0071095

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 JE 09/19/06
INITIAL/DATE

COMMENTS:

SDG K0331 SAF-RC-047

WASTE SITE:

Borrow Pit 18 Invertebrates
600-181 Invertebrates
Borrow Pit 14 Invertebrates
628-1 Invertebrates
116-F-1 Invertebrates
600-171 Invertebrates
600-208 Invertebrates
600-23 Invertebrates
300-49 Invertebrates
600-139 Invertebrates
600-204 Invertebrates
JA Jones 1 Invertebrates
Borrow Pit 9 Invertebrates
100-F-2 Invertebrates
300-A Riparian #6 Invertebrates
300-44/618-4 Invertebrates

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EDMC

Date: 11 September 2006
To: Washington Closure Hanford (technical representative)
From: TechLaw, Inc.
Project: 100 Area and 300 Area Component of the RCBRA Sediment & Tissue
Subject: Inorganic - Data Package No. K0331-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0331 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	Media	Validation	Date
J11KR0	4/17/06	Solid	C	See note 1
J11KR6	4/17/06	Solid	C	See note 1
J11KP9	4/17/06	Solid	C	See note 1
J11KR7	4/17/06	Solid	C	See note 1
J11XX8	4/25/06	Solid	C	See note 1
J11KT1	4/17/06	Solid	C	See note 1
J11KR8	4/17/06	Solid	C	See note 1
J11XX9	4/25/06	Solid	C	See note 1
J11KR5	4/25/06	Solid	C	See note 1
J11KR1	4/25/06	Solid	C	See note 1
J11KT3	4/25/06	Solid	C	See note 1
J11KR3	4/25/06	Solid	C	See note 1
J11KR4	4/25/06	Solid	C	See note 1
J11L34	4/25/06	Solid	C	See note 1
J11KT5	4/25/06	Solid	C	See note 1
J11L32	4/25/06	Solid	C	See note 1
J11955	4/25/06	Solid	C	See note 1
J11KT2	4/26/06	Solid	C	See note 1

1 - ICP metals (6010B) and mercury by 7471A.

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 and 28 days for mercury.

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 lithium results were qualified as estimates and flagged "UJ".

Due to method blank contamination, all detected tin results were qualified as an estimate 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 (207%), all iron results were qualified as estimates and flagged "J".

Due to a matrix spike recovery outside QC limits (158%), all silicon results were qualified as estimates 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 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 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. K0331 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 lithium results were qualified as estimates and flagged "UJ".
- Due to method blank contamination, all detected tin results were qualified as an estimate and flagged "UJ".
- Due to a matrix spike recovery outside QC limits (207%), all iron results were qualified as estimates and flagged "J".
- Due to a matrix spike recovery outside QC limits (158%), all silicon 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.

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: K0331	REVIEWER: TLI	Project: RCBRA	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Lithium	UJ	All	Method blank contamination
Tin	UJ	J11KR0, J11KP9 J11XX8, J11KR8 J11XX9, J11KR5 J11KR1, J11KT3 J11KR3, J11KR4 J11955	Method blank contamination
Iron Silicon	J	All	MS recovery

* - 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: K0331

Sample Number		J11KR0		J11KR6		J11KP9		J11KR7		J11XX8		J11KT1		J11KR8		J11XX9		J11KR5		J11KR1	
Remarks																					
Sample Date		4/17/06		4/17/06		4/17/06		4/17/06		4/25/06		4/17/06		4/25/06		4/25/06		4/25/06		4/25/06	
Inorganics	RQL	Result	Q	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	0.08	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.08	U
Aluminum		34.4		24.9		49.7		28.1		34.4		27.3		17.3		19.0		33.6		22.9	
Arsenic	10	1.2		1.1		1.1		1.5		1.1		2.9		2.2		1.5		2.1		0.81	
Boron		5.0		3.0		4.6		3.9		3.8		6.5		3.8		4.6		2.8		3.3	
Barium	2	2.5		1.7		3.0		1.9		2.1		2.1		1.9		2.1		1.2		2.8	
Beryllium		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	0.02	U
Bismuth		0.50	U	0.50	U	0.50	U	0.61	U	0.54	U	0.49	U	0.49	U	0.53	U	0.49	U	0.61	U
Calcium		343		306		376		330		424		533		319		318		485		373	
Cadmium	0.5	0.07	U	0.07	U	0.07	U	0.08	U	0.07	U	0.07	U	0.07	U	0.07	U	0.07	U	0.08	U
Cobalt		0.14		0.18		0.24		0.17	U	0.17		0.16		0.14		0.14	U	0.14		0.17	
Chromium	1	0.44		1.9		0.41		0.34		0.26		0.17		0.70		0.64		0.48		0.30	
Copper	1	6.4		5.6		13.4		6.2		6.8		6.8		13.2		18.6		7.0		10.3	
Iron		112	J	83.7	J	170	J	127	J	158	J	77.7	J	71.4	J	59.8	J	104	J	66.4	J
Mercury		0.02	U	0.02	U	0.02	U	0.02	U	0.01	U	0.02	U	0.02	U	0.02	U	0.02	U	0.01	U
Potassium	400	2410		2550		2620		2510		2490		2450		2760		2490		2270		2520	
Lithium	5	0.07	UJ	0.05	UJ	0.09	UJ	0.05	UJ	0.07	UJ	0.07	UJ	0.05	UJ	0.06	UJ	0.06	UJ	0.06	UJ
Magnesium		714		798		888		601		686		845		754		764		608		659	
Manganese		6.8		5.3		7.5		6.9		7.2		6.4		5.6		5.5		6.6		6.9	
Molybdenum		0.28	U	0.35		0.28	U	0.40		0.35		0.49		0.55		0.52		0.34		0.42	
Sodium		417		438		479		464		453		495		432		477		460		731	
Nickel		0.37		0.99		0.29		0.33		0.26	U	0.23	U	0.38		0.40		0.64		0.36	
Phosphorous	5	2370		2600		2610		2180		2230		2530		2670		2470		2090		2420	
Lead	5	0.30	U	0.37		0.38		0.37	U	0.33	U	1.1		0.3	U	0.32	U	0.89		0.55	
Antimony	6	0.44		0.43	U	0.56		0.69		0.55		0.42	U	0.54		0.50		0.44		0.53	U
Selenium		0.46	U	0.52		0.46	U	0.56	U	0.50	U	0.53		0.67		0.48	U	0.46		0.57	U
Silicon		61.0	J	51.6	J	71.8	J	56.9	J	66.8	J	54.5	J	39.5	J	44.5	J	55.2	J	37.2	J
Tin		1.1	UJ	1.0	U	1.7	UJ	1.3	U	1.2	UJ	1.0	U	1.8	UJ	2.2	UJ	1.1	UJ	1.4	UJ
Strontium		6.0		3.3		4.5		4.2		4.2		8.3		3.7		4.6		3.3		3.9	
Thallium		0.68	U	0.69	U	0.68	U	0.83	U	0.74	U	0.67	U	0.67	U	0.72	U	0.67	U	0.84	U
Uranium	30	2.2		1.9		1.7		2.0		1.9		1.8		1.3		2.1		1.7		2.7	
Vanadium		0.31		0.24		0.40		0.31		0.48		0.21		0.17		0.19		0.22		0.20	
Zinc	1	32.3		34.9		35.7		36.9		33.7		34.9		41.4		39.3		34.4		58.7	

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: K0331

Sample Number		J11KT3		J11KR3		J11KR4		J11L34		J11KT5		J11L32		J11955		J11KT2					
Remarks																					
Sample Date		4/17/06		4/17/06		4/17/06		4/17/06		4/25/06		4/17/06		4/25/06		4/25/06					
Inorganics	RQL	Result	Q	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	0.08	U	0.07	U	0.07	U	0.50	U				
Aluminum		14.5		18.9		17.4		15.2		12.4		15.5		16.0		53.9					
Arsenic	10	1.1		1.3		1.2		0.72		0.88		1.7		1.4		4.4	U				
Boron		4.7		2.5		3.6		4.7		3.6		3.1		3.5		7.0					
Barium	2	2.2		1.3		2.7		2.6		3.0		1.1		1.4		4.1					
Beryllium		0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.14	U				
Bismuth		0.49	U	0.49	U	0.49	U	0.50	U	0.56	U	0.48	U	0.49	U	3.6	U				
Calcium		356		335		308		439		539		537		385		1100					
Cadmium	0.5	0.07	U	0.57		0.07	U	0.07	U	0.08	U	0.07	U	0.07	U	0.50	U				
Cobalt		0.14		0.16		0.17		0.14	U	0.15	U	0.13	U	0.13	U	1.0	U				
Chromium	1	0.32		0.28		0.22		0.15		0.14	U	0.12	U	0.30		0.93	U				
Copper	1	8.0		18.3		8.0		5.3		3.9		6.0		7.7		15.6					
Iron		51.9	J	57.5	J	58.5	J	67.8	J	43.3	J	40.4	J	51.0	J	156	J				
Mercury		0.02	U	0.01	U	0.01	U	0.02	U	0.02	U	0.02	U	0.02	U	0.03	U				
Potassium	400	2510		2540		2620		2620		2220		2430		2470		3440					
Lithium	5	0.05	UJ	0.04	UJ	0.06	UJ	0.04	UJ	0.05	UJ	0.04	UJ	0.04	UJ	0.24	UJ				
Magnesium		662		540		722		826		858		568		804		952					
Manganese		4.5		6.0		5.9		7.1		7.0		5.4		5.3		12.5					
Molybdenum		0.30		0.36		0.44		0.40		0.48		0.46		0.45		2.1	U				
Sodium		466		820		469		427		508		440		494		570					
Nickel		0.52		0.46		0.52		0.29		0.26	U	0.22	U	0.60		1.7	U				
Phosphorous	5	2370		2490		2480		2540		2290		2270		2550		2970					
Lead	5	0.30	U	0.44		2.2		0.30	U	0.34	U	0.29	U	0.30		2.2	U				
Antimony	6	0.42	U	0.42	U	0.42	U	0.43	U	0.48	U	0.45		0.42	U	3.1	U				
Selenium		0.45	U	0.45	U	0.45	U	0.46	U	0.52	U	0.44	U	0.45	U	3.4	U				
Silicon		31.8	J	38.0	J	41.0	J	36.8	J	57.3	J	42.4	J	37.4	J	67.4	J				
Tin		1.2	UJ	1.4	UJ	1.2	UJ	1.0	U	1.2	U	1.0	U	1.2	UJ	7.6	U				
Strontium		5.2		2.7		4.0		4.8		4.5		4.6		3.8		7.2					
Thallium		0.67	U	0.67	U	0.67	U	0.68	U	0.77	U	0.65	U	0.67	U	5.0	U				
Uranium	30	0.85	U	2.5		0.92		1.1		0.97	U	1.6		1.9		10.8					
Vanadium		0.16		0.16		0.17		0.16		0.14		0.10		0.12		0.74					
Zinc	1	39.5		60.3		35.5		42.0		33.1		35.6		38.5		61.1					

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.

000012

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/08/06

CLIENT: TNUHANFORD RC-047 K0331 LVL LOT #: 0604L876

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J11KR0	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	34.4	MG/KG	2.3	1.0
		Arsenic, Total	1.2	MG/KG	0.59	1.0
		Boron, Total	5.0	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	343	MG/KG	1.6	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.14	MG/KG	0.14	1.0
		Chromium, Total	0.44	MG/KG	0.13	1.0
		Copper, Total	6.4	MG/KG	0.12	1.0
		Iron, Total	112 J	MG/KG	3.4	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	2410	MG/KG	2.2	1.0
		Lithium, Total	0.07 UJ	MG/KG	0.03	1.0
		Magnesium, Total	714	MG/KG	0.94	1.0
		Manganese, Total	6.8	MG/KG	0.03	1.0
		Molybdenum, Total	0.28 u	MG/KG	0.28	1.0
		Sodium, Total	417	MG/KG	0.74	1.0
		Nickel, Total	0.37	MG/KG	0.23	1.0
		Phosphorus, Total	2370	MG/KG	0.87	1.0
		Lead, Total	0.30 u	MG/KG	0.30	1.0
		Antimony, Total	0.44	MG/KG	0.43	1.0
		Selenium, Total	0.46 u	MG/KG	0.46	1.0
		Silicon, Total	61.0 J	MG/KG	2.2	1.0
		Tin, Total	1.1 UJ	MG/KG	1.0	1.0
		Strontium, Total	6.0	MG/KG	0.01	1.0
		Thallium, Total	0.68 u	MG/KG	0.68	1.0
		Uranium, Total	2.2	MG/KG	0.85	1.0
		Vanadium, Total	0.31	MG/KG	0.09	1.0
		Zinc, Total	32.3	MG/KG	0.16	1.0

9/9/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/08/06

CLIENT: TNUHANFORD RC-047 K0331 LVL LOT #: 0604L876

WORK ORDER: 11243-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J11KR6	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	24.9	MG/KG	2.3	1.0
		Arsenic, Total	1.1	MG/KG	0.60	1.0
		Boron, Total	3.0	MG/KG	0.24	1.0
		Barium, Total	1.7	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	306	MG/KG	1.6	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.18	MG/KG	0.14	1.0
		Chromium, Total	1.9	MG/KG	0.13	1.0
		Copper, Total	5.6	MG/KG	0.12	1.0
		Iron, Total	83.7 J	MG/KG	3.4	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	2550	MG/KG	2.2	1.0
		Lithium, Total	0.05 UJ	MG/KG	0.03	1.0
		Magnesium, Total	798	MG/KG	0.95	1.0
		Manganese, Total	5.3	MG/KG	0.03	1.0
		Molybdenum, Total	0.35	MG/KG	0.28	1.0
		Sodium, Total	438	MG/KG	0.74	1.0
		Nickel, Total	0.99	MG/KG	0.24	1.0
		Phosphorus, Total	2600	MG/KG	0.88	1.0
		Lead, Total	0.37	MG/KG	0.30	1.0
		Antimony, Total	0.43 u	MG/KG	0.43	1.0
		Selenium, Total	0.52	MG/KG	0.46	1.0
		Silicon, Total	51.6 J	MG/KG	2.2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	3.3	MG/KG	0.01	1.0
		Thallium, Total	0.69 u	MG/KG	0.69	1.0
		Uranium, Total	1.9	MG/KG	0.86	1.0
		Vanadium, Total	0.24	MG/KG	0.09	1.0
		Zinc, Total	34.9	MG/KG	0.16	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/08/06

CLIENT: TNUHANFORD RC-047 K0331 LVL LOT #: 0604L876

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J11KP9	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	49.7	MG/KG	2.3	1.0
		Arsenic, Total	1.1	MG/KG	0.59	1.0
		Boron, Total	4.6	MG/KG	0.23	1.0
		Barium, Total	3.0	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	376	MG/KG	1.6	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.24	MG/KG	0.14	1.0
		Chromium, Total	0.41	MG/KG	0.13	1.0
		Copper, Total	13.4	MG/KG	0.12	1.0
		Iron, Total	170 J	MG/KG	2.4	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	2620	MG/KG	2.2	1.0
		Lithium, Total	0.09 UJ	MG/KG	0.03	1.0
		Magnesium, Total	888	MG/KG	0.94	1.0
		Manganese, Total	7.5	MG/KG	0.03	1.0
		Molybdenum, Total	0.28 u	MG/KG	0.28	1.0
		Sodium, Total	479	MG/KG	0.74	1.0
		Nickel, Total	0.29	MG/KG	0.23	1.0
		Phosphorus, Total	2610	MG/KG	0.87	1.0
		Lead, Total	0.38	MG/KG	0.30	1.0
		Antimony, Total	0.56	MG/KG	0.43	1.0
		Selenium, Total	0.46 u	MG/KG	0.46	1.0
		Silicon, Total	71.8 J	MG/KG	2.2	1.0
		Tin, Total	1.7 UJ	MG/KG	1.0	1.0
		Strontium, Total	4.5	MG/KG	0.01	1.0
		Thallium, Total	0.68 u	MG/KG	0.68	1.0
		Uranium, Total	1.7	MG/KG	0.85	1.0
		Vanadium, Total	0.40	MG/KG	0.09	1.0
		Zinc, Total	35.7	MG/KG	0.16	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/08/06

