, Total	0.23 u	MG/KG	0.23	1.0
		Barium, Total	2.7	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.49 u	MG/KG	0.49	1.0
		Calcium, Total	7750 J	MG/KG	2.1	1.0
		Cadmium, Total	0.17	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.34 UJ	MG/KG	0.12	1.0
		Copper, Total	1.1 UJ	MG/KG	0.21	1.0
		Iron, Total	21.0 J	MG/KG	0.52	1.0
		Mercury, Total	0.02	MG/KG	0.02	1.0
		Potassium, Total	2020	MG/KG	74.1	1.0
		Lithium, Total	0.05 UJ	MG/KG	0.03	1.0
		Magnesium, Total	235	MG/KG	3.8	1.0
		Manganese, Total	3.1	MG/KG	0.31	1.0
		Molybdenum, Total	0.28 u	MG/KG	0.28	1.0
		Sodium, Total	1010	MG/KG	2.4	1.0
		Nickel, Total	0.23 u	MG/KG	0.23	1.0
		Phosphorus, Total	5360	MG/KG	0.86	1.0
		Lead, Total	0.43	MG/KG	0.30	1.0
		Antimony, Total	0.42 u	MG/KG	0.42	1.0
		Selenium, Total	0.83	MG/KG	0.45	1.0
		Silicon, Total	22.8 UJ	MG/KG	2.2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Titanium, Total	0.27	MG/KG	0.03	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	0.85 u	MG/KG	0.85	1.0
		Vanadium, Total	0.09 u	MG/KG	0.09	1.0
		Zinc, Total	46.8 J	MG/KG	0.15	1.0
		Zirconium, Total	1.0 uJ	MG/KG	1.0	1.0

6/22/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/28/06

CLIENT: TNUHANFORD RC-047 K0229 LVL LOT #: 0603L379

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	J11869	Silver, Total	0.07	MG/KG	0.07	1.0
		Aluminum, Total	15.9	MG/KG	2.2	1.0
		Arsenic, Total	0.58 u	MG/KG	0.58	1.0
		Boron, Total	0.23 u	MG/KG	0.23	1.0
		Barium, Total	3.7	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.48 u	MG/KG	0.48	1.0
		Calcium, Total	9750 J	MG/KG	2.1	1.0
		Cadmium, Total	0.15	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.45 UJ	MG/KG	0.12	1.0
		Copper, Total	0.91 UJ	MG/KG	0.21	1.0
		Iron, Total	38.8 J	MG/KG	0.51	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	2110	MG/KG	72.7	1.0
		Lithium, Total	0.06 UJ	MG/KG	0.03	1.0
		Magnesium, Total	244	MG/KG	3.7	1.0
		Manganese, Total	4.7	MG/KG	0.30	1.0
		Molybdenum, Total	0.27 u	MG/KG	0.27	1.0
		Sodium, Total	944	MG/KG	2.4	1.0
		Nickel, Total	0.23 u	MG/KG	0.23	1.0
		Phosphorus, Total	6220	MG/KG	0.85	1.0
		Lead, Total	0.42	MG/KG	0.29	1.0
		Antimony, Total	0.41 u	MG/KG	0.41	1.0
		Selenium, Total	0.76	MG/KG	0.44	1.0
		Silicon, Total	26.7 UJ	MG/KG	2.1	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Titanium, Total	1.2	MG/KG	0.03	1.0
		Thallium, Total	0.66 u	MG/KG	0.66	1.0
		Uranium, Total	0.83 u	MG/KG	0.83	1.0
		Vanadium, Total	0.14	MG/KG	0.08	1.0
		Zinc, Total	27.2 J	MG/KG	0.15	1.0
		Zirconium, Total	1.0 uJ	MG/KG	1.0	1.0

6/22/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/28/06

CLIENT: TNUHANFORD RC-047 K0229 LVL LOT #: 0603L379

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	J11870	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	23.7	MG/KG	2.2	1.0
		Arsenic, Total	0.58 u	MG/KG	0.58	1.0
		Boron, Total	0.23 u	MG/KG	0.23	1.0
		Barium, Total	3.7	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.49 u	MG/KG	0.49	1.0
		Calcium, Total	6790 J	MG/KG	2.1	1.0
		Cadmium, Total	0.17	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.42 UJ	MG/KG	0.12	1.0
		Copper, Total	1.0 UJ	MG/KG	0.21	1.0
		Iron, Total	73.0 J	MG/KG	0.51	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	2140	MG/KG	73.4	1.0
		Lithium, Total	0.05 UJ	MG/KG	0.03	1.0
		Magnesium, Total	308	MG/KG	3.7	1.0
		Manganese, Total	6.3	MG/KG	0.30	1.0
		Molybdenum, Total	0.28 u	MG/KG	0.28	1.0
		Sodium, Total	955	MG/KG	2.4	1.0
		Nickel, Total	0.45	MG/KG	0.23	1.0
		Phosphorus, Total	6290	MG/KG	0.86	1.0
		Lead, Total	0.49	MG/KG	0.30	1.0
		Antimony, Total	0.42 u	MG/KG	0.42	1.0
		Selenium, Total	0.58	MG/KG	0.45	1.0
		Silicon, Total	37.4 UJ	MG/KG	2.2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Titanium, Total	3.4	MG/KG	0.03	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	0.84 u	MG/KG	0.84	1.0
		Vanadium, Total	0.19	MG/KG	0.09	1.0
		Zinc, Total	29.6 J	MG/KG	0.15	1.0
		Zirconium, Total	1.0 uJ	MG/KG	1.0	1.0

6/22/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/28/06

CLIENT: TNUHANFORD RC-047 K0229 LVL LOT #: 0603L279

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-008	J11871	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	53.7	MG/KG	2.3	1.0
		Arsenic, Total	0.59 u	MG/KG	0.59	1.0
		Boron, Total	0.23 u	MG/KG	0.23	1.0
		Barium, Total	3.7	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.49 u	MG/KG	0.49	1.0
		Calcium, Total	8500 J	MG/KG	2.1	1.0
		Cadmium, Total	0.35	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.57 UJ	MG/KG	0.12	1.0
		Copper, Total	1.0 UJ	MG/KG	0.21	1.0
		Iron, Total	111 J	MG/KG	0.52	1.0
		Mercury, Total	0.02	MG/KG	0.01	1.0
		Potassium, Total	2150	MG/KG	74.1	1.0
		Lithium, Total	0.09 UJ	MG/KG	0.03	1.0
		Magnesium, Total	301	MG/KG	3.8	1.0
		Manganese, Total	6.6	MG/KG	0.31	1.0
		Molybdenum, Total	0.28 u	MG/KG	0.28	1.0
		Sodium, Total	1000	MG/KG	2.4	1.0
		Nickel, Total	0.40	MG/KG	0.23	1.0
		Phosphorus, Total	5970	MG/KG	0.86	1.0
		Lead, Total	0.41	MG/KG	0.30	1.0
		Antimony, Total	0.42 u	MG/KG	0.42	1.0
		Selenium, Total	0.73	MG/KG	0.45	1.0
		Silicon, Total	46.9 J	MG/KG	2.2	1.0
		Tin, Total	1.1 UJ	MG/KG	1.0	1.0
		Titanium, Total	3.5	MG/KG	0.03	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	0.85 u	MG/KG	0.85	1.0
		Vanadium, Total	0.21	MG/KG	0.09	1.0
		Zinc, Total	32.4 J	MG/KG	0.15	1.0
		Zirconium, Total	1.0 uJ	MG/KG	1.0	1.0

4/26/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/28/06

CLIENT: TNUHANFORD RC-047 K0229 LVL LOT #: 0603L379

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	J11872	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	52.5	MG/KG	2.2	1.0
		Arsenic, Total	0.58 u	MG/KG	0.58	1.0
		Boron, Total	0.23 u	MG/KG	0.23	1.0
		Barium, Total	4.1	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.48 u	MG/KG	0.48	1.0
		Calcium, Total	7180 J	MG/KG	2.1	1.0
		Cadmium, Total	0.28	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.57 UJ	MG/KG	0.12	1.0
		Copper, Total	1.0 UJ	MG/KG	0.21	1.0
		Iron, Total	118 J	MG/KG	0.51	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	2090	MG/KG	72.7	1.0
		Lithium, Total	0.1 UJ	MG/KG	0.03	1.0
		Magnesium, Total	252	MG/KG	3.7	1.0
		Manganese, Total	8.4	MG/KG	0.30	1.0
		Molybdenum, Total	0.27 u	MG/KG	0.27	1.0
		Sodium, Total	965	MG/KG	2.4	1.0
		Nickel, Total	0.23 u	MG/KG	0.23	1.0
		Phosphorus, Total	5300	MG/KG	0.85	1.0
		Lead, Total	0.47	MG/KG	0.29	1.0
		Antimony, Total	0.41 u	MG/KG	0.41	1.0
		Selenium, Total	0.78	MG/KG	0.44	1.0
		Silicon, Total	64.2 J	MG/KG	2.1	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Titanium, Total	3.9	MG/KG	0.03	1.0
		Thallium, Total	0.66 u	MG/KG	0.66	1.0
		Uranium, Total	0.83 u	MG/KG	0.83	1.0
		Vanadium, Total	0.32	MG/KG	0.08	1.0
		Zinc, Total	33.0 J	MG/KG	0.15	1.0
		Zirconium, Total	1.0 uJ	MG/KG	1.0	1.0