CLIENT: TNUHANFORD RC-047 K0331 LVL LOT #: 0604L876

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	J11KR7	Silver, Total	0.08	u	MG/KG	0.08	1.0
		Aluminum, Total	28.1		MG/KG	2.8	1.0
		Arsenic, Total	1.5		MG/KG	0.73	1.0
		Boron, Total	3.9		MG/KG	0.29	1.0
		Barium, Total	1.9		MG/KG	0.02	1.0
		Beryllium, Total	0.02	u	MG/KG	0.02	1.0
		Bismuth, Total	0.61	u	MG/KG	0.61	1.0
		Calcium, Total	330		MG/KG	2.0	1.0
		Cadmium, Total	0.08	u	MG/KG	0.08	1.0
		Cobalt, Total	0.17	u	MG/KG	0.17	1.0
		Chromium, Total	0.34		MG/KG	0.15	1.0
		Copper, Total	6.2		MG/KG	0.14	1.0
		Iron, Total	127	J	MG/KG	4.2	1.0
		Mercury, Total	0.02	u	MG/KG	0.02	1.0
		Potassium, Total	2510		MG/KG	2.7	1.0
		Lithium, Total	0.05	UJ	MG/KG	0.04	1.0
		Magnesium, Total	601		MG/KG	1.2	1.0
		Manganese, Total	6.9		MG/KG	0.04	1.0
		Molybdenum, Total	0.40		MG/KG	0.35	1.0
		Sodium, Total	464		MG/KG	0.90	1.0
		Nickel, Total	0.33		MG/KG	0.29	1.0
		Phosphorus, Total	2180		MG/KG	1.1	1.0
		Lead, Total	0.37	u	MG/KG	0.37	1.0
		Antimony, Total	0.69		MG/KG	0.52	1.0
		Selenium, Total	0.56	u	MG/KG	0.56	1.0
		Silicon, Total	56.9	J	MG/KG	2.7	1.0
		Tin, Total	1.3	u	MG/KG	1.3	1.0
		Strontium, Total	4.2		MG/KG	0.01	1.0
		Thallium, Total	0.83	u	MG/KG	0.83	1.0
		Uranium, Total	2.0		MG/KG	1.0	1.0
		Vanadium, Total	0.31		MG/KG	0.11	1.0
		Zinc, Total	36.9		MG/KG	0.19	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/08/06

CLIENT: TNUHANFORD RC-047 K0331 LVL LOT #: 0604L876

WORK ORDER: 11343-606-001-2999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	J11XX8	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	34.4	MG/KG	2.5	1.0
		Arsenic, Total	1.1	MG/KG	0.65	1.0
		Boron, Total	3.8	MG/KG	0.26	1.0
		Barium, Total	2.1	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.54 u	MG/KG	0.54	1.0
		Calcium, Total	424	MG/KG	1.7	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.17	MG/KG	0.15	1.0
		Chromium, Total	0.26	MG/KG	0.14	1.0
		Copper, Total	6.8	MG/KG	0.13	1.0
		Iron, Total	158 J	MG/KG	3.7	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	2490	MG/KG	2.4	1.0
		Lithium, Total	0.07 UJ	MG/KG	0.03	1.0
		Magnesium, Total	686	MG/KG	1.0	1.0
		Manganese, Total	7.2	MG/KG	0.03	1.0
		Molybdenum, Total	0.35	MG/KG	0.31	1.0
		Sodium, Total	453 J	MG/KG	0.81	1.0
		Nickel, Total	0.26 u	MG/KG	0.26	1.0
		Phosphorus, Total	2230	MG/KG	0.96	1.0
		Lead, Total	0.33 u	MG/KG	0.33	1.0
		Antimony, Total	0.55	MG/KG	0.47	1.0
		Selenium, Total	0.50 u	MG/KG	0.50	1.0
		Silicon, Total	66.8	MG/KG	2.4	1.0
		Tin, Total	1.2 UJ	MG/KG	1.1	1.0
		Strontium, Total	4.2	MG/KG	0.01	1.0
		Thallium, Total	0.74 u	MG/KG	0.74	1.0
		Uranium, Total	1.9	MG/KG	0.94	1.0
		Vanadium, Total	0.48	MG/KG	0.1	1.0
		Zinc, Total	33.7	MG/KG	0.17	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/08/06

CLIENT: TNUHANFORD RC-047 K0331 LVL LOT #: 0604L876

WORK ORDER: 11341-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	J11KT1	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	27.3	MG/KG	2.2	1.0
		Arsenic, Total	2.9	MG/KG	0.58	1.0
		Boron, Total	6.5	MG/KG	0.23	1.0
		Barium, Total	2.1	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	533	MG/KG	1.6	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.16	MG/KG	0.13	1.0
		Chromium, Total	0.17	MG/KG	0.12	1.0
		Copper, Total	6.8	MG/KG	0.11	1.0
		Iron, Total	77.7 J	MG/KG	3.3	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	2450	MG/KG	2.2	1.0
		Lithium, Total	0.07 UJ	MG/KG	0.03	1.0
		Magnesium, Total	845	MG/KG	0.92	1.0
		Manganese, Total	6.4	MG/KG	0.03	1.0
		Molybdenum, Total	0.49	MG/KG	0.28	1.0
		Sodium, Total	495 J	MG/KG	0.72	1.0
		Nickel, Total	0.23 u	MG/KG	0.23	1.0
		Phosphorus, Total	2530	MG/KG	0.86	1.0
		Lead, Total	1.1	MG/KG	0.30	1.0
		Antimony, Total	0.42 u	MG/KG	0.42	1.0
		Selenium, Total	0.53	MG/KG	0.45	1.0
		Silicon, Total	54.5	MG/KG	2.2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	8.3	MG/KG	0.01	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	1.8	MG/KG	0.84	1.0
		Vanadium, Total	0.21	MG/KG	0.09	1.0
		Zinc, Total	34.9	MG/KG	0.15	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/08/06

CLIENT: TNUHANFORD RC-047 K0331 LVL LOT #: 0604L876

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	J11KR8	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	17.3	MG/KG	2.2	1.0
		Arsenic, Total	2.2	MG/KG	0.58	1.0
		Boron, Total	3.8	MG/KG	0.23	1.0
		Barium, Total	1.9	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	319	MG/KG	1.6	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.14	MG/KG	0.13	1.0
		Chromium, Total	0.70	MG/KG	0.12	1.0
		Copper, Total	13.2	MG/KG	0.11	1.0
		Iron, Total	71.4 J	MG/KG	3.3	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	2760	MG/KG	2.2	1.0
		Lithium, Total	0.05 UJ	MG/KG	0.03	1.0
		Magnesium, Total	754	MG/KG	0.92	1.0
		Manganese, Total	5.6	MG/KG	0.03	1.0
		Molybdenum, Total	0.55	MG/KG	0.28	1.0
		Sodium, Total	432	MG/KG	0.72	1.0
		Nickel, Total	0.38	MG/KG	0.23	1.0
		Phosphorus, Total	2670	MG/KG	0.86	1.0
		Lead, Total	0.30 u	MG/KG	0.30	1.0
		Antimony, Total	0.54	MG/KG	0.42	1.0
		Selenium, Total	0.67	MG/KG	0.45	1.0
		Silicon, Total	39.5 J	MG/KG	2.2	1.0
		Tin, Total	1.8 UJ	MG/KG	1.0	1.0
		Strontium, Total	3.7	MG/KG	0.01	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	1.3	MG/KG	0.84	1.0
		Vanadium, Total	0.17	MG/KG	0.09	1.0
		Zinc, Total	41.4	MG/KG	0.15	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/08/06

CLIENT: TNUHANFORD RC-047 K0331 LVL LOT #: 0604L076

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-008	J11XX9	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	19.0	MG/KG	2.4	1.0
		Arsenic, Total	1.5	MG/KG	0.63	1.0
		Boron, Total	4.6	MG/KG	0.25	1.0
		Barium, Total	2.1	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.53 u	MG/KG	0.53	1.0
		Calcium, Total	318	MG/KG	1.7	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	0.64	MG/KG	0.13	1.0
		Copper, Total	18.6	MG/KG	0.12	1.0
		Iron, Total	59.8 J	MG/KG	3.6	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	2490	MG/KG	2.3	1.0
		Lithium, Total	0.06 UJ	MG/KG	0.03	1.0
		Magnesium, Total	764	MG/KG	1.0	1.0
		Manganese, Total	5.5	MG/KG	0.03	1.0
		Molybdenum, Total	0.52	MG/KG	0.30	1.0
		Sodium, Total	477	MG/KG	0.78	1.0
		Nickel, Total	0.40	MG/KG	0.25	1.0
		Phosphorus, Total	2470	MG/KG	0.93	1.0
		Lead, Total	0.32 u	MG/KG	0.32	1.0
		Antimony, Total	0.50	MG/KG	0.45	1.0
		Selenium, Total	0.48 u	MG/KG	0.48	1.0
		Silicon, Total	44.5 J	MG/KG	2.3	1.0
		Tin, Total	2.2 UJ	MG/KG	1.1	1.0
		Strontium, Total	4.6	MG/KG	0.01	1.0
		Thallium, Total	0.72 u	MG/KG	0.72	1.0
		Uranium, Total	2.1	MG/KG	0.91	1.0
		Vanadium, Total	0.19	MG/KG	0.09	1.0
		Zinc, Total	39.3	MG/KG	0.16	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/08/06

CLIENT: TNUHANFORD RC-047 K0331 LVL LOT #: 0604L076

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	J11KR5	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	22.6	MG/KG	2.3	1.0
		Arsenic, Total	2.1	MG/KG	0.59	1.0
		Boron, Total	2.8	MG/KG	0.23	1.0
		Barium, Total	1.2	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	485	MG/KG	1.6	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.14	MG/KG	0.13	1.0
		Chromium, Total	0.48	MG/KG	0.12	1.0
		Copper, Total	7.0	MG/KG	0.12	1.0
		Iron, Total	104 J	MG/KG	3.4	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	2270	MG/KG	2.2	1.0
		Lithium, Total	0.06 UJ	MG/KG	0.03	1.0
		Magnesium, Total	608	MG/KG	0.92	1.0
		Manganese, Total	6.6	MG/KG	0.03	1.0
		Molybdenum, Total	0.34	MG/KG	0.28	1.0
		Sodium, Total	460	MG/KG	0.73	1.0
		Nickel, Total	0.64	MG/KG	0.23	1.0
		Phosphorus, Total	2090	MG/KG	0.86	1.0
		Lead, Total	0.89	MG/KG	0.30	1.0
		Antimony, Total	0.44	MG/KG	0.42	1.0
		Selenium, Total	0.46	MG/KG	0.45	1.0
		Silicon, Total	55.2 J	MG/KG	2.2	1.0
		Tin, Total	1.1 UJ	MG/KG	1.0	1.0
		Strontium, Total	3.3	MG/KG	0.01	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	1.7	MG/KG	0.85	1.0
		Vanadium, Total	0.22	MG/KG	0.09	1.0
		Zinc, Total	34.4	MG/KG	0.15	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/08/06

CLIENT: TNUHANFORD RC-047 K0221 LVL LOT #: 06041876

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-010	J11KR1	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Aluminum, Total	22.9	MG/KG	2.8	1.0
		Arsenic, Total	0.81	MG/KG	0.74	1.0
		Boron, Total	3.3	MG/KG	0.29	1.0
		Barium, Total	2.8	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.61 u	MG/KG	0.61	1.0
		Calcium, Total	373	MG/KG	2.0	1.0
		Cadmium, Total	0.08 u	MG/KG	0.08	1.0
		Cobalt, Total	0.17	MG/KG	0.17	1.0
		Chromium, Total	0.30	MG/KG	0.16	1.0
		Copper, Total	10.3	MG/KG	0.14	1.0
		Iron, Total	66.4 J	MG/KG	4.2	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	2520	MG/KG	2.7	1.0
		Lithium, Total	0.06 UJ	MG/KG	0.04	1.0
		Magnesium, Total	659	MG/KG	1.2	1.0
		Manganese, Total	6.9	MG/KG	0.04	1.0
		Molybdenum, Total	0.42	MG/KG	0.35	1.0
		Sodium, Total	731	MG/KG	0.92	1.0
		Nickel, Total	0.36	MG/KG	0.29	1.0
		Phosphorus, Total	2420	MG/KG	1.1	1.0
		Lead, Total	0.55	MG/KG	0.37	1.0
		Antimony, Total	0.53 u	MG/KG	0.53	1.0
		Selenium, Total	0.57 u	MG/KG	0.57	1.0
		Silicon, Total	37.2 J	MG/KG	2.7	1.0
		Tin, Total	1.4 UJ	MG/KG	1.3	1.0
		Strontium, Total	3.9	MG/KG	0.01	1.0
		Thallium, Total	0.84 u	MG/KG	0.84	1.0
		Uranium, Total	2.7	MG/KG	1.1	1.0
		Vanadium, Total	0.20	MG/KG	0.11	1.0
		Zinc, Total	58.7	MG/KG	0.19	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/08/06

CLIENT: TNUHANFORD RC-047 K0331 LVL LOT #: 0604L876

WORK ORDER: 11241-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-011	J11KT3	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	14.5	MG/KG	2.3	1.0
		Arsenic, Total	1.1	MG/KG	0.59	1.0
		Boron, Total	4.7	MG/KG	0.23	1.0
		Barium, Total	2.2	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	356	MG/KG	1.6	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.14	MG/KG	0.13	1.0
		Chromium, Total	0.32	MG/KG	0.12	1.0
		Copper, Total	8.0	MG/KG	0.12	1.0
		Iron, Total	51.9 J	MG/KG	3.4	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	2510	MG/KG	2.2	1.0
		Lithium, Total	0.05 UJ	MG/KG	0.03	1.0
		Magnesium, Total	662	MG/KG	0.93	1.0
		Manganese, Total	4.5	MG/KG	0.03	1.0
		Molybdenum, Total	0.30	MG/KG	0.28	1.0
		Sodium, Total	466	MG/KG	0.73	1.0
		Nickel, Total	0.52	MG/KG	0.23	1.0
		Phosphorus, Total	2370	MG/KG	0.86	1.0
		Lead, Total	0.30 u	MG/KG	0.30	1.0
		Antimony, Total	0.42 u	MG/KG	0.42	1.0
		Selenium, Total	0.45 u	MG/KG	0.45	1.0
		Silicon, Total	31.8 J	MG/KG	2.2	1.0
		Tin, Total	1.2 UJ	MG/KG	1.0	1.0
		Strontium, Total	5.2	MG/KG	0.01	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	0.16	MG/KG	0.09	1.0
		Zinc, Total	39.5	MG/KG	0.15	1.0

9/9/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/08/06

CLIENT: TNUHANFORD RC-047 K0331 LVL LOT #: 0604L876

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-012	J11KR3	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	18.9	MG/KG	2.3	1.0
		Arsenic, Total	1.3	MG/KG	0.59	1.0
		Boron, Total	2.5	MG/KG	0.23	1.0
		Barium, Total	1.3	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	335	MG/KG	1.6	1.0
		Cadmium, Total	0.57	MG/KG	0.07	1.0
		Cobalt, Total	0.16	MG/KG	0.12	1.0
		Chromium, Total	0.28	MG/KG	0.12	1.0
		Copper, Total	18.3	MG/KG	0.12	1.0
		Iron, Total	57.5 J	MG/KG	3.4	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	2540	MG/KG	2.2	1.0
		Lithium, Total	0.04 UJ	MG/KG	0.03	1.0
		Magnesium, Total	540	MG/KG	0.93	1.0
		Manganese, Total	6.0	MG/KG	0.03	1.0
		Molybdenum, Total	0.36	MG/KG	0.28	1.0
		Sodium, Total	820	MG/KG	0.72	1.0
		Nickel, Total	0.46	MG/KG	0.23	1.0
		Phosphorus, Total	2490	MG/KG	0.86	1.0
		Lead, Total	0.44	MG/KG	0.30	1.0
		Antimony, Total	0.42 u	MG/KG	0.42	1.0
		Selenium, Total	0.45 u	MG/KG	0.45	1.0
		Silicon, Total	38.0 J	MG/KG	2.2	1.0
		Tin, Total	1.4 UJ	MG/KG	1.0	1.0
		Strontium, Total	2.7	MG/KG	0.01	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	2.5	MG/KG	0.85	1.0
		Vanadium, Total	0.16	MG/KG	0.09	1.0
		Zinc, Total	60.3	MG/KG	0.15	1.0

9/9/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/08/06

CLIENT: TNUHANFORD RC-047 K0331 LVL LOT #: 0604L876

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-013	J11KR4	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	17.4	MG/KG	2.2	1.0
		Arsenic, Total	1.2	MG/KG	0.58	1.0
		Boron, Total	3.6	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	308	MG/KG	1.6	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.17	MG/KG	0.13	1.0
		Chromium, Total	0.22	MG/KG	0.12	1.0
		Copper, Total	8.0	MG/KG	0.11	1.0
		Iron, Total	58.5 J	MG/KG	3.3	1.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	2620	MG/KG	2.2	1.0
		Lithium, Total	0.06 UJ	MG/KG	0.03	1.0
		Magnesium, Total	722	MG/KG	0.92	1.0
		Manganese, Total	5.9	MG/KG	0.03	1.0
		Molybdenum, Total	0.44	MG/KG	0.28	1.0
		Sodium, Total	469	MG/KG	0.72	1.0
		Nickel, Total	0.52	MG/KG	0.23	1.0
		Phosphorus, Total	2480	MG/KG	0.86	1.0
		Lead, Total	2.2	MG/KG	0.30	1.0
		Antimony, Total	0.42 u	MG/KG	0.42	1.0
		Selenium, Total	0.45 u	MG/KG	0.45	1.0
		Silicon, Total	41.0 J	MG/KG	2.2	1.0
		Tin, Total	1.2 UJ	MG/KG	1.0	1.0
		Strontium, Total	4.0	MG/KG	0.01	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	0.92	MG/KG	0.84	1.0
		Vanadium, Total	0.17	MG/KG	0.09	1.0
		Zinc, Total	35.5	MG/KG	0.15	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/08/06

CLIENT: TNUHANFORD RC-047 K0331 LVL LOT #: 0604L876

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-014	J11L24	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	15.2	MG/KG	2.3	1.0
		Arsenic, Total	0.72	MG/KG	0.59	1.0
		Boron, Total	4.7	MG/KG	0.23	1.0
		Barium, Total	2.6	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	439	MG/KG	1.6	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	0.15	MG/KG	0.13	1.0
		Copper, Total	5.3	MG/KG	0.12	1.0
		Iron, Total	67.8 J	MG/KG	3.4	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	2620	MG/KG	2.2	1.0
		Lithium, Total	0.04 UJ	MG/KG	0.03	1.0
		Magnesium, Total	826	MG/KG	0.94	1.0
		Manganese, Total	7.1	MG/KG	0.03	1.0
		Molybdenum, Total	0.40	MG/KG	0.28	1.0
		Sodium, Total	427	MG/KG	0.74	1.0
		Nickel, Total	0.29	MG/KG	0.23	1.0
		Phosphorus, Total	2540	MG/KG	0.87	1.0
		Lead, Total	0.30 u	MG/KG	0.30	1.0
		Antimony, Total	0.43 u	MG/KG	0.43	1.0
		Selenium, Total	0.46 u	MG/KG	0.46	1.0
		Silicon, Total	36.8 J	MG/KG	2.2	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	4.8	MG/KG	0.01	1.0
		Thallium, Total	0.68 u	MG/KG	0.68	1.0
		Uranium, Total	1.1	MG/KG	0.85	1.0
		Vanadium, Total	0.16	MG/KG	0.09	1.0
		Zinc, Total	42.0	MG/KG	0.16	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/08/06

CLIENT: TNUHANFORD RC-047 K0331 LVL LOT #: 0604L876

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-015	J11KT5	Silver, Total	0.08 u	MG/KG	0.08	1.0
		Aluminum, Total	12.4	MG/KG	2.6	1.0
		Arsenic, Total	0.88	MG/KG	0.67	1.0
		Boron, Total	3.6	MG/KG	0.26	1.0
		Barium, Total	3.0	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.56 u	MG/KG	0.56	1.0
		Calcium, Total	539	MG/KG	1.8	1.0
		Cadmium, Total	0.08 u	MG/KG	0.08	1.0
		Cobalt, Total	0.15 u	MG/KG	0.15	1.0
		Chromium, Total	0.14 u	MG/KG	0.14	1.0
		Copper, Total	3.9	MG/KG	0.12	1.0
		Iron, Total	43.3 J	MG/KG	3.8	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	2220	MG/KG	2.5	1.0
		Lithium, Total	0.05 UJ	MG/KG	0.03	1.0
		Magnesium, Total	858	MG/KG	1.1	1.0
		Manganese, Total	7.0	MG/KG	0.03	1.0
		Molybdenum, Total	0.48	MG/KG	0.22	1.0
		Sodium, Total	508	MG/KG	0.84	1.0
		Nickel, Total	0.26 u	MG/KG	0.26	1.0
		Phosphorus, Total	2290	MG/KG	0.99	1.0
		Lead, Total	0.34 u	MG/KG	0.34	1.0
		Antimony, Total	0.48 u	MG/KG	0.48	1.0
		Selenium, Total	0.52 u	MG/KG	0.52	1.0
		Silicon, Total	57.3 J	MG/KG	2.5	1.0
		Tin, Total	1.2 u	MG/KG	1.2	1.0
		Strontium, Total	4.5	MG/KG	0.01	1.0
		Thallium, Total	0.77 u	MG/KG	0.77	1.0
		Uranium, Total	0.97 u	MG/KG	0.97	1.0
		Vanadium, Total	0.14	MG/KG	0.1	1.0
		Zinc, Total	33.1	MG/KG	0.18	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/08/06

CLIENT: TNUHANFORD RC-047 K0331 LVL LOT #: 0604L876

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-016	J11L32	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	15.5	MG/KG	2.2	1.0
		Arsenic, Total	1.7	MG/KG	0.57	1.0
		Boron, Total	3.1	MG/KG	0.22	1.0
		Barium, Total	1.1	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	537	MG/KG	1.5	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.12 u	MG/KG	0.12	1.0
		Copper, Total	6.0	MG/KG	0.11	1.0
		Iron, Total	40.4 J	MG/KG	3.3	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	2430	MG/KG	2.1	1.0
		Lithium, Total	0.04 UJ	MG/KG	0.03	1.0
		Magnesium, Total	568	MG/KG	0.91	1.0
		Manganese, Total	5.4	MG/KG	0.03	1.0
		Molybdenum, Total	0.46	MG/KG	0.27	1.0
		Sodium, Total	440	MG/KG	0.71	1.0
		Nickel, Total	0.22 u	MG/KG	0.22	1.0
		Phosphorus, Total	2270	MG/KG	0.84	1.0
		Lead, Total	0.29 u	MG/KG	0.29	1.0
		Antimony, Total	0.45	MG/KG	0.41	1.0
		Selenium, Total	0.44 u	MG/KG	0.44	1.0
		Silicon, Total	42.4 J	MG/KG	2.1	1.0
		Tin, Total	1.0 u	MG/KG	1.0	1.0
		Strontium, Total	4.6	MG/KG	0.009	1.0
		Thallium, Total	0.65 u	MG/KG	0.65	1.0
		Uranium, Total	1.6	MG/KG	0.82	1.0
		Vanadium, Total	0.10	MG/KG	0.08	1.0
		Zinc, Total	35.6	MG/KG	0.15	1.0

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Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/08/06

CLIENT: TNUHANFORD RC-047 K0331 LVL LOT #: 0604L876

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-017	J11955	Silver, Total	0.07 u	MG/KG	0.07	1.0
		Aluminum, Total	16.0	MG/KG	2.3	1.0
		Arsenic, Total	1.4	MG/KG	0.59	1.0
		Boron, Total	3.5	MG/KG	0.23	1.0
		Barium, Total	1.4	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	385	MG/KG	1.6	1.0
		Cadmium, Total	0.07 u	MG/KG	0.07	1.0
		Cobalt, Total	0.13 u	MG/KG	0.13	1.0
		Chromium, Total	0.30	MG/KG	0.12	1.0
		Copper, Total	7.7	MG/KG	0.12	1.0
		Iron, Total	51.0 J	MG/KG	3.4	1.0
		Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Potassium, Total	2470	MG/KG	2.2	1.0
		Lithium, Total	0.04 UJ	MG/KG	0.03	1.0
		Magnesium, Total	804	MG/KG	0.93	1.0
		Manganese, Total	5.3	MG/KG	0.03	1.0
		Molybdenum, Total	0.45	MG/KG	0.28	1.0
		Sodium, Total	494	MG/KG	0.73	1.0
		Nickel, Total	0.60	MG/KG	0.23	1.0
		Phosphorus, Total	2550	MG/KG	0.86	1.0
		Lead, Total	0.30 u	MG/KG	0.30	1.0
		Antimony, Total	0.42 u	MG/KG	0.42	1.0
		Selenium, Total	0.45 u	MG/KG	0.45	1.0
		Silicon, Total	37.4 J	MG/KG	2.2	1.0
		Tin, Total	1.2 UJ	MG/KG	1.0	1.0
		Strontium, Total	3.8	MG/KG	0.01	1.0
		Thallium, Total	0.67 u	MG/KG	0.67	1.0
		Uranium, Total	1.9	MG/KG	0.85	1.0
		Vanadium, Total	0.12	MG/KG	0.09	1.0
		Zinc, Total	38.5	MG/KG	0.15	1.0

9/2/04

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 06/08/06

CLIENT: TNUHANFORD RC-047 K0331 LVL LOT #: 0604L876

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-018	J11KT2	Silver, Total	0.50	u	MG/KG	0.50	1.0
		Aluminum, Total	53.8		MG/KG	16.9	1.0
		Arsenic, Total	4.4	u	MG/KG	4.4	1.0
		Boron, Total	7.0		MG/KG	1.7	1.0
		Barium, Total	4.1		MG/KG	0.14	1.0
		Beryllium, Total	0.14	u	MG/KG	0.14	1.0
		Bismuth, Total	3.6	u	MG/KG	3.6	1.0
		Calcium, Total	1100		MG/KG	11.7	1.0
		Cadmium, Total	0.50	u	MG/KG	0.50	1.0
		Cobalt, Total	1.0	u	MG/KG	1.0	1.0
		Chromium, Total	0.93	u	MG/KG	0.93	1.0
		Copper, Total	15.6		MG/KG	0.86	1.0
		Iron, Total	156	J	MG/KG	24.9	1.0
		Mercury, Total	0.03	u	MG/KG	0.03	1.0
		Potassium, Total	3440		MG/KG	16.2	1.0
		Lithium, Total	0.24	UJ	MG/KG	0.21	1.0
		Magnesium, Total	952		MG/KG	6.9	1.0
		Manganese, Total	12.5		MG/KG	0.21	1.0
		Molybdenum, Total	2.1	u	MG/KG	2.1	1.0
		Sodium, Total	570		MG/KG	5.4	1.0
		Nickel, Total	1.7	u	MG/KG	1.7	1.0
		Phosphorus, Total	2970		MG/KG	6.4	1.0
		Lead, Total	2.2	u	MG/KG	2.2	1.0
		Antimony, Total	3.1	u	MG/KG	3.1	1.0
		Selenium, Total	3.4	u	MG/KG	3.4	1.0
		Silicon, Total	67.4	J	MG/KG	16.2	1.0
		Tin, Total	7.6	u	MG/KG	7.6	1.0
		Strontium, Total	7.2		MG/KG	0.07	1.0
		Thallium, Total	5.0	u	MG/KG	5.0	1.0
		Uranium, Total	10.8		MG/KG	6.2	1.0
		Vanadium, Total	0.74		MG/KG	0.64	1.0
		Zinc, Total	61.1		MG/KG	1.1	1.0

9/9/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-047
LVL#: 0604L876
SDG/SAF#: K0331/RC-047

W.O.#: 11343-606-001-9999-00
Date Received: 04-27-06

METALS CASE NARRATIVE

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory (LvLI) certifies that all test results meet the requirements of NELAC except as noted below.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise.

1. This narrative covers the analyses of 18 solid samples.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. The samples are reported on a wet weight, 'as received' basis.

   All samples were rerun for Aluminum, along with the Phosphorous analysis, due to sample matrix.

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

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

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

6. All preparation/method blanks (MB) were within 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.

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

8. All laboratory control samples (LCS) were within the 80-120% control limits with the exception of Silicon at 77.6%. Refer to the Inorganics Laboratory Control Standards Report. Associated sample results may be biased low.

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 67 pages.

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9. The matrix spike (MS) recoveries for 3 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.

10. 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
J11KR6	Iron	2,000	98.7
	Phosphorous	5,000	81.6
	Silicon	100	87.6

11. The duplicate analyses for 3 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

12. 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.

13. 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.

14. 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

6/8/06
Date

jjw/m04-876

LVLI
LIONVILLE LABORATORY INC.

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-301	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	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: BORROW PIT 18 INVERTEBRATES		SAF No.: RC-047
Ice Chest No.: AFS-04-052	Field Logbook No.: EL-1595	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A060878		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 INSECTS"

Preservation	Cool 4C	Cool 4C										
Type of Container	P	aG										
No. of Container(s)	10	1										
Volume	15g	50g										
SAMPLE ANALYSIS	See item (1) in Special Instructions	Pesticides - 8081										
Sample No.	Matrix *	Sample Date	Sample Time									
J11KR0	OTHER SOLID	APR 17 2006	09:44	X	X							

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: TR KLINCKMAN	APR 17 2006 1014	Received By/Stored In: EAS LOCKED STORAGE	APR 17 2006 1014
Relinquished By/Removed From: EAS LOCKED STORAGE	04-26-06 0930	Received By/Stored In: TR Klinckman	4-26-06 0930
Relinquished By/Removed From: TR Klinckman	4-26-06 1500	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: Fed Ex	4-27-06 0940	Received By/Stored In: D. Smith	4-27-06 0940
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

Perform pesticides and ICP metals in this order as sample is available.

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

Matrix *

S=Soil
SE=Sediment
SO=Solid
B=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wp=Wipe
L=Liquid
Va=Vapor
X=Other

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

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

15000000

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-307	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	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: 600-181 INVERTEBRATES		SAF No.: RC-047
Ice Chest No.: AFS-04-052	Field Logbook No.: EL-1595	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060378		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 INSECTS"

000035

Preservation	Cool 4C	Cool 4C											
Type of Container	P	aG											
No. of Container(s)	10	1											
Volume	15g	50g											
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Pesticides - 8081											

Sample No.	Matrix *	Sample Date	Sample Time										
J11KR6	OTHER SOLID	APR 17 2006	0924	X	X								

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From: TR KLINCKMAN	Date/Time: APR 17 2006 0943	Received By/Stored In: EAS LOCKED STORAGE	Date/Time: APR 17 2006 0943
Relinquished By/Removed From: EAS LOCKED STORAGE	Date/Time: 04-24-06 0930	Received By/Stored In: TR Edmondson	Date/Time: 4-26-06 0930
Relinquished By/Removed From: TR Edmondson WCH	Date/Time: 4-26-06 1500	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 4-27-06 0940	Received By/Stored In: [signature]	Date/Time: 4-27-06 0940
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

Perform pesticides and ICP metals in this order as sample is available.

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

Matrix *: S=Soil, SE=Sediment, SO=Solid, St=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)

0000000052

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-300	Page 1 of 1

Collector: TILLER, B. / JR KLINCKMAN	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: BORROW PIT 14 INVERTEBRATES	SAF No.: RC-047	
Ice Chest No.: AFS-04-05 2	Field Logbook No.: EL-1595	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES, LIONVILLE	Offsite Property No.: A060378	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 INSECTS"

Preservation	Cool 4C	Cool 4C
Type of Container	G/P	aG
No. of Container(s)	10	1
Volume	15g	50g
SAMPLE ANALYSIS	ICP Metals - 6010 (Full List; Mercury - 7471 - (CV)	Pesticides - 8081

Sample No.	Matrix *	Sample Date	Sample Time		
J11KP9	OTHER SOLID	APR 17 2006	1012	X	X

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: JR KLINCKMAN	APR 17 2006 1020	EAS LOCKED STORAGE	APR 17 2006 1020
Relinquished By/Removed From: EAS LOCKED STORAGE	04-24-06 0930	JR Klinckman	4-26-06 0930
Relinquished By/Removed From: JR Klinckman	4-26-06 1500	Fed Ex	
Relinquished By/Removed From: Fed Ex	4-27-06 0940	[illegible]	4-27-06 0940
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS
Perform pesticides and ICP metals in this order as sample is available.