4/26/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/28/06

CLIENT: TNUHANFORD RC-047 K0229 LVL LOT #: 0602L299

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J117R5	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Aluminum, Total	9.4	MG/KG	1.8	1.0
		Arsenic, Total	1.0	MG/KG	0.33	1.0
		Boron, Total	0.26 u	MG/KG	0.26	1.0
		Barium, Total	3.5	MG/KG	0.02	1.0
		Beryllium, Total	0.01	MG/KG	0.01	1.0
		Bismuth, Total	0.59 u	MG/KG	0.59	1.0
		Calcium, Total	9680	MG/KG	1.2	1.0
		Cadmium, Total	0.08	MG/KG	0.07	1.0
		Cobalt, Total	0.12 u	MG/KG	0.12	1.0
		Chromium, Total	0.36	MG/KG	0.16	1.0
		Copper, Total	1.6	MG/KG	0.12	1.0
		Iron, Total	34.7	MG/KG	3.1	1.0
		Mercury, Total	0.03	MG/KG	0.02	1.0
		Potassium, Total	2080	MG/KG	74.9	1.0
		Lithium, Total	0.1	MG/KG	0.03	1.0
		Magnesium, Total	305	MG/KG	1.3	1.0
		Manganese, Total	4.4	MG/KG	0.02	1.0
		Molybdenum, Total	0.13 u	MG/KG	0.13	1.0
		Sodium, Total	1100	MG/KG	2.4	1.0
		Nickel, Total	0.13 u	MG/KG	0.13	1.0
		Phosphorus, Total	5930	MG/KG	0.87	1.0
		Lead, Total	0.30 u	MG/KG	0.30	1.0
		Antimony, Total	0.39 u	MG/KG	0.39	1.0
		Selenium, Total	0.56	MG/KG	0.35	1.0
		Silicon, Total	17.5 J	MG/KG	0.80	1.0
		Tin, Total	0.95 UJ	MG/KG	0.50	1.0
		Titanium, Total	1.5	MG/KG	0.04	1.0
		Thallium, Total	0.62 u	MG/KG	0.62	1.0
		Uranium, Total	2.0 u	MG/KG	2.0	1.0
		Vanadium, Total	0.09 u	MG/KG	0.09	1.0
		Zinc, Total	53.2 J	MG/KG	0.05	1.0
		Zirconium, Total	0.52 uJ	MG/KG	0.52	1.0

6/26/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/28/06

CLIENT: TNUHANFORD RC-047 K0229

LVL LOT #: 0602L299

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J118B6	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Aluminum, Total	21.7	MG/KG	1.8	1.0
		Arsenic, Total	0.81	MG/KG	0.34	1.0
		Boron, Total	0.27 u	MG/KG	0.27	1.0
		Barium, Total	0.26	MG/KG	0.02	1.0
		Beryllium, Total	0.01	MG/KG	0.01	1.0
		Bismuth, Total	0.60 u	MG/KG	0.60	1.0
		Calcium, Total	186	MG/KG	1.2	1.0
		Cadmium, Total	1.4	MG/KG	0.07	1.0
		Cobalt, Total	0.14	MG/KG	0.12	1.0
		Chromium, Total	9.2	MG/KG	0.16	1.0
		Copper, Total	6.2	MG/KG	0.12	1.0
		Iron, Total	118	MG/KG	3.2	1.0
		Mercury, Total	0.04	MG/KG	0.02	1.0
		Potassium, Total	2290	MG/KG	76.3	1.0
		Lithium, Total	0.08	MG/KG	0.03	1.0
		Magnesium, Total	210	MG/KG	1.3	1.0
		Manganese, Total	3.5	MG/KG	0.02	1.0
		Molybdenum, Total	0.54	MG/KG	0.13	1.0
		Sodium, Total	1150	MG/KG	2.5	1.0
		Nickel, Total	4.4	MG/KG	0.13	1.0
		Phosphorus, Total	3080	MG/KG	0.89	1.0
		Lead, Total	0.31 u	MG/KG	0.31	1.0
		Antimony, Total	0.40 u	MG/KG	0.40	1.0
		Selenium, Total	1.2	MG/KG	0.36	1.0
		Silicon, Total	13.8 J	MG/KG	0.81	1.0
		Tin, Total	1.1 UJ	MG/KG	0.51	1.0
		Titanium, Total	0.93	MG/KG	0.04	1.0
		Thallium, Total	0.63 u	MG/KG	0.63	1.0
		Uranium, Total	2.0 u	MG/KG	2.0	1.0
		Vanadium, Total	0.15	MG/KG	0.09	1.0
		Zinc, Total	24.5 J	MG/KG	0.05	1.0
		Zirconium, Total	0.71 J	MG/KG	0.53	1.0

4/24/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/28/06

CLIENT: TNUHANFORD RC-047 K0229 LVL LOT #: 0602L299

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J118B7	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Aluminum, Total	1.8 u	MG/KG	1.8	1.0
		Arsenic, Total	1.2	MG/KG	0.33	1.0
		Boron, Total	0.26 u	MG/KG	0.26	1.0
		Barium, Total	0.16	MG/KG	0.02	1.0
		Beryllium, Total	0.03	MG/KG	0.01	1.0
		Bismuth, Total	0.60 u	MG/KG	0.60	1.0
		Calcium, Total	163	MG/KG	1.2	1.0
		Cadmium, Total	0.03	MG/KG	0.07	1.0
		Cobalt, Total	0.12 u	MG/KG	0.12	1.0
		Chromium, Total	0.18	MG/KG	0.16	1.0
		Copper, Total	4.9	MG/KG	0.12	1.0
		Iron, Total	51.2	MG/KG	3.1	1.0
		Mercury, Total	0.02	MG/KG	0.02	1.0
		Potassium, Total	1780	MG/KG	75.6	1.0
		Lithium, Total	0.06	MG/KG	0.03	1.0
		Magnesium, Total	167	MG/KG	1.3	1.0
		Manganese, Total	2.0	MG/KG	0.02	1.0
		Molybdenum, Total	0.16	MG/KG	0.13	1.0
		Sodium, Total	1180	MG/KG	2.5	1.0
		Nickel, Total	0.13 u	MG/KG	0.13	1.0
		Phosphorus, Total	2450	MG/KG	0.88	1.0
		Lead, Total	0.30 u	MG/KG	0.30	1.0
		Antimony, Total	0.39 u	MG/KG	0.39	1.0
		Selenium, Total	1.2	MG/KG	0.35	1.0
		Silicon, Total	5.2 J	MG/KG	0.80	1.0
		Tin, Total	1.0 UJ	MG/KG	0.51	1.0
		Titanium, Total	0.14 UJ	MG/KG	0.04	1.0
		Thallium, Total	0.63 u	MG/KG	0.63	1.0
		Uranium, Total	2.0 u	MG/KG	2.0	1.0
		Vanadium, Total	0.09 u	MG/KG	0.09	1.0
		Zinc, Total	21.5 J	MG/KG	0.05	1.0
		Zirconium, Total	0.53 u J	MG/KG	0.53	1.0