Matrix *
SO=Soil
SE=Sediment
SD=Solid
SL=Sludge
W=Water
OI=Oil
AI=Air
DS=Drum Solids
DL=Drum Liquids
To=Tissue
Wi=Wipe
L=Liquid
Ve=Vegetation
Xo=Other

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

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

000000053

000036

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-308	Page 1 of 1

Collector TILLER, B. TR KLINCKMAN.	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 628-1 INVERTEBRATES	SAF No. RC-047	
Ice Chest No. AFS-04-052	Field Logbook No. EL-1595	COA BESRAS6520	Method of Shipment FED EX
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A060378	Bill of Lading/Air Bill No. SEE OSPC	

000000054

POSSIBLE SAMPLE HAZARDS/REMARKS
POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage
COOL 4C "MATRIX COMPOSED OF INSECTS"

000037

Preservation	Cool 4C	Cool 4C	Cool 4C
Type of Container	P	aG	G/P
No. of Container(s)	1	1	1
Volume	15g	50g	15g
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Pesticides - 8081	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)

Sample No.	Matrix *	Sample Date	Sample Time			
J11KR7	OTHER SOLID	04-17-06	10:30	X	X	
J11XX8	OTHER SOLID	~~04-17-06~~	~~10:30~~	~~X~~	X	
		04-25-06	12:32			
		04-25-06	12:00			

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN.	04-17-06 10:40	EAS LOCKED STORAGE	04-17-06 10:40
EAS LOCKED STORAGE	04-25-06 12:20	TR KLINCKMAN.	04-25-06 12:20
TR KLINCKMAN	04-25-06 12:40	EAS LOCKED STORAGE	04-25-06 12:40
EAS LOCKED STORAGE	04-26-06 0930	TR Klinckman	4-26-06 0930
TR Klinckman WCH	4-26-06 1500	Fed Ex	
Fed Ex	4-27-06 0940	[illegible]	4-27-06 0940

SPECIAL INSTRUCTIONS
Perform pesticides and ICP metals in this order as sample is available.

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

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-047-312	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	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: 116-F-1 INVERTEBRATES		SAF No.: RC-047
Ice Chest No.: AFS-04-052	Field Logbook No.: EL-1595	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EDERLINE SERVICES LIONVILLE	Offsite Property No.: A060378		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 INSECTS"

000038

Preservation	Cool 4C												
Type of Container	P												
No. of Container(s)	1												
Volume	15g												
SAMPLE ANALYSIS	See item (1) in Special Instructions.												
Sample No.	Matrix *	Sample Date	Sample Time										
J11KT1	OTHER SOLID	APR 17 2006	1022	X									

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	APR 17 2006 1022	EAS LOCKED STORAGE	APR 17 2006 1026
EAS LOCKED STORAGE	0920		4-26-06 0930
	4-26-06 1500	Fed Ex	
Fed Ex	4-27-06 0940		4-27-06 0940

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

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-047-309	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	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: 600-171 INVERTEBRATES	SAF No.: RC-047	
Ice Chest No.: AFS-04-052	Field Logbook No.: EL-1595	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES, LIONVILLE	Offsite Property No.: A060378	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 INSECTS"

000039

Preservation	Cool 4C	Cool 4C	Cool 4C									
Type of Container	P	aG	G/P									
No. of Container(s)	1	1	1									
Volume	15g	50g	15g									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Pesticides - 8081	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)									
Sample No.	Matrix *	Sample Date	Sample Time									
J11KR8	OTHER SOLID	04-17-06	10:24	X	X							
J11XX9	OTHER SOLID	04-17-06	~~10:21~~	X	X							
		ICG 04-26-06	~~10:27~~ 25									
			12:40	ICG	04-25-06							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: TR KLINCKMAN	Date/Time: 04-17-06 10:30	Received By/Stored In: EAS LOCKED STORAGE	Date/Time: 04-17-06 10:30
Relinquished By/Removed From: EAS LOCKED STORAGE	Date/Time: 04-25-06 12:30	Received By/Stored In: TR KLINCKMAN	Date/Time: 04-25-06 12:30
Relinquished By/Removed From: TR KLINCKMAN	Date/Time: 04-25-06 12:45	Received By/Stored In: EAS LOCKED STORAGE	Date/Time: 04-25-06 12:45
Relinquished By/Removed From: EAS LOCKED STORAGE	Date/Time: 04-26-06 0930	Received By/Stored In: JK Eberline	Date/Time: 4-26-06 0930
Relinquished By/Removed From: JK Eberline	Date/Time: 4-26-06 1500	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From:	Date/Time: 4-27-06 0940	Received By/Stored In:	Date/Time: 4.27.06 0940

SPECIAL INSTRUCTIONS
Perform pesticides and ICP metals in this order as sample is available.

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

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)

000000056

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-047-306 Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	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: 600-208 INVERTEBRATES		SAF No.: RC-047
Ice Chest No.: AFS-04-052	Field Logbook No.: EL-1595	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060 378		Bill of Lading/Air Bill No.: SEE OSPC

Price Code: 9N

Air Quality ☐

Data Turnaround: 45 Days

000000057

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF INSECTS"

Preservation	Cool 4C	Cool 4C
Type of Container	P	aG
No. of Container(s)	10	1
Volume	15g	50g
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Pesticides - 8081

000040

ICG 04-25-06

Sample No.	Matrix *	Sample Date	Sample Time		
J11KR5	OTHER SOLID	APR 17 2006	11:50	X	X
		25			

CHAIN OF POSSESSION 04-25-06 **Sign/Print Names** 04-25-06

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	APR 17 2006 11:55	EAS LOCKED STORAGE	APR 17 2006 11:55
EAS LOCKED STORAGE	25 04-26-06 0930	TR Edmundson	25 4-26-06 0930
WCH	4-26-06 1500	Fed Ex	
	4-27-06 0940		4-27-06 0940

SPECIAL INSTRUCTIONS

Perform pesticides and ICP metals in this order as sample is available.

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

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-047-302	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	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: 600-23 INVERTEBRATES	SAF No.: RC-047	Air Quality ☐
Ice Chest No.: AFS-04-052	Field Logbook No.: EL-1595 — COA: BESRAS6520	Method of Shipment: FED EX	
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A060378	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 INSECTS"

Preservation	Cool 4C	Cool 4C
Type of Container	P	aG
No. of Container(s)	10	1
Volume	15g	50g
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Pesticides - 8081

000041

Sample No.	Matrix *	Sample Date	Sample Time		
J11KR1	OTHER SOLID	APR 17 2006	11:31	X	X
	ICG	25			
	04-25-06				

CHAIN OF POSSESSION	04-25-06	Sign/Print Names	04-25-06
Relinquished By/Removed From: ICG TR KLINCKMAN	Date/Time: APR 17 2006 11:35	Received By/Stored In: EAS LOCKED STORAGE	Date/Time: APR 17 2006 11:35
Relinquished By/Removed From: 25 EAS LOCKED STORAGE	Date/Time: 04-26-06 0530	Received By/Stored In: ICG-25 TR Elmendorf	Date/Time: 4-26-06 0930
Relinquished By/Removed From: WCH TR Elmendorf	Date/Time: 4-26-06 1500	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 4-27-06 0940	Received By/Stored In: [signature]	Date/Time: 4-27-06 0940
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

Perform pesticides and ICP metals in this order as sample is available.

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

Matrix *: S=Soil, SE=Sediment, SU=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)

000000058

Washington Closure Hanford | CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST | RC-047-314

Collector: TILLER, B. TR KLINCKMAN	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: 300-49 INVERTEBRATES		SAF No.: RC-047
Ice Chest No.: AFS-04-052	Field Logbook No.: EL-1595	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A060378		Bill of Lading/Air Bill No.: SEE OSPC

Price Code: 9N | Data Turnaround: 45 Days | Air Quality ☐

POSSIBLE SAMPLE HAZARDS/REMARKS
POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage
COOL 4C "MATRIX COMPOSED OF INSECTS"

Preservation	COOL 4C ~~None~~ 1/0 SZAE	Cool 4C
Type of Container	G/P	P
No. of Container(s)	1	1
Volume	10g	15g
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.

000042

Sample No.	Matrix *	Sample Date	Sample Time		
J11KT3	OTHER SOLID	04-25-06	11:40		X

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: TR KLINCKMAN	Date/Time: 04-25-06 11:42	Received By/Stored In: EAS LOCKED STORAGE	Date/Time: 04-25-06 11:42
Relinquished By/Removed From: EAS LOCKED STORAGE	Date/Time: 04-26-06 0930	Received By/Stored In: [signature]	Date/Time: 4-26-06 0930
Relinquished By/Removed From: [signature]	Date/Time: 4-26-06 1500	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 4-27-06 0940	Received By/Stored In: [signature]	Date/Time: 4-27-06 0940
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

(1) ~~Strontium 89,90 - Total Sr; Isotopic Thorium (Thorium-232)~~; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238); ~~Isotopic Plutonium~~ 6/0 3236
(2) ICP Metals - 6010 (Full List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc); Mercury - 7471 - (CV)

Matrix *
S=Soil
SS=Sediment
SO=Solid
St=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)

000000000

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-304	Page 1 of 1

Collector TILLER, B. TR KLINCKMAN	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 600-139 INVERTEBRATES		SAF No. RC-047
Ice Chest No. AFS-04-052	Field Logbook No. EL-1595	COA BESRAS6520	Method of Shipment FED EX
Shipped To EBERLINE SERVICES / JONVILLE	Offsite Property No. A060378		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 INSECTS"

000043

Preservation	Cool 4C	Cool 4C	
Type of Container	P	aG	
No. of Container(s)	10	1	
Volume	15g	50g	
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Pesticides - 8081	

04-25-06

Sample No.	Matrix *	Sample Date	Sample Time		
J11KR3	OTHER SOLID	APR 25 2006	11:27	X	X
	ICG				

CHAIN OF POSSESSION 04-25-06 Sign/Print Names 04-25-06

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN ICG	APR 17 2006 11:30	EAS LOCKED STORAGE	APR 17 2006 11:30
EAS LOCKED STORAGE 25	04-26-06 0930	TR Klinckman ICG 25	4-26-06 0930
TR Klinckman	4-26-06 1500	Fed Ex	
Fed Ex	4.27.06 0940		4.27.06 0940

SPECIAL INSTRUCTIONS
Perform pesticides and ICP metals in this order as sample is available.

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

Matrix *
Bo=Soil
SE=Sediment
SO=Solid
SL=Sludge
W = Water
OI=Oil
AE=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
Li=Liquid
Ve=Vegetation
Xo=Other

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

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

000000060

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-305	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	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: 600-204 INVERTEBRATES		SAF No.: RC-047
Ice Chest No.: AES-04-062	Field Logbook No.: EL-1595	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES/LIONVILLE	Offsite Property No.: A060378		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 INSECTS"

Preservation	Cool 4C	Cool 4C
Type of Container	P	aG
No. of Container(s)	50	1
Volume	15g	50g
SAMPLE ANALYSIS	See Item (1) in Special Instructions. 04-25-06 ICG	Pesticides - 8081

000044

04-25-06 ICG

Sample No.	Matrix *	Sample Date	Sample Time		
J11KR4	OTHER SOLID	APR 11 2006	11:20	~~X~~	X
		25			

CHAIN OF POSSESSION 04-25-06 Sign/Print Names 04-25-06

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	APR 11 2006 11:25 ICG	EAS LOCKED STORAGE	APR 11 2006 11:25 ICG
EAS LOCKED STORAGE	25 04-26-06 0930	25 E.R. Elandon 4-26-06	0930
E.R. Elandon 4-26-06	1500	Fed Ex	
Fed Ex	4-27-06 0940	[illegible] 4-27-06	0940

SPECIAL INSTRUCTIONS
perform pesticides and ICP metals in this order as sample is available.

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

Matrix *
Se=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

8HI-EE-011 (08/29/2005)

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-341	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	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: JA JONES 1 INVERTEBRATES	SAF No.: RC-047	Air Quality ☐
Ice Chest No.: AFS-04-052	Field Logbook No.: EL-1595 — COA: BESRAS6520	Method of Shipment: FED EX	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060 378	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 INSECTS"

000045

Preservation	Cool 4C
Type of Container	G/P
No. of Container(s)	1
Volume	15g

SAMPLE ANALYSIS

04-25-06

See item (1) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
J11L34	OTHER SOLID	APR 27 2006	~~09:14~~	X									
	ICG	25	10:40										

CHAIN OF POSSESSION 04-25-06 10:45 — Sign/Print Names 04-25-06 10:45

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	APR 27 2006 ICG ~~09:17~~	EAS LOCKED STORAGE	APR 27 2006 ICG ~~09:17~~
EAS LOCKED STORAGE	07-26-06 0930	TR Edmundson 4-26-06	0930
TR Edmundson 4-26-06	1500	Fed Ex	
Fed Ex	4-27-06 / 0940	D J Milh	4-27-06 / 0940

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

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)

000000062

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-316	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	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: BORROW PIT 9 INVERTEBRATES	SAF No.: RC-047	Air Quality ☐
Ice Chest No.: AFS-04-052	Field Logbook No.: EL-1595 — COA: BESRAS6520	Method of Shipment: FED EX	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060378	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 INSECTS"

Preservation	Cool 4C
Type of Container	P
No. of Container(s)	1
Volume	15g

000046

SAMPLE ANALYSIS

ICG 04-25-06

See item (1) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
J11KT5	OTHER SOLID	APR 25 2006	12:10	X									

CHAIN OF POSSESSION 04-25-06 — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	APR 25 2006 12:15	EAS LOCKED STORAGE	APR 25 2006 12:15
EAS LOCKED STORAGE	04-26-06 0930 ICG	TR Ellmundson	4-26-06 0930 ICG
TR Ellmundson	4-26-06 1500	Fed Ex	
Fed Ex	4-27-06 0940	D J Mech	4-27-06 0940

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

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-047-339	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	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: 100-F-2 INVERTEBRATES		SAF No.: RC-047	Air Quality ☐	
Ice Chest No.: AES-04-052	Field Logbook No.: EL-1595	COA: BESRAS6520	Method of Shipment: FED EX		
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A060378		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 INSECTS"

Preservation	Cool 4C											
Type of Container	G/P											
No. of Container(s)	1											
Volume	15g											
SAMPLE ANALYSIS	See item (1) in Special Instructions											

000047

04-25-06

Sample No.	Matrix *	Sample Date	Sample Time										
J11L32	OTHER SOLID	APR 25 2006	~~09:19~~	X									
	ICG	25	10:45										

CHAIN OF POSSESSION 04-25-06 10:50 Sign/Print Names 04-25-06 10:50

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN ICG	APR 25 2006 ~~09:22~~	EAS LOCKED STORAGE	APR 25 2006 ~~09:22~~
EAS LOCKED STORAGE	04-26-06 0930	TR Klinckman KS	4-26-06 0930
TR Klinckman WCH	4-26-06 1530	Fed Ex	
Fed Ex	4.27.06 1040	D Smith	4.27.06 0940
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

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

Matrix *

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-047-246	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	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-A RIPARIAN #6 INVERTEBRATES		SAF No.: RC-047
Ice Chest No.: AFS-04-052	Field Logbook No.: EL-1595	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A060378		Bill of Lading/Air Bill No.: SEE OSPC

Price Code: 9N

Air Quality ☐

Data Turnaround: 45 Days

000000065

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

000048

Preservation	None	Cool 4C											
Type of Container	G/P	P											
No. of Container(s)	1	1											
Volume	10g	15g											
SAMPLE ANALYSIS	See item (1) in Special Instructions.	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)											

Sample No.	Matrix *	Sample Date	Sample Time										
J11955	OTHER SOLID	4-25-06	11:10		X								

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From: TR KLINCKMAN	Date/Time: 11:15 APR 25 2006	Received By/Stored In: EAS LOCKED STORAGE	Date/Time: 11:15 APR 25 2006
Relinquished By/Removed From: EAS LOCKED STORAGE	Date/Time: 0930 4-26-06	Received By/Stored In: TR Edmundson	Date/Time: 4-26-06 0930
Relinquished By/Removed From: TR Edmundson WCH	Date/Time: 4-26-06 1500	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 4-27-06/0940	Received By/Stored In: [signature]	Date/Time: 4-27-06/0940
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

(1) Strontium-89,90 -- Total Sr; Isotopic Thorium [Thorium-232]; Isotopic Uranium [Uranium-233/234, Uranium-235, Uranium-238]; Isotopic Plutonium

Matrix *

S=Soil
SE=Sediment
SO=Solid
St=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-047-313	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	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: 300-44/618-4 INVERTEBRATES	SAF No.: RC-047	
Ice Chest No.: AFS-04-052	Field Logbook No.: EL-1595	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES JACKSONVILLE	Offsite Property No.: A060378	Bill of Lading/Air Bill No.: SEE OSPC	

000000066

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF INSECTS"

000049

Preservation	None	Cool 4C											
Type of Container	G/P	P											
No. of Container(s)	1	1											
Volume	10g	15g											
SAMPLE ANALYSIS	See item (1) in Special Instructions	See item (2) in Special Instructions											