6/24/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/28/06

CLIENT: TNUHANFORD RC-047 K0229 LVL LOT #: 0602L299

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	J118C0	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Aluminum, Total	8.6	MG/KG	1.8	1.0
		Arsenic, Total	0.77	MG/KG	0.34	1.0
		Boron, Total	0.27 u	MG/KG	0.27	1.0
		Barium, Total	0.44	MG/KG	0.02	1.0
		Beryllium, Total	0.02	MG/KG	0.01	1.0
		Bismuth, Total	0.60 u	MG/KG	0.60	1.0
		Calcium, Total	248	MG/KG	1.2	1.0
		Cadmium, Total	1.3	MG/KG	0.07	1.0
		Cobalt, Total	0.12 u	MG/KG	0.12	1.0
		Chromium, Total	0.31	MG/KG	0.16	1.0
		Copper, Total	1.5	MG/KG	0.12	1.0
		Iron, Total	94.4	MG/KG	3.2	1.0
		Mercury, Total	0.08 u	MG/KG	0.08	1.0
		Potassium, Total	2860	MG/KG	76.3	1.0
		Lithium, Total	0.07	MG/KG	0.03	1.0
		Magnesium, Total	212	MG/KG	1.3	1.0
		Manganese, Total	2.1	MG/KG	0.02	1.0
		Molybdenum, Total	0.19	MG/KG	0.13	1.0
		Sodium, Total	1580	MG/KG	2.5	1.0
		Nickel, Total	0.18	MG/KG	0.13	1.0
		Phosphorus, Total	3350	MG/KG	0.89	1.0
		Lead, Total	0.31 u	MG/KG	0.31	1.0
		Antimony, Total	0.40 u	MG/KG	0.40	1.0
		Selenium, Total	2.1	MG/KG	0.36	1.0
		Silicon, Total	13.9 J	MG/KG	0.81	1.0
		Tin, Total	0.60 UJ	MG/KG	0.51	1.0
		Titanium, Total	0.67	MG/KG	0.04	1.0
		Thallium, Total	0.63 u	MG/KG	0.63	1.0
		Uranium, Total	2.0 u	MG/KG	2.0	1.0
		Vanadium, Total	0.09	MG/KG	0.09	1.0
		Zinc, Total	74.9 J	MG/KG	0.05	1.0
		Zirconium, Total	0.53 uJ	MG/KG	0.53	1.0

K 6/22/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/28/06

CLIENT: TNUHANFORD RC-047 K0229 LVL LOT #: 0602L299

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	J118C1	Silver, Total	0.21 u	MG/KG	0.21	1.0
		Aluminum, Total	5.9	MG/KG	2.7	1.0
		Arsenic, Total	1.3	MG/KG	0.50	1.0
		Boron, Total	0.40 u	MG/KG	0.40	1.0
		Barium, Total	0.35	MG/KG	0.03	1.0
		Beryllium, Total	0.04	MG/KG	0.01	1.0
		Bismuth, Total	0.90 u	MG/KG	0.90	1.0
		Calcium, Total	229	MG/KG	1.8	1.0
		Cadmium, Total	0.65	MG/KG	0.10	1.0
		Cobalt, Total	0.18 u	MG/KG	0.18	1.0
		Chromium, Total	0.87	MG/KG	0.24	1.0
		Copper, Total	1.3	MG/KG	0.18	1.0
		Iron, Total	89.9	MG/KG	4.7	1.0
		Potassium, Total	2650	MG/KG	113	1.0
		Lithium, Total	0.08	MG/KG	0.04	1.0
		Magnesium, Total	198	MG/KG	2.0	1.0
		Manganese, Total	2.6	MG/KG	0.03	1.0
		Molybdenum, Total	0.47	MG/KG	0.19	1.0
		Sodium, Total	1180	MG/KG	3.7	1.0
		Nickel, Total	0.19 u	MG/KG	0.19	1.0
		Phosphorus, Total	2750	MG/KG	1.3	1.0
		Lead, Total	0.46 u	MG/KG	0.46	1.0
		Antimony, Total	0.59 u	MG/KG	0.59	1.0
		Selenium, Total	1.6	MG/KG	0.53	1.0
		Silicon, Total	14.4 J	MG/KG	1.2	1.0
		Tin, Total	0.79 UJ	MG/KG	0.76	1.0
		Titanium, Total	0.73	MG/KG	0.06	1.0
		Thallium, Total	0.94 u	MG/KG	0.94	1.0
		Uranium, Total	3.0 u	MG/KG	3.0	1.0
		Vanadium, Total	0.13 u	MG/KG	0.13	1.0
		Zinc, Total	61.7 J	MG/KG	0.07	1.0
		Zirconium, Total	0.79 uJ	MG/KG	0.79	1.0

R 6/22/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-047
LVL#: 0602L299/0603L379
SDG/SAF#: K0229/RC-047

W.O.#: 11343-606-001-9999-00
Dates Received: 02-17-06, 03-01-06

METALS CASE NARRATIVE

1. This narrative covers the analyses of 14 solid samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. All samples were reported from a different instrument for Potassium, Sodium, and Phosphorous. Additionally, the samples from LvLI# 0603L379 were also reported from the different instrument for Aluminum, Beryllium, Calcium, Copper, Iron, Magnesium, Manganese, and Zirconium, all due to sample matrix.

3. All analyses were performed within the required holding times.

4. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.

5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).

7. The preparation/method blanks for 2 analytes were outside method criteria. {less than the Practical Quantitation Limit (3X the IDL), or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

   a). The MB (06L0158) results for Iron and Silicon were greater than the Practical Quantitation Limit (PQL) {3 x the (IDL) Instrument Detection Level} and samples J117R5, J117R8, J117R9, J11869 for Iron, and all samples in LvLI# 0603L379 for Silicon, read less than 20 times the MB concentration. However, no corrective action criteria for MBs were provided in SW846 method 6010B. The sample results were reported herein "uncorrected" for the levels found in the MB.

8. All ICP Interference Check Standards were within control limits.

9. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Silicon for 06L0122-LC1 at 64.2%, and for 06L0158-LC1 at 36.2%. Refer to the Inorganics Laboratory Control Standards Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 70 pages.

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10. The matrix spike (MS) recoveries on sample J117R5 for 4 analytes, and sample J117R3 for 5 analytes, were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A PDS was prepared at meaningful concentration level for the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J117R5	Calcium	20,000	106.4
	Phosphorous	2,000	87.0
	Zinc	1,000	99.6
	Zirconium	100	115.1
J117R3	Calcium	800	81.2
	Iron	2,000	95.2
	Potassium	1,000	88.0
	Phosphorous	10,000	86.7
	Zirconium	200	99.7

12. The duplicate analyses for 10 analytes on sample J117R5, and for 7 analytes on sample J117R3, were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.

14. LvLI is NELAP accredited by the state of Pennsylvania and holds over 20 additional state accreditations. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

15. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

3/29/06
Date

jjw/m02-299

LVLI
LIONVILLE LABORATORY INC.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-047-132 | Page 1 of 1

Collector: TILLER, B.	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 9N	Data Turnaround: 45 Days	Air Quality: ☐	
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: 300-1, SAMPLE 3		SAF No.: RC-047
Ice Chest No.: ERC-03-103	Field Logbook No.: EL-1597 5	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: ~~EBERLINE SERVICES~~ LIONVILLE	Offsite Property No.: A060290		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

0000031

SAMPLE ANALYSIS	Gamma Spec - (Full List)	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)				
Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	aG	G/P	G/P	aG	aG	aG				
No. of Container(s)	0	0	1	0	0	0				
Volume	750g	5g	15g	50g	50g	50g				

Sample No.	Matrix *	Sample Date	Sample Time	Gamma Spec	Strontium	ICP Metals	Pesticides	PCBs	Semi-VOA				
J117R5	OTHER SOLID	02-10-06	12:30	X		X							

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From: BRETT TILLER		02-10-06 1330	EAS LOCKED STORAGE	02-10-06 1330
Relinquished By/Removed From: EAS LOCKED STORAGE		02-13-06 0745	R2 Steffler R.J. Steffl	2-13-06 0745
Relinquished By/Removed From: R2 Steffler R.J. Steffl		2-13-06 0900	3728 / 2A	2-13-06 0900
Relinquished By/Removed From: 3728 / 2A		2-16-06 1130	R2 Steffler R.J. Steffl	2-16-06 1130
Relinquished By/Removed From: R2 Steffler R.J. Steffl		2-16-06 1600	Fed Ex	
Relinquished By/Removed From: Fed Ex		2-17-06 10920	D. Smith	2-17-06 10920

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec, Iso Uranium and Iso Strontium then tranship to Lionville Labs, if possible maintain 4 C cooling. NOTE: Lionville- contact Rich Weiss upon receipt.