Sample No.	Matrix *	Sample Date	Sample Time										
J11KT2	OTHER SOLID	APR 26 2006	0724		X								

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: TR KLINCKMAN	APR 26 2006 0735	EAS LOCKED STORAGE	APR 26 2006 0735
Relinquished By/Removed From: EAS LOCKED STORAGE	04-26-06 0930	TR Klinckman	4-26-06 0930
Relinquished By/Removed From: TR Klinckman	4-26-06 1500	Fed Ex	
Relinquished By/Removed From: Fed Ex	4-27-06 0940	[illegible]	4-27-06 0940
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Strontium-89,90 -- Total Sr; Isotopic Thorium [Thorium-232]; Isotopic Uranium [Uranium-233/234, Uranium-235, Uranium-238]; Isotopic Plutonium

(2) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

Matrix *

Soil, SE=Sediment, Sludge, Sb=Biosolids, W=Water, OnOil, AnAir, DS=Drum Solids, DL=Drum Liquids, Ti=Tissue, Wi=Wipe, Li=Liquid, Vo=Vegetation, Xo=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		DATA PACKAGE:	K0331	
VALIDATOR:	TLI	LAB:	LLI	DATE:	9/8/06
			SDG:	K0331	

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

SAMPLES/MATRIX					
J11KR0	J11RRC	J11KP9	J11KR7	J11XX8	J11KT1
J11KR8	J11XX9	J11KR5	J11KR1	J11KT3	J11KR3
J11KR4	J11L34	J11KT5	J11L32	J11L55	J11KT2
					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: [illegible] 9/96 Lithium - UJ all no PB

Tin - all detected - UJ

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: Iron - 207 µs - J all no PAS

silicon - 157.2 µs - J all

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments:

6. ICP QUALITY CONTROL (Levels D and E)

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

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

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

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

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

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

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

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

Duplicate injections performed as required? ..... Yes No N/A
Duplicate injection %RSD values acceptable? ..... Yes No N/A
Analytical spikes performed as required? ..... Yes No N/A
Analytical spike recoveries acceptable? ..... Yes No N/A
Standards traceable? ..... Yes No N/A
Standards expired? ..... Yes No N/A
MSA performed as required? ..... Yes No N/A
MSA results acceptable? ..... Yes No N/A
Transcription/calculation errors? ..... Yes No N/A

Comments:

8. HOLDING TIMES (all levels)

Samples properly preserved? ..... Yes No N/A
Sample holding times acceptable? ..... Yes No N/A

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

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

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

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

Comments:

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 06/08/06

CLIENT: TNUHANFORD RC-047 K0331 LVL LOT #: 0604L876

WORK ORDER: 11343-506-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	06L0322-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	0.46	MG/KG	0.24	1.0
		Barium, Total	0.02	MG/KG	0.02	1.0
		Beryllium, Total	0.02 u	MG/KG	0.02	1.0
		Bismuth, Total	0.51 u	MG/KG	0.51	1.0
		Calcium, Total	3.1	MG/KG	1.6	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	0.13 u	MG/KG	0.13	1.0
		Copper, Total	0.12 u	MG/KG	0.12	1.0
		Iron, Total	3.9	MG/KG	3.5	1.0
		Potassium, Total	2.3 u	MG/KG	2.3	1.0
		Lithium, Total	0.05	MG/KG	0.03	1.0
		Magnesium, Total	0.97 u	MG/KG	0.97	1.0
		Manganese, Total	0.03 u	MG/KG	0.03	1.0
		Molybdenum, Total	0.29 u	MG/KG	0.29	1.0
		Sodium, Total	0.76 u	MG/KG	0.76	1.0
		Nickel, Total	0.24 u	MG/KG	0.24	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	0.44 u	MG/KG	0.44	1.0
		Selenium, Total	0.47 u	MG/KG	0.47	1.0
		Silicon, Total	2.3 u	MG/KG	2.3	1.0
		Tin, Total	1.1	MG/KG	1.1	1.0
		Strontium, Total	0.01	MG/KG	0.01	1.0
		Thallium, Total	0.70 u	MG/KG	0.70	1.0
		Uranium, Total	0.88 u	MG/KG	0.88	1.0
		Vanadium, Total	0.09 u	MG/KG	0.09	1.0
		Zinc, Total	0.35	MG/KG	0.16	1.0
BLANK1	06C0085-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 06/08/06

CLIENT: TNUHANFORD RC-047 K0331 LVL LOT #: 0604L076

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-002	J11KR6	Silver, Total	4.4	0.07u	4.9	89.8	1.0
		Aluminum, Total	222	24.9	196	100.5	1.0
		Arsenic, Total	175	1.1	196	88.8	1.0
		Boron, Total	92.6	3.0	98.0	91.4	1.0
		Barium, Total	183	1.7	196	92.5	1.0
		Beryllium, Total	4.6	0.02u	4.9	93.9	1.0
		Bismuth, Total	449	0.50u	490	91.6	1.0
		Calcium, Total	2650	306	2450	95.6	1.0
		Cadmium, Total	4.5	0.07u	4.9	91.8	1.0
		Cobalt, Total	45.3	0.18	49.0	92.1	1.0
		Chromium, Total	18.7	1.9	19.6	85.7	1.0
		Copper, Total	29.3	5.6	24.5	96.7	1.0
		Iron, Total	287	83.7	98.0	207.2	1.0
		Potassium, Total	5000	2550	2450	99.9	1.0
		Lithium, Total	98.1	0.05	98.0	100.0	1.0
		Magnesium, Total	3010	798	2450	90.4	1.0
		Manganese, Total	53.8	5.3	49.0	99.0	1.0
		Molybdenum, Total	89.9	0.35	98.0	91.4	1.0
		Sodium, Total	2620	438	2450	89.1	1.0
		Nickel, Total	45.8	0.99	49.0	91.4	1.0
		Phosphorus, Total	2900	2600	490	62.0*	1.0
		Lead, Total	45.0	0.37	49.0	91.1	1.0
		Antimony, Total	43.5	0.43u	49.0	88.8	1.0
		Selenium, Total	173	0.52	196	87.9	1.0
		Silicon, Total	207	51.6	98.0	158.6	1.0
		Tin, Total	85.5	1.0 u	98.0	87.2	1.0
		Strontium, Total	94.7	3.3	98.0	93.3	1.0
		Thallium, Total	178	0.69u	196	90.8	1.0
		Uranium, Total	212	1.9	~~490~~	~~43.0~~ 85.9	1.0
		Vanadium, Total	45.8	0.24	49.0	93.0	1.0
		Zinc, Total	80.7	34.9	49.0	93.5	1.0

corrected entry PW 6/8/06

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 06/08/06

CLIENT: TNUHANFORD RC-047 K0331 LVL LOT #: 0604L876

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-003	J11KP9	Mercury, Total	0.15	0.02u	0.15	99.3	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 06/08/06

CLIENT: TNUHANFORD RC-047 K0331 LVL LOT #: 0604L876

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-001REP	J11KR0	Silver, Total	0.07u	0.07u	NC	1.0
		Aluminum, Total	34.4	29.6	15.0	1.0
		Arsenic, Total	1.2	1.3	8.0	1.0
		Boron, Total	5.0	4.9	2.0	1.0
		Barium, Total	2.5	2.3	8.3	1.0
		Beryllium, Total	0.02u	0.02u	NC	1.0
		Bismuth, Total	0.50u	0.50u	NC	1.0
		Calcium, Total	342	418	19.9	1.0
		Cadmium, Total	0.07u	0.07u	NC	1.0
		Cobalt, Total	0.14	0.17	19.9	1.0
		Chromium, Total	0.44	0.55	23.0	1.0
		Copper, Total	6.4	7.0	9.0	1.0
		Iron, Total	112	103	7.7	1.0
		Potassium, Total	2410	2280	5.5	1.0
		Lithium, Total	0.07	0.06	17.1	1.0
		Magnesium, Total	714	758	6.0	1.0
		Manganese, Total	6.8	7.5	9.8	1.0
		Molybdenum, Total	0.28u	0.28u	NC	1.0
		Sodium, Total	417	374	11.0	1.0
		Nickel, Total	0.37	0.44	16.9	1.0
		Phosphorus, Total	2370	2310	2.8	1.0
		Lead, Total	0.30u	0.30u	NC	1.0
		Antimony, Total	0.44	0.53	17.7	1.0
		Selenium, Total	0.46u	0.46u	NC	1.0
		Silicon, Total	61.0	55.1	10.2	1.0
		Tin, Total	1.1	1.0 u	~~NC~~ 200	1.0
		Strontium, Total	6.0	5.7	5.1	1.0
		Thallium, Total	0.68u	0.68u	NC	1.0
		Uranium, Total	2.2	2.4	8.7	1.0
		Vanadium, Total	0.31	0.25	21.5	1.0
		Zinc, Total	32.3	37.5	14.9	1.0

corrected entry PW 6/8/06

Date: 11 September 2006
To: Washington Closure Hanford (technical representative)
From: TechLaw, Inc.
Project: 100 Area and 300 Area Component of the RCBRA Sediment & Tissue
Subject: Pesticide - Data Package No. K0331-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0331 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	Media	Validation	Date
J11KR0	4/17/06	Solid	C	See note 1
J11KR6	4/17/06	Solid	C	See note 1
J11KP9	4/17/06	Solid	C	See note 1
J11KR7	4/17/06	Solid	C	See note 1
J11XX8	4/25/06	Solid	C	See note 1
J11KR8	4/17/06	Solid	C	See note 1
J11XX9	4/25/06	Solid	C	See note 1
J11KR5	4/25/06	Solid	C	See note 1
J11KR1	4/25/06	Solid	C	See note 1
J11KR3	4/25/06	Solid	C	See note 1
J11KR4	4/25/06	Solid	C	See note 1

1 – Pesticides by 8081A.

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 5 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

DATA QUALITY OBJECTIVES

- **Holding Times & Sample Preservation**

Sample data were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil

samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded by less than or equal to twice times the limit, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If holding times are exceeded by greater than two times the limit, all associated detected sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

Per WCH instructions, the holding time was counted from receipt of the samples at Lionville Laboratories Inc. (4/27/06) instead of the date of sample collection (4/17/06 through 4/25/06). Using the sample collection date would have resulted in the sample results being either qualified as estimates "J" or rejected "R".

Due to the holding time being exceeded by less than twice the limit, all pesticide results were qualified as estimates and flagged "J".

- **Method Blank**

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than required quantitation limit (RQL). If target compounds are present, sample results less than five times the blank concentration are qualified as undetected and flagged "U". If the sample result is less than five times the blank concentration and less than RQL, the result is qualified as undetected and elevated to the RQL.

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike & 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%. If spike recoveries are

outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

Due to the lack of a matrix spike, matrix spike duplicate and LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

Due to a matrix spike duplicate recovery outside QC limits (54%), all gamma-chlordane results were qualified as estimates and flagged "J".

Due to matrix spike and matrix spike duplicate recoveries outside QC limits (18% & 22%), all endrin aldehyde results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

Due to surrogate recoveries outside QC limits, all detected pesticide results in sample J11KR3 (146% & 144%) and J11KR4 (156% & 144%) were qualified as estimates and flagged "J".

All other surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results

must be within RPD limits of plus/minus 20%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to the lack of a matrix spike and matrix spike duplicate analysis, all toxaphene results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the project specific RQLs to ensure that laboratory detection levels meet the required criteria. All undetected results exceeded the RQL. Under the WCH validation statement of work, no qualification is required.

- **Completeness**

Data Package No. K0331 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 the holding time being exceeded by less than twice the limit, all pesticide results were qualified as estimates and flagged "J".

- Due to the lack of a matrix spike, matrix spike duplicate and LCS analysis, all toxaphene results were qualified as estimates and flagged "J".

- Due to a matrix spike duplicate recovery outside QC limits (54%), all gamma-chlordane results were qualified as estimates and flagged "J".

- Due to matrix spike and matrix spike duplicate recoveries outside QC limits (18% & 22%), all endrin aldehyde results were qualified as estimates and flagged "J".

- Due to surrogate recoveries outside QC limits, all detected pesticide results in sample J11KR3 (146% & 144%) and J11KR4 (156% & 144%) 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.

All undetected results exceeded the RQL. Under the WCH validation 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 procedures herein 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 quantitation limit is an estimate.

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

PESTICIDE DATA QUALIFICATION SUMMARY*

SDG: K0331	REVIEWER: LL	Project: RCBRA	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All	J	All	Holding time
Toxaphene	J	All	No MS/MSD/LCS
Gama-chlordane	J	All	MSD recovery
Endrin aldehyde	J	All	MS/MSD recovery
Endolsulfan I 4,4'-DDT Methoxychlor	J	J11KR3	Surrogate recovery
Beta-BHC Endosulfan I 4,4'-DDD	J	K11KR4	Surrogate recovery

* - 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

PESTICIDE/PCB ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD

Laboratory: LLI SDG: K0331

Sample Number		J11KR0		J11KR6		J11KP9		J11KK7		J11XX8		J11KR8		J11XX9		J11KR5		J11KR1	
Remarks																			
Sample Date		4/17/06		4/17/06		4/17/06		4/17/06		4/25/06		4/17/06		4/25/06		4/25/06		4/25/06	
Extraction Date		5/17/06		5/17/06		5/17/06		5/17/06		5/17/06		5/17/06		5/17/06		5/17/06		5/17/06	
Analysis Date		5/19/06		6/6/06		6/6/06		6/6/06		6/7/06		6/7/06		6/7/06		6/7/06		6/15/06	
Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Alpha-BHC	5	30	UJ	27	UJ	29	UJ	30	UJ	38	UJ	22	UJ	23	UJ	28	UJ	29	UJ
Gamma-BHC (Lindane)	5	30	UJ	27	UJ	29	UJ	30	UJ	38	UJ	22	UJ	23	UJ	28	UJ	29	UJ
Beta-BHC	5	30	UJ	27	UJ	29	UJ	30	UJ	38	UJ	22	UJ	23	UJ	28	UJ	21	J
Heptachlor	5	30	UJ	27	UJ	29	UJ	30	UJ	38	UJ	22	UJ	23	UJ	28	UJ	29	UJ
Delta-BHC	5	30	UJ	27	UJ	29	UJ	30	UJ	38	UJ	22	UJ	23	UJ	28	UJ	29	UJ
Aldrin	5	30	UJ	27	UJ	29	UJ	30	UJ	38	UJ	22	UJ	23	UJ	28	UJ	29	UJ
Heptachlor Epoxide	5	30	UJ	27	UJ	10	J	30	UJ	38	UJ	22	UJ	23	UJ	28	UJ	36	J
Endosulfan I	5	100	J	27	UJ	29	UJ	30	UJ	38	UJ	22	UJ	23	UJ	26	J	29	UJ
Dieldrin	5	30	UJ	27	UJ	29	UJ	30	UJ	38	UJ	22	UJ	23	UJ	28	UJ	29	UJ
4,4'-DDE	5	30	UJ	27	UJ	29	UJ	30	UJ	38	UJ	22	UJ	23	UJ	18	J	29	UJ
Endrin	5	30	UJ	27	UJ	29	UJ	30	UJ	38	UJ	22	UJ	23	UJ	28	UJ	29	UJ
Endosulfan II	5	30	UJ	27	UJ	29	UJ	30	UJ	38	UJ	22	UJ	23	UJ	28	UJ	29	UJ
4,4'-DDD	5	30	UJ	27	UJ	29	UJ	30	UJ	38	UJ	22	UJ	23	UJ	74	J	29	UJ
Endosulfan Sulfate	5	30	UJ	27	UJ	29	UJ	30	UJ	38	UJ	22	UJ	23	UJ	1400	J	29	UJ
4,4'-DDT	5	30	UJ	120	J	180	J	84	J	140	J	94	J	98	J	28	UJ	29	UJ
Methoxychlor	5	30	UJ	100	J	86	J	30	UJ	38	UJ	22	UJ	34	J	180	J	29	UJ
Endrin Ketone	5	30	UJ	27	UJ	29	UJ	30	UJ	38	UJ	22	UJ	23	UJ	28	UJ	29	UJ
Endrin Aldehyde	5	30	UJ	27	UJ	29	UJ	30	UJ	38	UJ	22	UJ	23	UJ	28	UJ	20	J
alpha-Chlordane	5	30	UJ	27	UJ	29	UJ	30	UJ	38	UJ	22	UJ	23	UJ	28	UJ	29	UJ
gamma-Chlordane	5	30	UJ	27	UJ	29	UJ	30	UJ	38	UJ	22	UJ	23	UJ	28	UJ	29	UJ
Toxaphene	5	300	UJ	270	UJ	290	UJ	300	UJ	380	UJ	220	UJ	230	UJ	280	UJ	290	UJ

000011

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.