Matrix *
S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
Ve=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-169	Page 1 of 1

Collector TILLER, B. JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location VERNITA BRIDGE #1, LIVER		SAF No. RC-047
Ice Chest No. ERC - 03 - 103	Field Logbook No. EL-15976 see 2-14-06	COA BESRAS6520	Method of Shipment FED EX
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A060290		Bill of Lading/Air Bill No. SEE OSPC

Price Code 9N

Air Quality ☐

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

000032

Preservation	None	Cool 4C										
Type of Container	G/P	G/P										
No. of Container(s)	1	1										
Volume	5g	15g										
SAMPLE ANALYSIS	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)										
Sample No. / Matrix * / Sample Date / Sample Time												
J118B6 / OTHER SOLID / 2-14-06 / 1700		X										

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From: JAMES BERNHARD, Date/Time 2-14-06 1800	Received By/Stored In: EAS LOCKED STORAGE, Date/Time 2-14-06 1800	
Relinquished By/Removed From: FAS L.S. JAMES BERNHARD, Date/Time 2-16-06 1000	Received By/Stored In: RZ Steffler, Date/Time 2-16-06 1000	
Relinquished By/Removed From: RZ Steffler, Date/Time 2-16-06 1600	Received By/Stored In: Fed Ex, Date/Time	
Relinquished By/Removed From: [illegible], Date/Time 2-17-06 0920	Received By/Stored In: D. Johnson, Date/Time 2-17-06 0920	
Relinquished By/Removed From, Date/Time	Received By/Stored In, Date/Time	
Relinquished By/Removed From, Date/Time	Received By/Stored In, Date/Time	

Matrix *

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-170	Page 1 of 1

Collector TILLER, JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 9N	Data Turnaround 45 Days		
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location VERNITA BRIDGE #2, LIVER		SAF No. RC-047
Air Quality ☐			
Ice Chest No. ERC-03-103	Field Logbook No. EL-15975 JEB 2-14-06	COA BESRAS6520	Method of Shipment FED EX
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A060290		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

000033

Preservation	None	Cool 4C										
Type of Container	G/P	G/P										
No. of Container(s)	1	1										
Volume	5g	15g										
SAMPLE ANALYSIS	Strontium-89,90 -- Total Sr, Isotopic Thorium, Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)										
Sample No.	Matrix *	Sample Date	Sample Time									
J118B7	OTHER SOLID	2-14-06	1740		X							

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From JAMES BERNHARD Date/Time 1800 2-14-06	Received By/Stored In EAS LOCKED STORAGE Date/Time 1800 2-14-06	
Relinquished By/Removed From JAMES BERNHARD EAS L.S. Date/Time 1000 2-16-06	Received By/Stored In RZ Steffler Date/Time 1000 2-16-06	
Relinquished By/Removed From RZ Steffler Date/Time 1600 2-16-06	Received By/Stored In Fed Ex Date/Time	
Relinquished By/Removed From Fed Ex Date/Time 2-17-06 0920	Received By/Stored In Date/Time 2-17-06 0920	
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time	

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford | **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** | RC-047-173 | Page 1 of 1

Collector: TILLER, B. **JAMES BERNHARD**	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: VERNITA BRIDGE #1, KIDNEY		SAF No.: RC-047
Ice Chest No.: ERC-03-103	Field Logbook No.: EL-1597	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A060290		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

000034

Preservation	Cool 4C
Type of Container	G/P
No. of Container(s)	1
Volume	15g
SAMPLE ANALYSIS	ICP Metals - 6010 (Full List), Mercury - 7471 - (CV)

Sample No.	Matrix *	Sample Date	Sample Time	
J118C0	OTHER SOLID	2-14-06	1730	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
JAMES BERNHARD	1800 2-14-06	EAS LOCKED STORAGE	1800 2-14-06
EAS L.S. JAMES BERNHARD	1000 2-16-06	RZ Stoffler	1000 2-16-06
RZ Stoffler	1600 2-16-06	Fed Ex	
Fed Ex	2-17-06 0920	D. Smith	2-17-06 0920

SPECIAL INSTRUCTIONS

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-174	Page 1 of 1

Collector TILLER, B. — JAMES BERNHARD	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 9N	Data Turnaround 45 Days	Air Quality ☐	
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location VERNITA BRIDGE #2, KIDNEY		SAF No. RC-047
Ice Chest No. ERC-03-103	Field Logbook No. EL-159/5 JEB 2-14-06	COA	Method of Shipment FED EX
Shipped To EBERLINE SERVICES KLONDIKE	Offsite Property No. A060290		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

8000035

Preservation	Cool 4C											
Type of Container	G/P											
No. of Container(s)	1											
Volume	15g											
SAMPLE ANALYSIS	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)											
Sample No.	Matrix *	Sample Date	Sample Time									
J118C1	OTHER SOLID	2-14-06	1750	X								

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS
Relinquished By/Removed From — JAMES BERNHARD — Date/Time 2-14-06 1800	Received By/Stored In — EAS LOCKED STORAGE — Date/Time 2-14-06 1800	
Relinquished By/Removed From — JAMES BERNHARD — Date/Time 2-16-06 1000	Received By/Stored In — R2 Steffler — Date/Time 2-16-06 1000	
Relinquished By/Removed From — R2 Steffler — Date/Time 2-16-06 1600	Received By/Stored In — Fed Ex — Date/Time	
Relinquished By/Removed From — Fed Ex — Date/Time 2.17.06 0920	Received By/Stored In — Date/Time 2.17.06 0920	
Relinquished By/Removed From — Date/Time	Received By/Stored In — Date/Time	
Relinquished By/Removed From — Date/Time	Received By/Stored In — Date/Time	

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

OHLEE 011 (08/20/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-130	Page 1 of 1

Collector TILLER, B.	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location 300-1, SAMPLE 1		SAF No. RC-047
Ice Chest No. AFS-04-122	Field Logbook No. EL-1597/5	COA BESRAS6520	Method of Shipment FED EX
Shipped To EBERLINE ~~EBERLINE SERVICES~~ ~~LIONVILLE~~	Offsite Property No. A060304		Bill of Lading/Air Bill No. See OSPC

Price Code 9N

Air Quality ☐

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

000036

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	aG	G/P	G/P	aG	aG	aG					
No. of Container(s)	1	0	10	0	0	0					
Volume	750g	5g	15g	50g	50g	50g					

SAMPLE ANALYSIS

SDG# K0229

Sample No.	Matrix *	Sample Date	Sample Time	Gamma Spec - (Full List)	Strontium-89,90 – Total Sr; Isotopic Thorium; Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)					
J117R3	OTHER SOLID	02-10-06	09:45	X		X								

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
BRETT TILLER	02-10-06 1030	EAS LOCKED STORAGE	02-10-06 1030
EAS LOCKED STORAGE	02-13-06 0745	RZ Stoffler	2-13-06 0745
RZ Stoffler	2-13-06 0900	3728/2A	2-13-06 / 0900
3728/2A	2-16-06 1030	RZ Stoffler	2-16-06 1030
RZ Stoffler	2-16-06 1600	Fed Ex	
FEDEX		Alex Kelly	3/17/06 10:00

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec, ~~Iso-Uranium and Iso-Strontium~~ then tranship to Lionville Labs, if possible maintain 4 C cooling. BOTTLE

NOTE: Lionville- contact ~~Rich~~ JOAN

Weigs upon receipt.

KESSNER

SDG# K0229

Fed Ex 3-1-06/0915 D. Smith 3-1-06/0915

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
	Relinquished by Alex Kelly		2/28/06 16:00

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-131	Page 1 of 1

Collector: TILLER, B.	Company Contact: JOAN KESSNER — Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 9N — Data Turnaround: 45 Days
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: 300-1, SAMPLE 2	SAF No.: RC-047	Air Quality ☐
Ice Chest No.: AFS-04-122	Field Logbook No.: EL-1597 5 Δ/10 2/14/06 — COA: BESRAS6520	Method of Shipment: FED EX	
Shipped To: ~~EBERLINE SERVICES~~ EBERLINE ~~LIONVILLE~~	Offsite Property No.: A060304	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

000037

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	aG	G/P	G/P	aG	aG	aG					
No. of Container(s)	1	0	1	0	0	0					
Volume	750g	5g	15g	50g	50g	50g					

SAMPLE ANALYSIS — SDG# K0229

Sample No.	Matrix *	Sample Date	Sample Time	Gamma Spec - (Full List)	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)				
J117R4	OTHER SOLID	02-10-06	11:30	XX		X							

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From: BRETT TILLER	Received By/Stored In: EAS LOCKED STORAGE	02-10-06 1200
Relinquished By/Removed From: EAS LOCKED STORAGE	Received By/Stored In: RZ Stoffler	02-13-06 0745
Relinquished By/Removed From: RZ Stoffler	Received By/Stored In: 3728 / 2A	2-13-06 0900
Relinquished By/Removed From: 3728 / 2A	Received By/Stored In: RZ Stoffler	2-16-06 1030
Relinquished By/Removed From: RZ Stoffler	Received By/Stored In: Fed Ex	2-16-06 1600
Relinquished By/Removed From: Fed Ex	Received By/Stored In: Alex Kelleny	3/17/06 10:00

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec, ~~iso-Uranium and Iso-Strontium~~ then tranship to Lionville Labs, if possible maintain 4 C cooling. NOTE: Lionville- contact ~~Rich Weise~~ JOAN upon receipt.

KESSNER

SDG# K0229

Fed Ex 3-1-06 1015 — D. Smith 3-1-06 1015

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

LABORATORY SECTION	Received By: Relinquished By Alex Kelleny 2/28/06	Title: 16:00	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

000000058

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-132	Page 1 of 1

Collector: TILLER, B.	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: 300-1, SAMPLE 3	SAF No.: RC-047	
Ice Chest No.: AFS-04-122	Field Logbook No.: EL-1597 5 ICG-(E) 02-10-06	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES, LIONVILLE	Offsite Property No.: A060304	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

000038

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	aG	G/P 02-10-06	G/P	aG	aG	aG					
No. of Container(s)	1	1	0	0	0	0					
Volume	750g	5g	15g	50g	50g	50g					

SAMPLE ANALYSIS

SDG# K0229

Sample No.	Matrix *	Sample Date	Sample Time	Gamma Spec - (Full List)	Strontium-89,90 – Total Sr; ~~Strontium, Thorium,~~ Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)				
J117R5	OTHER SOLID	02-10-06	12:30	X	X								
				X	X	ICG-							
						02-10-06							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
BRETT TILLER	02-10-06 1330	EAS LOCKED STORAGE	02-10-06 1330
EAS LOCKED STORAGE	02-13-06 0745	R2 Steffler	2-13-06 0745
R2 Steffler	2-13-06 0900	3728/2A	2-13-06 0900
R2 Steffler 2-16-06	2-16-06 1030	R2 Steffler	2-16-06 1030
R2 Steffler	2-16-06 1600	Fed Ex	
FED EX		Flex Kellerd	2/17/06 10:00

SPECIAL INSTRUCTIONS

~~NOTE: Eberline perform Gamma Spec, Iso Uranium and Iso Strontium then reship to Lionville Labs, if possible maintain 4 C cooling. Weigs upon receipt.~~ S/A 21406 ~~NOTE: Lionville contact Rich~~

SDG# K0229

Fed Ex 3-1-06 10915 J.D. Smith 3-1-06 1095

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

LABORATORY SECTION	Received By / Relinquished By	Title	Date/Time
	Flex Kellerd 2/28/06 16:00		

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-135	Page 1 of 1

Collector TILLER, B.	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location 300 AREA ELEVATED, SAMPLE 3		SAF No. RC-047
Ice Chest No. AFS-04-122	Field Logbook No. EL-1592 5	COA BESRAS6520	Method of Shipment FED EX
Shipped To ~~EBERLINE SERVICES LIONVILLE~~ EBERLINE	Offsite Property No. A060304		Bill of Lading/Air Bill No. See OSPC

Price Code 9N

Air Quality ☐

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

000039

SAMPLE ANALYSIS	Gamma Spec - (Full List)	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)				
Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	aG	G/P	G/P	aG	aG	aG				
No. of Container(s)	1	0	1	0	0	0				
Volume	750g	5g	15g	50g	50g	50g				

SDG# K0229

Sample No.	Matrix *	Sample Date	Sample Time									
J117R8	OTHER SOLID	~~02-08-06~~	~~1200~~	X		X						
		02-10-06	08:30									

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From BRETT TILLER	Date/Time 0900 02-10-06	Received By/Stored In EAS LOCKED STORAGE	Date/Time 0900 02-10-06
Relinquished By/Removed From EAS LOCKED STORAGE	Date/Time 0745 02-13-06	Received By/Stored In RC Steffler R.J. Steffler	Date/Time 0745 2-13-06
Relinquished By/Removed From RC Steffler R.J. Steffler	Date/Time 0900 2-13-06	Received By/Stored In 3728 / 2A	Date/Time 2-13-06 / 0900
Relinquished By/Removed From 3728 / 2A	Date/Time 2-16-06 1030	Received By/Stored In RC Steffler R.J. Steffler	Date/Time 1030 2-16-06
Relinquished By/Removed From RC Steffler R.J. Steffler	Date/Time 1600 2-16-06	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From FED EX	Date/Time	Received By/Stored In Alex Kelly	Date/Time 2/17/06 10:00

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec, ~~for Uranium and for Strontium~~ then tranship to Lionville Labs, if possible maintain 4 C cooling. NOTE: Lionville- contact Eberline upon receipt.

KESSNER

JohN

SDG# K0229

Fed Ex 3-1-06 10915 D. Smith 3-1-06 0915

Matrix *

SoSoil
SESediment
SOSolid
SlSludge
WWater
OiOil
AiAir
DSDrum Solids
DLDrum Liquids
TTissue
WIWipe
LiLiquid
VeVegetation
XOther

LABORATORY SECTION	Received By Relinquished By Alex Kelly 2/28/06 16:00	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-136	Page 1 of 1

Collector: TILLER, B.	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: 300 AREA LOW, SAMPLE I	SAF No.: RC-047	
Ice Chest No.: AFS-04-122	Field Logbook No.: EL-1597 5 3/10 2006	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: 3/10 2006 EBERLINE ~~EBERLINE SERVICES~~ / LIONVILLE 3/10 2006	Offsite Property No.: A060304		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C 'MATRIX COMPOSED OF FISH"

000040

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	aG	G/P	G/P	aG	aG	aG					
No. of Container(s)	1	0	1	0	0	0					
Volume	750g	5g	15g	50g	50g	50g					

SAMPLE ANALYSIS: SDG# K0229

Sample No.	Matrix *	Sample Date	Sample Time	Gamma Spec - (Full List)	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)
J117R9	OTHER SOLID	02-10-06	09:00	X 3/10 2006		X 3/10 2006			

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	BRETT TILLER	02-10-06 1030	EAS LOCKED STORAGE	02-10-06 1030
Relinquished By/Removed From	EAS LOCKED STORAGE	02-13-06 0745	RZ Steffler	2-13-06 0745
Relinquished By/Removed From	RZ Steffler	2-13-06 0900	3728 / 2A	2-13-06 0900
Relinquished By/Removed From	3728 / 2A	2-16-06 1030	RZ Steffler	2-16-06 1030
Relinquished By/Removed From	RZ Steffler	2-16-06 1600	FED EX	
Relinquished By/Removed From	FED EX		Alex Leeuwenburgh	2/17/06 10:00

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec, ~~Isotopic Uranium and Iso Strontium~~ then tranship to Lionville Labs. if possible maintain 4 C cooling. Weigh upon receipt. 3/10 2006 BETTLE

NOTE: Lionville- contact ~~Rick~~ JOAN KESSNER 3/10 2006

SDG# K0229

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

Fed Ex 3-1-06 10915 D. Smith 3-1-06/0915

LABORATORY SECTION	Received By	Title	Date/Time
	Relinquished By Alex Leeuwenburgh	2/28/06 16:00	

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-136	Page 1 of 1

Collector: TILLER, B.	Company Contact: JOAN KESSNER — Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 9N — Data Turnaround: 45 Days
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: 300 AREA LOW, SAMPLE 1	SAF No.: RC-047	Air Quality ☐
Ice Chest No.: AFS-04-122	Field Logbook No.: EL-15975 @ 02-10-06 — COA: BESRAS6520	Method of Shipment: FED EX	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060304	Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

000041

Preservation	Cool 4C	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	aG	G/P	G/P	aG	aG	aG					
No. of Container(s)	0	1	0	0	0	0					
Volume	750g	5g	15g	50g	50g	50g					

SAMPLE ANALYSIS SDGs K0229

Sample No.	Matrix *	Sample Date	Sample Time	Gamma Spec - (Full List)	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)				
J117R9	OTHER SOLID	02-10-06	09:00	X	X								

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
BRETT TILLER	02-10-06 1030	EAS LOCKED STORAGE	02-10-06 1030
EAS LOCKED STORAGE	02-13-06 0745	RZ Steffler R.J. Steffler	2-13-06 0745
RZ Steffler R.J. Steffler	2-13-06 0900	3728 / 2A	2-13-06 / 0900
3728 / 2A	2-16-06 1030	RZ Steffler R.J. Steffler	2-16-06 1030
RZ Steffler R.J. Steffler	2-16-06 1600	Fed Ex	
FED EX		Alex Kellerd	2/17/06 10:00

SPECIAL INSTRUCTIONS

~~NOTE: Eberline perform Gamma Spec, Iso Uranium and Iso Strontium then tranship to Lionville Labs, if possible maintain 4 C cooling. Write upon receipt.~~ 2/28/06 ~~NOTE: Lionville contact Rich~~

SDGs K0229

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

LABORATORY SECTION	Received By: Relinquished by Alex Kellerd 2/28/06	Title: 16:00	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-147	Page 1 of 1

Collector TILLER, B.	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 9N	Data Turnaround 45 Days	Air Quality ☐	
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location VERNITA BRIDGE #1	SAF No. RC-047	
Ice Chest No. AFS-04-122	Field Logbook No. EL-15975 6.P. 02-14-06	COA BESRAS6520	Method of Shipment FED EX
Shipped To EBERLINE SERVICES/ LIONVILLE	Offsite Property No. A060304		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

000042

Preservation	COOL 4C ~~None~~ A/A 2/14/06	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	G/P	G/P	aG	aG	aG						
No. of Container(s)	1	1	0	0	0	0						
Volume	750g	5g	15g	50g	50g	50g						

SAMPLE ANALYSIS

SDG# K0229

Sample No.	Matrix *	Sample Date	Sample Time	Gamma Spec - (Full List)	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)					
J11869	OTHER SOLID	02-13-06	1300	X	X									

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	BRETT TILLER	02-13-06 1430	EAS LOCKED STORAGE A/A	02-13-06 1430
Relinquished By/Removed From	JAMES BERNHARD	2-16-06 1000	RZ Stiffler RZ Stiffler	2-16-06 1000
Relinquished By/Removed From	RZ Stiffler RZ Stiffler	2-16-06 1600	Fed Ex	
Relinquished By/Removed From	FED Ex		Alex Kelley	2/17/06 10:00
Relinquished By/Removed From	Alex Kelley	2/28/06 16:00		
Relinquished By/Removed From	Fed Ex	3-1-06 10915	D. Smith	3-1-06 10915

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec then tranship bottle to Lionville Labs, if possible maintain 4 C cooling.