PESTICIDE/PCB ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD					
Laboratory: LLI	SDG: K0331				
Sample Number		J11KR3		J11KR4	
Remarks					
Sample Date		4/25/06		4/17/06	
Extraction Date		5/17/06		5/17/06	
Analysis Date		6/15/06		6/15/06	
Pesticide	RQL	Result	Q	Result	Q
Alpha-BHC	5	29	UJ	27	UJ
Gamma-BHC (Lindane)	5	29	UJ	27	UJ
Beta-BHC	5	29	UJ	120	J
Heptachlor	5	29	UJ	27	UJ
Delta-BHC	5	29	UJ	27	UJ
Aldrin	5	29	UJ	27	UJ
Heptachlor Epoxide	5	29	UJ	27	UJ
Endosulfan I	5	59	J	21	J
Dieldrin	5	29	UJ	27	UJ
4,4'-DDE	5	29	UJ	27	UJ
Endrin	5	29	UJ	27	UJ
Endosulfan II	5	29	UJ	27	UJ
4,4'-DDD	5	29	UJ	39	J
Endosulfan Sulfate	5	29	UJ	27	UJ
4,4'-DDT	5	19	J	27	UJ
Methoxychlor	5	110	J	27	UJ
Endrin Ketone	5	29	UJ	27	UJ
Endrin Aldehyde	5	29	UJ	27	UJ
alpha-Chlordane	5	29	UJ	27	UJ
gamma-Chlordane	5	29	UJ	27	UJ
Toxaphene	5	290	UJ	270	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.

000012

Pesticide/PCBs by GC, CLP List

Report Date: 06/23/06 12:47

RFW Batch Number: 0604L876 Client: TNUHANFORD RC-047 K0331 Work Order: 11343606001 Page: 1

	Cust ID:	J11KR0	J11KR6	J11KP9	J11KR7	J11XX8	J11KR8
Sample Information	RFW#:	001	002	003	004	005	007
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	4.00	4.00	4.00	4.00	4.00	4.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	100 %	90 %	99 %	94 %	86 %	44 %
	Decachlorobiphenyl	110 %	117 %	114 %	115 %	100 %	53 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		30 U J	27 U J	29 U J	30 U J	38 U J	22 U J
gamma-BHC (Lindane)		30 U	27 U	29 U	30 U	38 U	22 U
Beta-BHC		30 U	27 U	29 U	30 U	38 U	22 U
Heptachlor		30 U	27 U	29 U	30 U	38 U	22 U
Delta-BHC		30 U	27 U	29 U	30 U	38 U	22 U
Aldrin		30 U	27 U	10	30 U	38 U	22 U
Heptachlor epoxide		30 U	27 U	29 U	30 U	38 U	22 U
gamma-Chlordane		30 U	27 U	29 U	30 U	38 U	22 U
Endosulfan I		100	27 U	29 U	30 U	38 U	22 U
alpha-Chlordane		30 U	27 U	29 U	30 U	38 U	22 U
4,4'-DDE		30 U	27 U	29 U	30 U	38 U	22 U
Dieldrin		30 U	27 U	29 U	30 U	38 U	22 U
Endrin		30 U	27 U	29 U	30 U	38 U	22 U
4,4'-DDD		30 U	27 U	29 U	30 U	38 U	22 U
Endosulfan II		30 U	27 U	29 U	30 U	38 U	22 U
4,4'-DDT		30 U	120	180	84	140	94
Endrin aldehyde		30 U	27 U	29 U	30 U	38 U	22 U
Endosulfan sulfate		30 U	27 U	29 U	30 U	38 U	22 U
Methoxychlor		30 U	100	86	30 U	38 U	22 U
Endrin ketone		30 U	27 U	29 U	30 U	38 U	22 U
Toxaphene		300 U	270 U	290 U	300 U	380 U	220 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

000000007

0000013

6/23/6

9/9/06

Lionville Laboratory, Inc.
Pesticide/PCBs by GC, CLP List

Report Date: 06/19/06 20:37

RFW Batch Number: 0604L876 Client: TNUHANFORD RC-047 K0331 Work Order: 11343606001 Page: 2

Sample Information	Cust ID:	J11XX9	J11KR5	J11KR1	J11KR1	J11KR1	J11KR3
	RFW#:	008	009	010	010 MS	010 MSD	012
	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOLID
	D.F.:	4.00	4.00	4.00	4.00	4.00	4.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	83 %	86 %	90 %	87 %	88 %	146 * %
	Decachlorobiphenyl	100 %	95 %	92 %	95 %	96 %	144 * %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		23 U J	28 U J	29 U J	69 %	77 %	29 U J
gamma-BHC (Lindane)		23 U	28 U	29 U	80 %	89 %	29 U
Beta-BHC		23 U	28 U	21 J	86 %	88 %	29 U
Heptachlor		23 U	28 U	29 U	75 %	75 %	29 U
Delta-BHC		23 U	28 U	29 U	65 %	70 %	29 U
Aldrin		23 U	28 U	29 U	72 %	69 %	29 U
Heptachlor epoxide		23 U	28 U	36	67 %	60 %	29 U
gamma-Chlordane		23 U	28 U	29 U	61 %	54 * %	29 U
Endosulfan I		23 U	26 J	29 U	78 %	80 %	59
alpha-Chlordane		23 U	28 U	29 U	72 %	75 %	29 U
4,4'-DDE		23 U	18 J	29 U	78 %	82 %	29 U
Dieldrin		23 U	28 U	29 U	75 %	73 %	29 U
Endrin		23 U	28 U	29 U	95 %	87 %	29 U
4,4'-DDD		23 U	74	29 U	85 %	83 %	29 U
Endosulfan II		23 U	28 U	29 U	77 %	79 %	29 U
4,4'-DDT		98	28 U	29 U	73 %	69 %	19 J
Endrin aldehyde		23 U	28 U	20 J	18 * %	22 * %	29 U
Endosulfan sulfate		23 U	1400	29 U	80 %	82 %	29 U
Methoxychlor		34	180	29 U	108 %	101 %	110
Endrin ketone		23 U	28 U	29 U	81 %	82 %	29 U
Toxaphene		230 U	280 U	290 U	290 U	290 U	290 U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

9/9/06

2/20/06

000000008

000014

	Cust ID:	J11KR4	PBLKHK	PBLKHK BS
Sample Information	RFW#:	013	06LE0395-MB1	06LE0395-MB1
	Matrix:	SOLID	SOIL	SOIL
	D.F.:	4.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	156 * %	86 %	92 %
	Decachlorobiphenyl	144 * %	94 %	102 %

Alpha-BHC	27	U J	0.33	U	104	%
gamma-BHC (Lindane)	27	U	0.33	U	99	%
Beta-BHC	120		0.33	U	109	%
Heptachlor	27	U	0.33	U	112	%
Delta-BHC	27	U	0.33	U	95	%
Aldrin	27	U	0.33	U	102	%
Heptachlor epoxide	27	U	0.33	U	109	%
gamma-Chlordane	27	U	0.33	U	104	%
Endosulfan I	21	I	0.33	U	112	%
alpha-Chlordane	27	U	0.33	U	105	%
4,4'-DDE	27	U	0.33	U	109	%
Dieldrin	27	U	0.33	U	116	%
Endrin	27	U	0.33	U	121	%
4,4'-DDD	39		0.33	U	109	%
Endosulfan II	27	U	0.33	U	107	%
4,4'-DDT	27	U	0.33	U	128	%
Endrin aldehyde	27	U	0.33	U	105	%
Endosulfan sulfate	27	U	0.33	U	107	%
Methoxychlor	27	U	0.33	U	152	%
Endrin ketone	27	U	0.33	U	111	%
Toxaphene	270	U	3.3	U	3.3	U

U= Analyzed, not detected. J= Present below detection limit. B= Present in blank. NR= Not reported. NS= Not spiked.
%= Percent recovery. D= Diluted out. I= Interference. NA= Not Applicable. *= Outside of EPA CLP QC

R 9/9/06

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-047
LVL #: 0604L876
SDG/SAF # K0331/RC-047

W.O. #: 11343-606-001-9999-00
Date Received: 04-27-2006

CHLORINATED PESTICIDES

Eleven (11) solid samples were collected on 04-17,25-2006.

The samples and their associated QC samples were extracted on 05-17-2006 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 05-19-2006 and 06-06,07,15-2006. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A.

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. The sample was stored in a refrigerator (ID# R003) that malfunctioned and failed to maintain the required sample storing temperature (4°C +/- 2°C) on 05-10-2006. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
2. Samples were extracted outside the required holding time. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
3. All samples results were reported on a wet-weight basis.
4. The samples and their associated QC samples received a Copper-Sulfur cleanup according to Lionville Laboratory SOPs based on SW846 method 3660A.
5. The method blank was below the reporting limits for all target compounds.
6. Four (4) of thirty (30) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. All blank spike recoveries were within acceptance criteria.
8. Three (3) of forty (40) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
9. All samples required a 4-fold dilution due to the nature of the sample matrix. The reporting limits were adjusted to reflect the necessary dilution.

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 2 8 pages.

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LVLI
LIONVILLE LABORATORY INC.

10. The initial calibrations associated with this data set were within acceptance criteria.

11. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria with the exception of CCV analyzed on 06-06-2006 at 07:13 P.M on the RTX-CLP column. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

12. 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.

13. 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

6/23/06
Date

som\r:\group\data\pest\tmu hanford\0604-876.pst

208 Welsh Pool Road • Exton, PA 19341- 1313 • (610) 280-3000 • Fax (610) 280-3041

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 06PM002

Initiator: Orlette Johnson
Date: 6/21/06
Client: TNU Hanford

Batch: 0604L876
Samples: ALL
Method: SW846/MCAWW/CLP/

Parameter: Pesticides
Matrix: Other Solid
Prep Batch: 06LE0325

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
X Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

Sample(s) was/were extracted X days beyond the hold time

X 8 and 16

2. Known or Probable Causes(s) due to a temporary glassware shortage created by a malfunctioning drying kiln i.e, much of our glassware was lost when one of the kilns overheated. We made every effort to replace glassware as soon as possible but our needs exceeded on-the-shelf vendor stocks of certain critical items. This problem was exacerbated by an unusually high number of samples received during this period of time for organics extraction.

3. Discussion and Proposed Action

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Other Description:

We have replenished glassware stocks to higher levels than those in-house before the kiln malfunction. We have also replaced the kiln.

4. Project Manager Instructions...signature/date: [signature] 6/21/06

__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
X Include in Case Narrative
X Client Contacted:
Date/Person [signature]
__ Add
__ Cancel

5. Final Action...signature/date: [signature] 6/23/06 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
X Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Welsh
__	X Lab General Manager: I. Daniels	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson	__	__ GC/LC: Kiger
__	X Data Management: Stilwell	__	__ MS: Schneider/Carden
__	__ Sample Prep: Kiger	__	__ Log-in: Perry
		__	__ Admin: _____
		__	__ Other: _____

QA-105-A-0805

3A

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 06Gc186

Initiator: RBW
Date: 6/8/06
Client: TW

Batch: 0604L876
Samples: 010S, 010T, 012, 013
Method: SW846/MCAWW/CLP/

Parameter: AGST
Matrix: SOLID
Prep Batch: 06LE0395

1. Reason for SDR

a. COC Discrepancy
__ Tech Profile Error __ Client Request __ Sampler Error on C-O-C
__ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy
__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

(1) Surrogate recoveries high in samples ~~010S 010T~~, 012 and 013 RBW 6/20/06
(2) Spike recoveries out in samples 010S and 010T.
(3) CCV analyzed 6/6/06 7:13:42pm high on RTX-CLP column.

2. Known or Probable Causes(s)

4 CCV analyzed. 5/29/06 18:22 & 5/30 2:46 elevated.

3. Discussion and Proposed Action
__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Other Description:
(1) Narrate - minimal impact to sample data
(2) Narrate - All BS recoveries w/in acceptance criteria
3 & 4 Quantitation taken from RTX-CLP 2 column which is within ±15% acceptance criteria. Elevated response on RTX-CLP column does not impact ability to confirm affected target compounds
6/23/06 6/21/06

4. Project Manager Instructions...signature/date:
__ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: 6/21/06

Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson	__	__ GC/LC: Kiger
__	__ Data Management: Stilwell	__	__ MS: Rychlak/Daley
__	__ Sample Prep: Beegle/Kiger	__	__ Log-in: Perry
		__	__ Admin: _____
		__	__ Other: _____

QA-105-A-0805

Lionville Laboratory Sample Discrepancy Report (SDR) SDR #: 06PM001

Initiator: Orlette Johnson Batch: 06D4L816 Parameter: Pests
Date: 5/17/06 Samples: -001 to -005; -007 to 010 Matrix: Solid
Client: TNI Hanford Method: SW846/MCAWW/CLP/ -012, -013 Prep Batch: _____

1. Reason for SDR

a. COC Discrepancy __ Tech Profile Error __ Client Request __ Sampler Error on C-O-C __ Transcription Error __ Wrong Test Code __ Other _____

b. General Discrepancy

__ Missing Sample/Extract* __ Container Broken __ Wrong Sample Pulled __ Label ID's Illegible
__ Hold Time Exceeded __ Insufficient Sample* __ Preservation Wrong __ Received Past Hold
__ Improper Bottle Type __ Not Amenable to Analysis X Other

Note*: Verified by [Log-In] or [Prep Group] (circle)...signature/date: _____

c. Problem (Include all relevant specific results; attach data if necessary)

On 5/10/06 sample storage refrigerator ID# R003 malfunctioned and was not holding the required sample storage temperature of 4°C +/- 2°C

2. Known or Probable Causes(s)

Broken motor

3. Discussion and Proposed Action

__ Re-log
__ Entire Batch
__ Following Samples: _____
__ Re-leach
__ Re-extract
__ Re-digest
__ Revise EDD
__ Change Test Code to _____
__ Place On/Take Off Hold (circle)

Other Description:
At the time of malfunction R003 was used for storage of samples received for extractable organics, metals and wet chemistry (except TOC) analyses. All samples were removed from R003 to another refrigerator on 5/10/06. R003 was tagged out on 5/10/06, repaired on 5/12/06, and we have certified that R003 is maintaining the required sample storage temperature.

4. Project Manager Instructions...signature/date: Orlette Johnson 5/17/06

__ Concur with Proposed Action
✓ Disagree with Proposed Action; See Instruction
✓ Include in Case Narrative
✓ Client Contacted:
Date/Person John Kessner 5/16/06
__ Add
__ Cancel

5. Final Action...signature/date: _____ 6/12/06 Other Explanation:

__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

When Final Action has been recorded, forward original to QA Specialist for distribution and filing.