NOTE: Lionville- contact ~~Rich Weiss~~ JOAN KESSNER upon receipt.

A/A 2/14/06

SDG# K0229

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquid
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-148	Page 1 of 1

Collector TILLER, B.	Company Contact JOAN KESSNER	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Project Designation 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location VERNITA BRIDGE #2		SAF No. RC-047
Ice Chest No. AFS-04-122	Field Logbook No. EL-15975 A.I. 02-14-06	COA BESRAS6520	Method of Shipment FED EX
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A060304		Bill of Lading/Air Bill No. SEE OSPC

Price Code 9N

Air Quality ☐

Data Turnaround 45 Days

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

000043

SAMPLE ANALYSIS

SDG# K0229

Preservation				Cool 4C ~~None~~ 2/16/06	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container				G/P	G/P	G/P	aG	aG	aG			
No. of Container(s)				1	1	0	0	0	0			
Volume				750g	5g	15g	50g	50g	50g			
				Gamma Spec - (Full List)	Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)			
Sample No.	Matrix *	Sample Date	Sample Time									
J11870	OTHER SOLID	02-13-06	1315	X	X							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From BRETT TILLER	Date/Time 1430 02-13-06	Received By/Stored In EAS LOCKED STORAGE	Date/Time 1432 -13-06
Relinquished By/Removed From JAMES BERNHARD EAS L.S.	Date/Time 1600 2-16-06	Received By/Stored In RZ Stoffler	Date/Time 1600 2-16-06
Relinquished By/Removed From RZ Stoffler	Date/Time 1600 2-16-06	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From FED EX	Date/Time	Received By/Stored In Alex Kelleel	Date/Time 2/17/06 AK
Relinquished By/Removed From Alex Kelleel	Date/Time 2/28/06 16:00	Received By/Stored In	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time 3-1-06 10915	Received By/Stored In D. Smith	Date/Time 3-1-06 10915

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec then tranship bottle to Lionville Labs, if possible maintain 4 C cooling.

NOTE: Lionville- contact ~~Rich Weiss~~ JOAN KELSNER upon receipt. 4/A 21406

SDG# K0229

Matrix *

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

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-149	Page 1 of 1

Collector: TILLER, B.	Company Contact: JOAN KESSNER	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 9N	Data Turnaround: 45 Days	Air Quality ☐	
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: VERNITA BRIDGE #3	SAF No.: RC-047	
Ice Chest No.: AFS-04-122	Field Logbook No.: EL-1597/5 pg. 02-14-06	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060304		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

0000044

Preservation	COOL 4C Hom- AP 21406	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G/P	aG	aG	aG					
No. of Container(s)	1	1	0	0	0	0					
Volume	750g	5g	15g	50g	50g	50g					
SAMPLE ANALYSIS SDG# K0229	Gamma Spec - (Full List)	Strontium-89,90 – Total Sr; Isotopic Thorium; Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)					
Sample No.	Matrix *	Sample Date	Sample Time								
J11871	OTHER SOLID	02-13-06	1345	X	X						

CHAIN OF POSSESSION	Sign/Print Names	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	BRETT TILLER	1430 02-13-06	EAS LOCKED STORAGE	1430 02-13-06
Relinquished By/Removed From	JAMES BERNHARD EAS L.S.	1000 2-16-06	RZ Stiffler	1000 2-16-06
Relinquished By/Removed From	RZ Stiffler	1600 2-16-06	Fed Ex	
Relinquished By/Removed From	FED EX		Alex Kelley	2/17/06 10:00
Relinquished By/Removed From	Alex Kelley	2/28/06 16:00		
Relinquished By/Removed From	Fed Ex	3-1-06 10915	D. Smith	3-1-06 10915

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec then tranship bottle to Lionville Labs, if possible maintain 4 C cooling.

NOTE: Lionville- contact ~~Rich Weiss~~ JOAN KESSNER upon receipt. AP 21406

SDG# K0229

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-150	Page 1 of 1

Collector: TILLER, B.	Company Contact: JOAN KESSNER — Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 9N — Data Turnaround: 45 Days
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: VERNITA BRIDGE #4	SAF No.: RC-047	Air Quality ☐
Ice Chest No.: AFS-04-122	Field Logbook No.: EL-15975 & T 02-14-06 — COA: BESRAS6520	Method of Shipment: FED EX	
Shipped To: EBERLINE SERVICES, LIONVILLE	Offsite Property No.: A060304	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF FISH"

000045

Preservation	COOL 4C ~~None~~ AP 21406	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	G/P	G/P	aG	aG	aG					
No. of Container(s)	1	1	0	0	0	0					
Volume	750g	5g	15g	50g	50g	50g					
SAMPLE ANALYSIS	Gamma Spec - (Full List)	Strontium-89,90 – Total Sr; Isotopic Thorium; Isotopic Uranium	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081	PCBs - 8082	Semi-VOA - 8270A (TCL)					

SDG# K0229

Sample No.	Matrix *	Sample Date	Sample Time										
J11872	OTHER SOLID	02-13-06	1400	X	X								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: BRETT TILLER	Date/Time: 1430 02-13-06	Received By/Stored In: EAS LOCKED STORAGE	Date/Time: 1430 2-13-06
Relinquished By/Removed From: JAMES BERNHARD EAS C.S.	Date/Time: 1600 2-16-06	Received By/Stored In: RZ Stettler	Date/Time: 1600 2-16-06
Relinquished By/Removed From: RZ Stettler	Date/Time: 1600 2-16-06	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: FED EX	Date/Time:	Received By/Stored In: Alex Kelleth	Date/Time: 2/17/06 10:00
Relinquished By/Removed From: Alex Kelleth	Date/Time: 2/28/06 16:00	Received By/Stored In:	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 3-1-06 10915	Received By/Stored In:	Date/Time: 3-1-06 10915

SPECIAL INSTRUCTIONS

NOTE: Eberline- perform Gamma Spec then tranship bottle to Lionville Labs, if possible maintain 4 C cooling.

NOTE: Lionville- contact ~~Rich Weiss~~ JOAN KESSNER upon receipt.

AP 21406

SDG# K0229

Matrix *

S=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
Lq=Liquid
V=Vegetation
X=Other

LABORATORY SECTION	Received By	Title	Date/Time
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

BHI-EE-011 (08/29/2005)

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: RCBRA tissue			DATA PACKAGE: K0229		
VALIDATOR: TCJ		LAB: LLE		DATE: 6/16/06	
			SDG: K0229		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		

SAMPLES/MATRIX

J11R75	J118B6	J118B7	J118C0	J118C1
J117R3	J117R4	J117R5A	J117R8	J117R9
J11869	J11870	J11871	J11872	
				Solid

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: UJ - all detects Tin UJ titanium in B7
chromium, copper, lithium - UJ in R3, R4, R5A, R8, R9, 69, 70, 71
Silica - UJ R3, R4, R5A, R8, R9, 69, 70 + 72

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: Zinc MS - R5, B6, B7, C0, C1 - J
MS Calcium + iron J - R3, R4, R5A, R8, R9, 869, 870, 871, 872
Zirconium - J all - MS

LCS - Silica - J all

No PAS

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: Zinc – J all 30.8 & 142.4

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:

no mercury in RCI

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/28/06

CLIENT: TNUHANFORD RC-047 K0229 LVL LOT #: 0602L299

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	06L0122-MB1	Silver, Total	0.14 u	MG/KG	0.14	1.0
		Aluminum, Total	1.8 u	MG/KG	1.8	1.0
		Arsenic, Total	0.34 u	MG/KG	0.34	1.0
		Boron, Total	0.27 u	MG/KG	0.27	1.0
		Barium, Total	0.02 u	MG/KG	0.02	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Bismuth, Total	0.61 u	MG/KG	0.61	1.0
		Calcium, Total	2.2	MG/KG	1.2	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.12 u	MG/KG	0.12	1.0
		Chromium, Total	0.16 u	MG/KG	0.16	1.0
		Copper, Total	0.12 u	MG/KG	0.12	1.0
		Iron, Total	3.2 u	MG/KG	3.2	1.0
		Potassium, Total	77.1 u	MG/KG	77.1	1.0
		Lithium, Total	0.03 u	MG/KG	0.03	1.0
		Magnesium, Total	1.4 u	MG/KG	1.4	1.0
		Manganese, Total	0.02 u	MG/KG	0.02	1.0
		Molybdenum, Total	0.13 u	MG/KG	0.13	1.0
		Sodium, Total	3.9	MG/KG	2.5	1.0
		Nickel, Total	0.13 u	MG/KG	0.13	1.0
		Phosphorus, Total	0.90 u	MG/KG	0.90	1.0
		Lead, Total	0.31 u	MG/KG	0.31	1.0
		Antimony, Total	0.40 u	MG/KG	0.40	1.0
		Selenium, Total	0.36 u	MG/KG	0.36	1.0
		Silicon, Total	0.82 u	MG/KG	0.82	1.0
		Tin, Total	0.70	MG/KG	0.52	1.0
		Titanium, Total	0.05	MG/KG	0.04	1.0
		Thallium, Total	0.64 u	MG/KG	0.64	1.0
		Uranium, Total	2.1 u	MG/KG	2.1	1.0
		Vanadium, Total	0.09 u	MG/KG	0.09	1.0
		Zinc, Total	0.05 u	MG/KG	0.05	1.0
		Zirconium, Total	0.54 u	MG/KG	0.54	1.0
BLANK1	06C0033-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/28/06

CLIENT: TNUHANFORD RC-047 K0229 LVL LOT #: 0603L379

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	06L0158-MB1	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	2.4 u	MG/KG	2.4	1.0
		Arsenic, Total	0.61 u	MG/KG	0.61	1.0
		Boron, Total	0.24 u	MG/KG	0.24	1.0
		Barium, Total	0.08	MG/KG	0.02	1.0
		Beryllium, Total	0.02	MG/KG	0.02	1.0
		Bismuth, Total	0.51 u	MG/KG	0.51	1.0
		Calcium, Total	6.5	MG/KG	2.2	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.14 u	MG/KG	0.14	1.0
		Chromium, Total	0.17	MG/KG	0.13	1.0
		Copper, Total	0.40	MG/KG	0.22	1.0
		Iron, Total	2.3	MG/KG	0.54	1.0
		Potassium, Total	77.1 u	MG/KG	77.1	1.0
		Lithium, Total	0.06	MG/KG	0.03	1.0
		Magnesium, Total	3.9 u	MG/KG	3.9	1.0
		Manganese, Total	0.32 u	MG/KG	0.32	1.0
		Molybdenum, Total	0.29 u	MG/KG	0.29	1.0
		Sodium, Total	2.5 u	MG/KG	2.5	1.0
		Nickel, Total	0.24 u	MG/KG	0.24	1.0
		Phosphorus, Total	1.6	MG/KG	0.90	1.0
		Lead, Total	0.31 u	MG/KG	0.31	1.0
		Antimony, Total	0.44 u	MG/KG	0.44	1.0
		Selenium, Total	0.47 u	MG/KG	0.47	1.0
		Silicon, Total	8.2	MG/KG	2.3	1.0
		Tin, Total	1.6	MG/KG	1.1	1.0
		Titanium, Total	0.03	MG/KG	0.03	1.0
		Thallium, Total	0.70 u	MG/KG	0.70	1.0
		Uranium, Total	1.5	MG/KG	0.88	1.0
		Vanadium, Total	0.09 u	MG/KG	0.09	1.0
		Zinc, Total	0.22	MG/KG	0.16	1.0
		Zirconium, Total	1.1 u	MG/KG	1.1	1.0
BLANK1	06C0041-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 03/28/06

CLIENT: TNUHANFORD RC-047 K0229 LVL LOT #: 0602L299

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J117R5	Silver, Total	4.7	0.14u	4.8	97.9	1.0
		Aluminum, Total	209	9.4	190	104.7	1.0
		Arsenic, Total	170	1.0	190	89.0	1.0
		Boron, Total	85.0	0.26u	95.2	89.3	1.0
		Barium, Total	184	3.5	190	94.6	1.0
		Beryllium, Total	4.5	0.01	4.8	93.4	1.0
		Bismuth, Total	451	0.59u	476	94.8	1.0
		Calcium, Total	10900	9680	2380	52.5*	1.0
		Cadmium, Total	4.3	0.08	4.8	88.0	1.0
		Cobalt, Total	44.5	0.12u	47.6	93.5	1.0
		Chromium, Total	18.7	0.36	19.0	96.5	1.0
		Copper, Total	25.7	1.6	23.8	101.3	1.0
		Iron, Total	133	34.7	95.2	103.2	1.0
		Mercury, Total	0.18	0.03	0.14	105.9	1.0
		Potassium, Total	4040	2080	2380	82.1	1.0
		Lithium, Total	107	0.1	95.2	112.5	1.0
		Magnesium, Total	2420	305	2380	88.7	1.0
		Manganese, Total	49.8	4.4	47.6	95.4	1.0
		Molybdenum, Total	89.8	0.13u	95.2	94.3	1.0
		Sodium, Total	3160	1100	2380	86.3	1.0
		Nickel, Total	43.4	0.13u	47.6	91.2	1.0
		Phosphorus, Total	5460	5930	476	-98. *	1.0
		Lead, Total	43.6	0.30u	47.6	91.6	1.0
		Antimony, Total	42.8	0.39u	47.6	89.9	1.0
		Selenium, Total	154	0.56	190	80.4	1.0
		Silicon, Total	121	17.5	95.2	108.6	1.0
		Tin, Total	88.7	0.95	95.2	92.2	1.0
		Titanium, Total	90.3	1.5	95.2	93.3	1.0
		Thallium, Total	174	0.62u	190	91.2	1.0
		Uranium, Total	221	2.0 u	238	93.0	1.0
		Vanadium, Total	45.4	0.09u	47.6	95.4	1.0
		Zinc, Total	78.8	53.2	47.6	53.8	1.0
		Zirconium, Total	312	0.52u	476	65.4	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 03/28/06

CLIENT: TNUHANFORD RC-047 K0229

LVL LOT #: 0603L379

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J117R3	Silver, Total	4.5	0.07u	4.8	93.8	1.0
		Aluminum, Total	174	15.1	190	83.4	1.0
		Arsenic, Total	176	0.58u	190	92.5	1.0
		Boron, Total	89.1	0.23u	95.2	93.6	1.0
		Barium, Total	181	2.3	190	93.9	1.0
		Beryllium, Total	4.1	0.02u	4.8	85.4	1.0
		Bismuth, Total	461	0.49u	476	96.8	1.0
		Calcium, Total	9310	6090	2380	135.5	1.0
		Cadmium, Total	4.5	0.11	4.8	91.5	1.0
		Cobalt, Total	44.2	0.13u	47.6	92.9	1.0
		Chromium, Total	18.6	0.63	19.0	94.6	1.0
		Copper, Total	21.4	1.4	23.8	84.0	1.0
		Iron, Total	114	56.4	95.2	60.8	1.0
		Mercury, Total	0.14	0.02u	0.14	95.1	1.0
		Potassium, Total	3880	2180	2380	71.3	1.0
		Lithium, Total	103	0.06	95.2	108.4	1.0
		Magnesium, Total	2160	225	2380	81.4	1.0
		Manganese, Total	42.3	4.1	47.6	80.3	1.0
		Molybdenum, Total	89.2	0.28u	95.2	93.7	1.0
		Sodium, Total	2820	889	2380	81.0	1.0
		Nickel, Total	45.0	0.42	47.6	93.7	1.0
		Phosphorus, Total	5690	4520	476	245.1*	1.0
		Lead, Total	45.1	0.30	47.6	94.1	1.0
		Antimony, Total	44.4	0.42u	47.6	93.3	1.0
		Selenium, Total	170	0.68	190	88.7	1.0
		Silicon, Total	124	24.2	95.2	105.3	1.0
		Tin, Total	88.2	1.1	95.2	91.5	1.0
		Titanium, Total	92.8	1.9	95.2	95.5	1.0
		Thallium, Total	178	0.67u	190	93.3	1.0
		Uranium, Total	218	0.84u	238	91.7	1.0
		Vanadium, Total	44.6	0.19	47.6	93.3	1.0
		Zinc, Total	70.5	31.1	47.6	82.8	1.0
		Zirconium, Total	292	1.0 u	476	61.4	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 03/28/06