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Welsh
__	X Lab Manager: I. Daniels	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson	✓	__ GC/LC: Kiger
__	__ Data Management: Stilwell	__	__ MS: Schneider/Daley
__	__ Sample Prep: Beegle/Kiger	__	__ Log-In: Perry
		__	__ Admin: _____
		__	__ Other: _____

QA-105-A-0805

RECEIVED
JUN 2006

Lionville Laboratory, Inc.
PEST/PCB ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-047 K0331

DATE RECEIVED: 04/27/06 LVL LOT # :0604L876

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J11KR0	001	SO	06LE0395	04/17/06	05/17/06	05/19/06
J11KR6	002	SO	06LE0395	04/17/06	05/17/06	06/06/06
J11KP9	003	SO	06LE0395	04/17/06	05/17/06	06/06/06
J11KR7	004	SO	06LE0395	04/17/06	05/17/06	06/06/06
J11XX8	005	SO	06LE0395	04/25/06	05/17/06	06/07/06
J11KR8	007	SO	06LE0395	04/17/06	05/17/06	06/07/06
J11XX9	008	SO	06LE0395	04/25/06	05/17/06	06/07/06
J11KR5	009	SO	06LE0395	04/25/06	05/17/06	06/07/06
J11KR1	010	SO	06LE0395	04/25/06	05/17/06	06/15/06
J11KR1	010 MS	SO	06LE0395	04/25/06	05/17/06	06/15/06
J11KR1	010 MSD	SO	06LE0395	04/25/06	05/17/06	06/15/06
J11KR3	012	SO	06LE0395	04/25/06	05/17/06	06/15/06
J11KR4	013	SO	06LE0395	04/25/06	05/17/06	06/15/06

LAB QC:

PBLKHK	MB1	S	06LE0395	N/A	05/17/06	06/06/06
PBLKHK	MB1 BS	S	06LE0395	N/A	05/17/06	06/06/06

Lionville Laboratory Use Only

0604L876

Custody Transfer Record/Lab Work Request

Page ___ of ___

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client TNU Hanford RC-047

Est. Final Proj. Sampling Date

Project #

Project Contact/Phone # see pg 1

Lionville Laboratory Project Manager Arlette Johnson

QC ___ Del ___ TAT ___

Date Rec'd 4-27-06 Date Due ___

		A								B					
Refrigerator #				3						3					
#/Type Container	Liquid														
	Solid			1 gl						1 pl					
Volume	Liquid														
	Solid			50 gr (125)						15 gr (125)					
Preservatives				—						—					
ANALYSES REQUESTED →		ORGANIC							INORG						
		VOA	BNA	Pest/PCB	Herb				Metal	CN	Metals + Hg				
		Lionville Laboratory Use Only													
				06-08H					METALS(1)		METALS(1)				

MATRIX CODES:
S - Soil
SE - Sediment
SO - Solid
SL - Sludge
W - Water
O - Oil
A - Air
DS - Drum Solids
DL - Drum Liquids
L - EP/TCLP Leachate
WI - Wipe
X - Other
F - Fish

Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected														
011	J11KT3			SO	4-25-06	1140										X				
012	J11KR3					1127			X					X						
013	J11KR4					1120			X					X						
014	J11L34					1040										X				
015	J11KT5					1210										X				
016	J11L32					1045										X				
017	J11955					1110										X				
018	J11KT2				4-26-06	0724										X				

000023

Special Instructions:

METALS(1) - HSL+Bi, B, Li, Mo, P, Si, Sr, Sn, U

DATE/REVISIONS:

1.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time	Relinquished by	Received by	Date	Time
Fed Ex	D J Smith	4-27-06	0946								

000000050

Lionville Laboratory, Use Only

06041876

Custody Transfer Record/Lab Work Request

See SRC

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client: TNU Hanford RC-047

Est. Final Proj. Sampling Date:

Project #: 11343-004-001-9999-00

Project Contact/Phone #:

Lionville Laboratory Project Manager: Colette Johnson

QC: Spec Del: Std TAT: 30 Days

Date Rec'd: 4-27-06 Date Due: 5/27/06

		A	B
Refrigerator #		3	3
#/Type Container	Liquid		
	Solid	1pl	1pl
Volume	Liquid		
	Solid	50gr (125)	15gr (125)
Preservatives		—	—

ANALYSES REQUESTED →

MATRIX CODES:	Lab ID	Client ID/Description	Matrix QC Chosen (✓) MS	MSD	Matrix	Date Collected	Time Collected	VOA	BNA	Pest/PCB (ORGANIC)	Herb (ORGANIC)				Metal + Hg (INORG)	CN (INORG)	Metals + Hg (INORG)					
										CLOSED					METALS (1)		METALS (1)					
S - Soil	001	J11KR0			SO	4-17-06	0949			X					X							
SE - Sediment	002	J11KR6					0924			X					X							
SO - Solid	003	J11KP9					1012			X					X							
SL - Sludge	004	J11KR7					1030			X							X					
W - Water	005	J11XX8				4-25-06	1232			X							X					
O - Oil	006	J11KT1				4-17-06	1022										X					
A - Air	007	J11KR8					1024			X							X					
DS - Drum Solids	008	J11XX9				4-25-06	1240			X							X					
DL - Drum Liquids	009	J11KR5					1150			X					X							
L - EP/TCLP Leachate	010	J11KR1					1131			X					X							
WI - Wipe																						
X - Other																						
F - Fish																						

Lionville Laboratory Use Only

Special Instructions:

METALS (1) = HSL + Bi, B, Li, Mo, P, Si, Sr, Sn, Tl.

RUN MATRIX QC.

DATE/REVISIONS:

1. Matrix = Solids.
2.
3.
4.
5.
6.

Relinquished by	Received by	Date	Time
FedEx	J Smith	4-27-06	0940

Relinquished by	Received by	Date	Time

Relinquished by	Received by	Date	Time
"COMPOSITE WASTE"			

ORIGINAL REWRITTEN

000000049

000024

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-047-301 | Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	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: BORROW PIT 18 INVERTEBRATES		SAF No.: RC-047
Ice Chest No.: AFS-04-052	Field Logbook No.: EL-1595	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A060 378		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 INSECTS"

000025

Preservation	Cool 4C	Cool 4C											
Type of Container	P	aG											
No. of Container(s)	10	1											
Volume	15g	50g											
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Pesticides - 8081											
Sample No.	Matrix *	Sample Date	Sample Time										
J11KR0	OTHER SOLID	APR 17 2006	09:44	X	X								

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: TR KLINCKMAN	APR 17 2006 1014	Received By/Stored In: EAS LOCKED STORAGE	APR 17 2006 1014
Relinquished By/Removed From: EAS LOCKED STORAGE	04-26-06 0930	Received By/Stored In: TR Klinckman	4-26-06 0930
Relinquished By/Removed From: TR Klinckman	4-26-06 1500	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: Fed Ex	4-27-06 0940	Received By/Stored In: D. Smith	4-27-06 0940
Relinquished By/Removed From:		Received By/Stored In:	
Relinquished By/Removed From:		Received By/Stored In:	

SPECIAL INSTRUCTIONS

Perform pesticides and ICP metals in this order as sample is available.

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

Matrix *

S=Soil
SE=Sediment
SO=Solid
SS=Sludge
W=Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
Li=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)

000000012

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		RC-047-307
Collector: TILLER, B. TR KLINCKMAN	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: 600-181 INVERTEBRATES		SAF No.: RC-047
Ice Chest No.: AFS-04-052	Field Logbook No.: EL-1595	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060378		Bill of Lading/Air Bill No.: SEE OSPC

Price Code: 9N

Air Quality ☐

Data Turnaround: 45 Days

000000013

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF INSECTS"

Preservation	Cool 4C	Cool 4C
Type of Container	P	aG
No. of Container(s)	~~1~~ 10 AB 32906	1
Volume	15g	50g
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Pesticides - 8081

000026

Sample No.	Matrix *	Sample Date	Sample Time		
J11KR6	OTHER SOLID	APR 17 2006	0924	X	X

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: TR KLINCKMAN	Date/Time: APR 17 2006 0943	Received By/Stored In: EAS LOCKED STORAGE	Date/Time: APR 17 2006 0943
Relinquished By/Removed From: EAS LOCKED STORAGE	Date/Time: 04-24-06 0930	Received By/Stored In: TR Edmundson	Date/Time: 4-26-06 0930
Relinquished By/Removed From: TR Edmundson WCH	Date/Time: 4-26-06 1500	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 4-27-06 0940	Received By/Stored In: [signature]	Date/Time: 4-27-06 0940
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

Perform pesticides and ICP metals in this order as sample is available.

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

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-047-300	Page 1 of 1

Collector: TILLER, B. / IH KLINCKMAN	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: BORROW PIT 14 INVERTEBRATES		SAF No.: RC-047
Ice Chest No.: AFS-04-05 2	Field Logbook No.: EL-1595	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060378		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 INSECTS"

Preservation	Cool 4C	Cool 4C										
Type of Container	G/P	aG										
No. of Container(s)	10	1										
Volume	15g	50g										
SAMPLE ANALYSIS	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)	Pesticides - 8081										

Sample No.	Matrix *	Sample Date	Sample Time										
J11KP9	OTHER SOLID	APR 17 2006	1012	X	X								

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: IH KLINCKMAN	APR 17 2006 1020	Received By/Stored In: EAS LOCKED STORAGE	APR 17 2006 1020
Relinquished By/Removed From: EAS LOCKED STORAGE	04-18-06 0930	Received By/Stored In:	4-26-06 0920
Relinquished By/Removed From: WCH	4-26-06 1500	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: Fed Ex	4-27-06 0940	Received By/Stored In:	4-27-06 0940
Relinquished By/Removed From:		Received By/Stored In:	
Relinquished By/Removed From:		Received By/Stored In:	

SPECIAL INSTRUCTIONS

Perform pesticides and ICP metals in this order as sample is available.

Matrix *

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

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

000027

0000000014

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-308	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN.	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: 628-1 INVERTEBRATES	SAF No.: RC-047	
Ice Chest No.: AFS-04-052	Field Logbook No.: EL-1595	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060378	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 INSECTS"

(000028)

SAMPLE ANALYSIS			
Preservation	Cool 4C	Cool 4C	Cool 4C
Type of Container	P	aG	G/P
No. of Container(s)	1	1	1
Volume	15g	50g	15g
	See item (1) in Special Instructions.	Pesticides - 8081	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)

Sample No.	Matrix *	Sample Date	Sample Time			
J11KR7	OTHER SOLID	04-17-06	10:30	X	X	
J11XX8	OTHER SOLID	~~04-17-06~~	~~10:30~~	X	X	
		04-25-06	12:32			
		04-25-06	12:00			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN.	04-17-06 10:40	EAS LOCKED STORAGE	04-17-06 10:40
EAS LOCKED STORAGE	04-25-06 12:20	TR KLINCKMAN.	04-25-06 12:20
TR KLINCKMAN.	04-25-06 12:40	EAS LOCKED STORAGE	04-25-06 12:40
EAS LOCKED STORAGE	04-26-06 0930	TR Klinckman	4-26-06 0930
TR Klinckman WCH	4-26-06 1500	Fed Ex	
Fed Ex	4-27-06 0940	[illegible]	4-27-06 0940

SPECIAL INSTRUCTIONS

Perform pesticides and ICP metals in this order as sample is available.

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

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-047-312	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	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: 116-F-1 INVERTEBRATES		SAF No.: RC-047
Ice Chest No.: AFS-04-052	Field Logbook No.: EL-1595	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A060378		Bill of Lading/Air Bill No.: SEE OSPC

Price Code: 9N

Air Quality ☐

Data Turnaround: 45 Days

000000016

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF INSECTS"

Preservation	Cool 4C										
Type of Container	P										
No. of Container(s)	1										
Volume	15g										
SAMPLE ANALYSIS	See item (1) in Special Instructions.										

000029

Sample No.	Matrix *	Sample Date	Sample Time									
J11KT1	OTHER SOLID	APR 17 2006	1022	X								

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From: TR KLINCKMAN	Date/Time: APR 17 2006 1024	Received By/Stored In: EAS LOCKED STORAGE	Date/Time: APR 17 2006 1024
Relinquished By/Removed From: EAS LOCKED STORAGE	Date/Time: 04-24-06 0920	Received By/Stored In: TR Edmundson	Date/Time: 4-26-06 0930
Relinquished By/Removed From: TR Edmundson	Date/Time: 4-26-06 1500	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 4-27-06 0940	Received By/Stored In: [signature]	Date/Time: 4-27-06 0940
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

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

Matrix *: S=Soil, Sg=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-047-309	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	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: 600-171 INVERTEBRATES	SAF No.: RC-047	Air Quality ☐
Ice Chest No.: AFS-04-052	Field Logbook No.: EL-1595 — COA: BESRAS6520	Method of Shipment: FED EX	
Shipped To: EBERLINE SERVICES/LIONVILLE	Offsite Property No.: A060378	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 INSECTS"

Preservation	Cool 4C	Cool 4C	Cool 4C
Type of Container	P	aG	G/P
No. of Container(s)	1	1	1
Volume	15g	50g	15g
SAMPLE ANALYSIS	See item (1) in Special Instructions	Pesticides - 8081	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)

000030

Sample No.	Matrix *	Sample Date	Sample Time			
J11KR8	OTHER SOLID	04-17-06	10:24	X	X	
J11XX9	OTHER SOLID	04-17-06	~~10:24~~	X	X	
		ICG 04-25-06	~~10:27~~			
			12:40	ICG	04-25-06	

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: TR KLINCKMAN	Date/Time: 04-17-06 10:30	Received By/Stored In: EAS LOCKED STORAGE	Date/Time: 04-17-06 10:30
Relinquished By/Removed From: EAS LOCKED STORAGE	Date/Time: 04-25-06 12:30	Received By/Stored In: TR KLINCKMAN	Date/Time: 04-25-06 12:30
Relinquished By/Removed From: TR KLINCKMAN	Date/Time: 04-25-06 12:45	Received By/Stored In: EAS LOCKED STORAGE	Date/Time: 04-25-06 12:45
Relinquished By/Removed From: EAS LOCKED STORAGE	Date/Time: 04-26-06 0930	Received By/Stored In: TR Edmundson	Date/Time: 4-26-06 0930
Relinquished By/Removed From: TR Edmundson WCH	Date/Time: 4-26-06 1500	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: [signature]	Date/Time: 4.27.06 0940	Received By/Stored In: [signature]	Date/Time: 4.27.06 0940

SPECIAL INSTRUCTIONS

Perform pesticides and ICP metals in this order as sample is available.

(1) ICP Metals - 6010 (Full List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc}; Mercury - 7471 - (CV)

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, R=Other

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

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

000000017

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-306	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	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: 600-208 INVERTEBRATES	SAF No.: RC-047	
Ice Chest No.: AFS-04-052	Field Logbook No.: EL-1595	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES LIONVILLE	Offsite Property No.: A060 378		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 INSECTS"

000031

Preservation	Cool 4C	Cool 4C										
Type of Container	P	aG										
No. of Container(s)	1	1										
Volume	15g	50g										
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Pesticides - 8081										

ICG 04-25-06

Sample No.	Matrix *	Sample Date	Sample Time										
J11KR5	OTHER SOLID	APR 11 2006	11:50	X	X								
		25											

CHAIN OF POSSESSION 04-25-06 Sign/Print Names 04-25-06

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	APR 11 2006 11:55	EAS LOCKED STORAGE	APR 11 2006 11:55
EAS LOCKED STORAGE	04-26-06 0930		25 04-26-06 0930
WCH	4-26-06 1500	Fed Ex	
	4-27-06 0940		4-27-06 0940

SPECIAL INSTRUCTIONS

Perform pesticides and ICP metals in this order as sample is available.

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

Matrix *

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-047-302	Page 1 of 1

Collector TILLER, B. TR KLINCKMAN	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 600-23 INVERTEBRATES		SAF No. RC-047
Ice Chest No. AFS-04-052	Field Logbook No. EL-1595	COA BESRAS6520	Method of Shipment FED EX
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A060378		Bill of Lading/Air Bill No. SEE OSPC

Price Code 9N

Air Quality ☐

Data Turnaround 45 Days

000000019

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C "MATRIX COMPOSED OF INSECTS"

000032

Preservation	Cool 4C	Cool 4C
Type of Container	P	aG
No. of Container(s)	X 0	1
Volume	15g	50g
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Pesticides - 8081

Sample No.	Matrix *	Sample Date	Sample Time		
J11KR1	OTHER SOLID	APR ~~17~~ 25 2006	11:31	X	X
	ICG				
	04-25-06				

CHAIN OF POSSESSION 04-25-06	Sign/Print Names 04-25-06
Relinquished By/Removed From ICG TR KLINCKMAN Date/Time APR 17 2006 11:35	Received By/Stored In EAS LOCKED STORAGE Date/Time APR 17 2006 11:35
Relinquished By/Removed From 25 EAS LOCKED STORAGE Date/Time 04-26-06 0530	Received By/Stored In ICG-25 TR Edmundson Date/Time 4-26-06 0930
Relinquished By/Removed From WCH TR Edmundson Date/Time 4-26-06 1500	Received By/Stored In Fed Ex Date/Time
Relinquished By/Removed From Fed Ex Date/Time 4-27-06 0940	Received By/Stored In [signature] Date/Time 4-27-06 0940
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

Perform pesticides and ICP metals in this order as sample is available.

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

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-047-314	Page 1 of 1

Collector TILLER, B. TR KLINCKMAN	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 300-49 INVERTEBRATES		SAF No. RC-047
Ice Chest No. AFS-04-052	Field Logbook No. EL-1595	COA BESRAS6520	Method of Shipment FED EX
Shipped To EBERLINE SERVICES (LIONVILLE)	Offsite Property No. A060378		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 INSECTS"

Preservation	COOL 4C ~~None~~ 4/10 2006	Cool 4C										
Type of Container	G/P	P										
No. of Container(s)	1	1										
Volume	10g	15g										
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.										