CLIENT: TNUHANFORD RC-047 K0229 LVL LOT #: 0602L299

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J117R5	Silver, Total	0.14u	0.13u	NC	1.0
		Aluminum, Total	9.4	10.1	7.2	1.0
		Arsenic, Total	1.0	0.80	22.3	1.0
		Boron, Total	0.26u	0.26u	NC	1.0
		Barium, Total	3.5	2.8	22.2	1.0
		Beryllium, Total	0.01	0.01u	~~NC~~ 200 *	1.0
		Bismuth, Total	0.59u	0.59u	NC	1.0
		Calcium, Total	9680	7900	20.3	1.0
		Cadmium, Total	0.08	0.07u	~~NC~~ 200 *	1.0
		Cobalt, Total	0.12u	0.12u	NC	1.0
		Chromium, Total	0.36	0.39	6.4	1.0
		Copper, Total	1.6	1.6	0.00	1.0
		Iron, Total	34.7	30.6	12.6	1.0
		Mercury, Total	0.03	0.04	17.1	1.0
		Potassium, Total	2080	2100	0.74	1.0
		Lithium, Total	0.1	0.11	13.2	1.0
		Magnesium, Total	305	268	13.1	1.0
		Manganese, Total	4.4	3.7	17.3	1.0
		Molybdenum, Total	0.13u	0.12u	NC	1.0
		Sodium, Total	1100	1100	0.57	1.0
		Nickel, Total	0.13u	0.12u	NC	1.0
		Phosphorus, Total	5930	4900	19.0	1.0
		Lead, Total	0.30u	0.30u	NC	1.0
		Antimony, Total	0.39u	0.38	~~NC~~ 200 *	1.0
		Selenium, Total	0.56	0.95	51.1	1.0
		Silicon, Total	17.5	17.2	1.7	1.0
		Tin, Total	0.95	0.50u	~~NC~~ 200 *	1.0
		Titanium, Total	1.5	0.50	99.8	1.0
		Thallium, Total	0.62u	0.62u	NC	1.0
		Uranium, Total	2.0 u	2.0 u	NC	1.0
		Vanadium, Total	0.09u	0.09u	NC	1.0
		Zinc, Total	53.2	39.0	30.8	1.0
		Zirconium, Total	0.52u	0.52u	NC	1.0

* corrected entries
MW 3/29/06

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 03/28/06

CLIENT: TNUHANFORD RC-047 K0229 LVL LOT #: 0603L379

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J117R3	Silver, Total	0.07u	0.07u	NC	1.0
		Aluminum, Total	15.1	23.2	42.3	1.0
		Arsenic, Total	0.58u	0.59u	NC	1.0
		Boron, Total	0.23u	0.23u	NC	1.0
		Barium, Total	2.3	2.8	19.6	1.0
		Beryllium, Total	0.02u	0.02u	NC	1.0
		Bismuth, Total	0.49u	0.49u	NC	1.0
		Calcium, Total	6090	7170	16.3	1.0
		Cadmium, Total	0.11	0.11	4.4	1.0
		Cobalt, Total	0.13u	0.13u	NC	1.0
		Chromium, Total	0.63	0.97	42.7	1.0
		Copper, Total	1.4	2.0	35.3	1.0
		Iron, Total	56.4	58.3	3.3	1.0
		Mercury, Total	0.02u	0.01u	NC	1.0
		Potassium, Total	2180	2100	3.7	1.0
		Lithium, Total	0.06	0.05	11.7	1.0
		Magnesium, Total	225	242	6.9	1.0
		Manganese, Total	4.1	4.4	7.1	1.0
		Molybdenum, Total	0.28u	0.28u	NC	1.0
		Sodium, Total	889	887	0.27	1.0
		Nickel, Total	0.42	3.4	156.2	1.0
		Phosphorus, Total	4520	5230	14.6	1.0
		Lead, Total	0.30	0.45	38.4	1.0
		Antimony, Total	0.42u	0.42u	NC	1.0
		Selenium, Total	0.68	0.65	4.5	1.0
		Silicon, Total	24.2	26.3	8.3	1.0
		Tin, Total	1.1	1.2	8.7	1.0
		Titanium, Total	1.9	2.9	41.7	1.0
		Thallium, Total	0.67u	0.67u	NC	1.0
		Uranium, Total	0.84u	0.85u	NC	1.0
		Vanadium, Total	0.19	0.16	17.4	1.0
		Zinc, Total	31.1	185	142.4	1.0
		Zirconium, Total	1.0 u	1.0 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 03/28/06

CLIENT: TNUHANFORD RC-047 K0229 LVL LOT #: 0602L299

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	06L0122-LC1	Silver, LCS	48.7	50.0	MG/KG	97.4
		Aluminum, LCS	479	500	MG/KG	95.8
		Arsenic, LCS	876	1000	MG/KG	87.6
		Boron, LCS	457	500	MG/KG	91.4
		Barium, LCS	487	500	MG/KG	97.3
		Beryllium, LCS	25.0	25.0	MG/KG	100
		Bismuth, LCS	479	500	MG/KG	95.8
		Calcium, LCS	2420	2500	MG/KG	96.7
		Cadmium, LCS	23.9	25.0	MG/KG	95.6
		Cobalt, LCS	244	250	MG/KG	97.8
		Chromium, LCS	51.0	50.0	MG/KG	102.0
		Copper, LCS	125	125	MG/KG	99.8
		Iron, LCS	499	500	MG/KG	99.8
		Potassium, LCS	2260	2500	MG/KG	90.6
		Lithium, LCS	496	500	MG/KG	99.3
		Magnesium, LCS	2330	2500	MG/KG	93.3
		Manganese, LCS	77.5	75.0	MG/KG	103.3
		Molybdenum, LCS	498	500	MG/KG	99.7
		Sodium, LCS	2240	2500	MG/KG	89.6
		Nickel, LCS	192	200	MG/KG	96.0
		Phosphorus, LCS	446	500	MG/KG	89.1
		Lead, LCS	236	250	MG/KG	94.2
		Antimony, LCS	276	300	MG/KG	92.2
		Selenium, LCS	808	1000	MG/KG	80.8
		Silicon, LCS	321	500	MG/KG	64.2
		Tin, LCS	486	500	MG/KG	97.2
		Titanium, LCS	494	500	MG/KG	98.7
		Thallium, LCS	924	1000	MG/KG	92.4
		Uranium, LCS	239	250	MG/KG	95.5
		Vanadium, LCS	252	250	MG/KG	100.9
		Zinc, LCS	93.7	100	MG/KG	93.7
		Zirconium, LCS	489	500	MG/KG	97.8
LCS1	06C0033-LC1	Mercury, LCS	6.8	6.2	MG/KG	109.3

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 03/28/06

CLIENT: TNUHANFORD RC-047 K0229 LVL LOT #: 0603L379

WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	06L0158-LC1	Silver, LCS	49.4	50.0	MG/KG	98.8
		Aluminum, LCS	440	500	MG/KG	88.0
		Arsenic, LCS	942	1000	MG/KG	94.2
		Boron, LCS	477	500	MG/KG	95.5
		Barium, LCS	496	500	MG/KG	99.1
		Beryllium, LCS	22.5	25.0	MG/KG	90.0
		Bismuth, LCS	495	500	MG/KG	99.0
		Calcium, LCS	2060	2500	MG/KG	82.5
		Cadmium, LCS	24.3	25.0	MG/KG	97.2
		Cobalt, LCS	245	250	MG/KG	98.0
		Chromium, LCS	50.1	50.0	MG/KG	100.2
		Copper, LCS	112	125	MG/KG	89.2
		Iron, LCS	427	500	MG/KG	85.4
		Potassium, LCS	2200	2500	MG/KG	88.0
		Lithium, LCS	513	500	MG/KG	102.6
		Magnesium, LCS	2120	2500	MG/KG	84.8
		Manganese, LCS	62.7	75.0	MG/KG	83.6
		Molybdenum, LCS	497	500	MG/KG	99.4
		Sodium, LCS	2240	2500	MG/KG	89.5
		Nickel, LCS	196	200	MG/KG	97.8
		Phosphorus, LCS	450	500	MG/KG	90.0
		Lead, LCS	241	250	MG/KG	96.5
		Antimony, LCS	288	300	MG/KG	96.1
		Selenium, LCS	912	1000	MG/KG	91.2
		Silicon, LCS	181	500	MG/KG	36.2
		Tin, LCS	495	500	MG/KG	99.0
		Titanium, LCS	487	500	MG/KG	97.4
		Thallium, LCS	984	1000	MG/KG	98.4
		Uranium, LCS	240	250	MG/KG	96.1
		Vanadium, LCS	248	250	MG/KG	99.4
		Zinc, LCS	96.1	100	MG/KG	96.1
		Zirconium, LCS	461	500	MG/KG	92.2
LCS1	06C0041-LC1	Mercury, LCS	7.6	6.2	MG/KG	123.2