000033

Sample No.	Matrix *	Sample Date	Sample Time									
J11KT3	OTHER SOLID	04-25-06	11:40		X							

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From TR KLINCKMAN	04-25-06 11:42	Received By/Stored In ERS LOCKED STORAGE	04-25-06 11:42
Relinquished By/Removed From ERS LOCKED STORAGE	04-26-06 0930	Received By/Stored In	4-26-06 0930
Relinquished By/Removed From WCH	4-26-06 1500	Received By/Stored In Fed Ex	
Relinquished By/Removed From Fed Ex	4-27-06 0940	Received By/Stored In	4-27-06 0940
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ~~Strontium-89/90 — Total Sr; Isotopic Thorium [Thorium-232]~~; Isotopic Uranium [Uranium-233/234, Uranium-235, Uranium-238]; ~~Isotopic Plutonium~~ 4/10 2006
(2) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

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

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

000000020

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-304	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	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: 600-139 INVERTEBRATES	SAF No.: RC-047	
Ice Chest No.: AFS-04-052	Field Logbook No.: EL-1595; COA: BESRAS6520	Method of Shipment: FED EX	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060378	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 INSECTS"

Preservation	Cool 4C	Cool 4C
Type of Container	P	aG
No. of Container(s)	1	1
Volume	15g	50g
SAMPLE ANALYSIS	See item (1) in Special Instructions.	Pesticides - 8081

000034

04-25-06

Sample No.	Matrix *	Sample Date	Sample Time										
J11KR3	OTHER SOLID ICG	APR 25 2006	11:27	X	X								

CHAIN OF POSSESSION 04-25-06 Sign/Print Names 04-25-06

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN ICG	APR 17 2006 11:30	EAS LOCKED STORAGE	APR 17 2006 11:30
EAS LOCKED STORAGE	25 04-26-06 0930	TR Blanchard ICG	25 4-26-06 0930
TR Blanchard	4-26-06 1500	Fed Ex	
Fed Ex	4-27-06 0940	[signature]	4-27-06 0940

SPECIAL INSTRUCTIONS

Perform pesticides and ICP metals in this order as sample is available.

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

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)

000000021

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-305	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	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: 600-204 INVERTEBRATES	SAF No.: RC-047	
Ice Chest No.: AFS-04-062	Field Logbook No.: EL-1595; COA: BESRAS6520	Method of Shipment: FED EX	
Shipped To: EBERLINE SERVICES/LIONVILLE	Offsite Property No.: A060378	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 INSECTS"

Preservation	Cool 4C	Cool 4C										
Type of Container	P	uG										
No. of Container(s)	10	1										
Volume	15g	50g										
SAMPLE ANALYSIS	See item (1) in Special Instructions 04-25-06 ICG	Pesticides - 8081										

000035

Sample No.	Matrix *	Sample Date	Sample Time										
J11KR4	OTHER SOLID	APR 11 2006 25	11:20	X	X								

CHAIN OF POSSESSION 04-25-06 Sign/Print Names 04-25-06

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	APR 11 2006 11:25 ICG	FAS LOCKED STORAGE	APR 11 2006 11:25
FAS LOCKED STORAGE	25 0930 4-26-06	[illegible]	25 ICG 4-26-06 0930
TR Klinckman	4-26-06 1500	Fed Ex	
Fed Ex	4-27-06 0940	[illegible]	4-27-06 0940

SPECIAL INSTRUCTIONS
perform pesticides and ICP metals in this order as sample is available.

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

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-047-341	Page 1 of 1

Collector TILLER, B. TR KLINCKMAN	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 JA JONES 1 INVERTEBRATES	SAF No. RC-047	Air Quality ☐
Ice Chest No. AFS-04-052	Field Logbook No. EL-1595 / COA BESRAS6520	Method of Shipment FED EX	
Shipped To EBERLINE SERVICES / JONVILLE	Offsite Property No. A060 378	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 INSECTS"

000036

Preservation	Cool 4C											
Type of Container	G/P											
No. of Container(s)	1											
Volume	15g											
SAMPLE ANALYSIS 04-25-06	See item (1) in Special Instructions.											
Sample No.	Matrix *	Sample Date	Sample Time									
J11L34	OTHER SOLID	APR 21 2006	~~09:14~~	X								
	ICG	25	10:40									

CHAIN OF POSSESSION 04-25-06 10:45 Sign/Print Names 04-25-06 10:45

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	APR 21 2006 ICG ~~0917~~	EAS LOCKED STORAGE	APR 21 2006 ~~0917~~
EAS LOCKED STORAGE	0930	JR Elmendorf	4-26-06 0930
JR Elmendorf WCH	4-26-06 1500	Fed Ex	
Fed Ex	4-27-06/0940	[illegible]	4-27-06/0940

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

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-047-316	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	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: BORROW PIT 9 INVERTEBRATES	SAF No.: RC-047	
Ice Chest No.: AFS-04-052	Field Logbook No.: EL-1595 — COA: BESRAS6520	Method of Shipment: FED EX	
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A060378	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 INSECTS"

Preservation	Cool 4C
Type of Container	P
No. of Container(s)	1
Volume	15g

000037

SAMPLE ANALYSIS

ICG 04-25-06

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions.
J11KT5	OTHER SOLID	APR 25 2006	12:10	X

CHAIN OF POSSESSION 04-25-06 — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	APR 25 2006 12:15	EAS LOCKED STORAGE	APR 25 2006 12:15
EAS LOCKED STORAGE	04-26-06 0930	ICG TR Klinckman	4-26-06 0930
T.R. Ellwordson	4-26-06 1500	Fed Ex	
Fed Ex	4-27-06 0940	D J Melh	4-27-06 0940

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

Matrix *: SoSoil, 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)

000000024

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-339	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	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: 100-F-2 INVERTEBRATES		SAF No.: RC-047
Ice Chest No.: AFS-04-052	Field Logbook No.: EL-1595	COA: BESRAS6520	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A060378		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 INSECTS"

Preservation	Cool 4C
Type of Container	G/P
No. of Container(s)	1
Volume	15g

000038

SAMPLE ANALYSIS

04-25-06

See item (1) in Special Instructions.

Sample No.	Matrix *	Sample Date	Sample Time										
J11L32	OTHER SOLID	APR ~~14~~ 2006	~~09:19~~	X									
	ICG	25	10:45										

CHAIN OF POSSESSION 04-25-06 10:50 Sign/Print Names 04-25-06 10:50

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
ICG TR KLINCKMAN	APR 14 2006 09:22	EAS LOCKED STORAGE	APR 14 2006 09:22
EAS LOCKED STORAGE	04-16-06 0930	TR Edmondson ICG	4-26-06 0930
TR Edmondson TR Edmondson	4-26-06 1530	Fed Ex	
Fed Ex	4-27-06 0940	[signature]	4-27-06 0940

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

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-047-246	Page 1 of 1

Collector: TILLER, B. TR KLINCKMAN	Company Contact: JOAN KESSNER; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 9N; Air Quality ☐; Data Turnaround: 45 Days
Project Designation: 100 & 300 Area Component of the RCBRA Sediment and Ti	Sampling Location: 300-A RIPARIAN #6 INVERTEBRATES	SAF No.: RC-047	
Ice Chest No.: AFS-04-052	Field Logbook No.: EL-1595; COA: BESRAS6520	Method of Shipment: FED EX	
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A060378	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

000039

Preservation	None	Cool 4C											
Type of Container	G/P	P											
No. of Container(s)	1	1											
Volume	10g	15g											
SAMPLE ANALYSIS	See item (1) in Special Instructions	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)											

Sample No.	Matrix *	Sample Date	Sample Time										
J11955	OTHER SOLID	4-25-06	11:10		X								

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From: TR KLINCKMAN	Date/Time: 11:15 APR 25 2006	Received By/Stored In: EAS LOCKED STORAGE	Date/Time: 11:15 APR 25 2006
Relinquished By/Removed From: EAS LOCKED STORAGE	Date/Time: 0930 4-26-06	Received By/Stored In: TR Edmundson 4-26-06	Date/Time: 0930
Relinquished By/Removed From: TR Edmundson 4-26-06	Date/Time: 1500	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 4-27-06/0940	Received By/Stored In: [signature]	Date/Time: 4-27-06/0940
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

(1) Strontium-89,90 -- Total Sr; Isotopic Thorium (Thorium-232); Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238); Isotopic Plutonium

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)

000000026

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-313	Page 1 of 1

Collector TILLER, B. TR KLINCKMAN	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 300-44/618-4 INVERTEBRATES		SAF No. RC-047	Air Quality ☐	
Ice Chest No. AFS-04-052	Field Logbook No. EL-1595	COA BESRAS6520	Method of Shipment FED EX		
Shipped To EBERLINE SERVICES KIONVILLE	Offsite Property No. A060378		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 INSECTS"

Preservation	None	Cool 4C										
Type of Container	G/P	P										
No. of Container(s)	1	1										
Volume	10g	15g										
SAMPLE ANALYSIS	See item (1) in Special Instructions	See item (2) in Special Instructions										

Sample No.	Matrix *	Sample Date	Sample Time										
J11KT2	OTHER SOLID	APR 26 2006	0724		X								

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From TR KLINCKMAN	Date/Time 0735 APR 26 2006	Received By/Stored In EAS LOCKED STORAGE	Date/Time 0735 APR 26 2006
Relinquished By/Removed From EAS LOCKED STORAGE	Date/Time 04-26-06 0930	Received By/Stored In TR Blundon	Date/Time 4-26-06 0930
Relinquished By/Removed From TR Blundon 4-26-06	Date/Time 1500	Received By/Stored In Fed Ex	Date/Time
Relinquished By/Removed From Fed Ex 4-27-06	Date/Time 0940	Received By/Stored In	Date/Time 4-27-06 0940
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

(1) Strontium-89,90 – Total Sr; Isotopic Thorium [Thorium-232]; Isotopic Uranium [Uranium-233/234, Uranium-235, Uranium-238]; Isotopic Plutonium

(2) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

Matrix *

S=Solid
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)

00000027

00000400

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: RCBRA			DATA PACKAGE: K0331		
VALIDATOR: TLF		LAB: LLI		DATE: 9/9/06	
			SDG: K0331		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J11KR0	J11KR6	J11KP9	J11KR7	J11XX8	J11KR8
J11XX9	J11KR5	J11KR1	J11KR3	J11KR4	
					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 acceptable? ..... Yes No N/A

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

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

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

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

DDT and endrin breakdowns acceptable? ..... Yes No N/A

Comments: _____

PCB DATA VALIDATION CHECKLIST

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

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A
Calibration blank 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/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: no FB

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

Surrogates analyzed? ..... Yes No N/A
Surrogate recoveries acceptable? ..... Yes No N/A
Surrogates traceable? (Levels D, E) ..... Yes No N/A
Surrogates expired? (Levels D, E) ..... Yes No N/A
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: Surr - KR3 - ~~0~~ J all detects no PAS
KR4 - UJ " "
MS - endrin aldehyde - J
MSD - Endrin aldehyde - J MSD - gamma chlordane - J
no toxaphene MS/MSD/LCS - J all

PCB 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: toxaphene - no MS/MSD - J all

6. SYSTEM PERFORMANCE (Levels D and E)

Chromatographic performance acceptable? ..... Yes No N/A

Positive results resolved acceptably? ..... Yes No N/A

Comments:

7. HOLDING TIMES (all levels)

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

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

Comments: J all <2X HT

PCB DATA VALIDATION CHECKLIST

8. COMPOUND IDENTIFICATION, QUANTITATION, AND DETECTION LIMITS (all levels)

Compound identification acceptable? (Levels D, E) ..... Yes No N/A
Compound quantitation acceptable? (Levels D, E) ..... Yes No N/A
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: all undetects over

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other absorbent) cleanup performed? ..... Yes No N/A
Lot check performed? ..... Yes No N/A
Check recoveries acceptable? ..... Yes No N/A
GPC cleanup performed? ..... Yes No N/A
GPC check performed? ..... Yes No N/A
GPC check recoveries acceptable? ..... Yes No N/A
GPC calibration performed? ..... Yes No N/A
GPC calibration check performed? ..... Yes No N/A
GPC calibration check retention times acceptable? ..... Yes No N/A
Check/calibration materials traceable? ..... Yes No N/A
Check/calibration materials Expired? ..... Yes No N/A
Analytical batch QC given similar cleanup? ..... Yes No N/A
Transcription/Calculation Errors? ..... Yes No N/A

Comments:

Date: 11 September 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 100 Area and 300 Area Component of the RCBRA Sediment & Tissues
Subject: Radiochemistry - Data Package No. K0331-EB

INTRODUCTION

This memo presents the results of data validation on Data Package No. K0331 prepared by Eberline Services (EB). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Date
J11955	4/25/06	Solid	C	Isotopic uranium by AEA
J11KT2	4/26/06	Solid	C	Isotopic uranium by AEA
J11KT3	4/25/06	Solid	C	Isotopic uranium by AEA

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 Water Sampling Plan (DOE/RL-2005, 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.

All 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. All analytes met the RQL.

- **Completeness**

Data package No. K0331 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

None found.

REFERENCES

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

DOE/RL-2005, Rev. 0, October 2005, *100 Area and 300 Area Component of the RCBRA Water Sampling 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: K0331	REVIEWER: [redacted]	Project: RCBRA	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

* - 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: K0331						
Sample Number		J11955		J11KT2		J11KT3	
Remarks							
Sample Date		4/25/06		4/26/06		4/25/06	
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q
Uranium-233/234	1	0	U	0.030	U	0.072	U
Uranium-235	1	0	U	0	U	0	U
Uranium-238	1	0	U	0	U	0	U

600009

* - 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 K0331

R604201-03 J11955

DATA SHEET

SDG	7430	Client/Case no	Hanford SDG K0331
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R604201-03	Client sample id	J11955
Dept sample id	7430-003	Location/Matrix	300-A RIP#6INVERTEBRATES SOLID
Received	04/27/06	Collected/Weight	04/25/06 11:10 3.93 g
% solids	100.0	Custody/SAF No	RC-047-246 RC-047

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0	0.061	0.23	1.0	U	U
Uranium 235	15117-96-1	0	0.074	0.28	1.0	U	U
Uranium 238	U-238	0	0.061	0.23	1.0	U	U

100&300Area Compnt RCBRA Sediment&Ti

μ 9/9/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/31/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0331

R604201-01 J11KT2

DATA SHEET

SDG	7430	Client/Case no	Hanford SDG K0331
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R604201-01	Client sample id	J11KT2
Dept sample id	7430-001	Location/Matrix	300-44/618-4 INVERTIBRTS SOLID
Received	04/27/06	Collected/Weight	04/26/06 07:24 2.44 g
% solids	100.0	Custody/SAF No	RC-047-313 RC-047

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	0.030	0.059	0.23	1.0	U	U
Uranium 235	15117-96-1	0	0.072	0.27	1.0	U	U
Uranium 238	U-238	0	0.059	0.23	1.0	U	U

100&300Area Compnt RCBRA Sediment&Ti

9/9/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/31/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0331

R604201-02 J11KT3

DATA SHEET

SDG	7430	Client/Case no	Hanford SDG K0331
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R604201-02	Client sample id	J11KT3
Dept sample id	7430-002	Location/Matrix	300-49 INVERTEBRATES SOLID
Received	04/27/06	Collected/Weight	04/25/06 11:40 2.18 g
% solids	100.0	Custody/SAF No	RC-047-314 RC-047

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Uranium 233/234	U-233/234	0.072	0.073	0.28	1.0	U	U
Uranium 235	15117-96-1	0	0.088	0.34	1.0	U	U
Uranium 238	U-238	0	0.072	0.28	1.0	U	U

100&300Area Compnt RCBRA Sediment&Ti

K 9/9/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/31/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K0331 was composed of three 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 May 31, 2006.

2.0 ANALYSIS NOTES

2.1 Isotopic Uranium Analysis

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

6/02/06
Date

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-047-313	Page 1 of 1

Collector TILLER, B. TR KLINCKMAN	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 300-44/618-4 INVERTEBRATES K0331 (7430)		SAF No. RC-047
Ice Chest No. ERC-03-106	Field Logbook No. EL-1595	COA BESRAS6520	Method of Shipment FED EX
Shipped To EBERLINE SERVICES / LIONVILLE	Offsite Property No. A060408		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 INSECTS"

000015

Preservation	COOL 4C ~~None~~ JH 5-2-06	Cool 4C										
Type of Container	G/P	P										
No. of Container(s)	1	1										
Volume	10g	15g										
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.										

Sample No.	Matrix *	Sample Date	Sample Time										
J11KT2	OTHER SOLID	APR 26 2006	0724	X									

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	APR 26 2006 0725	EAS LOCKED STORAGE	APR 26 2006 0725
EAS LOCKED STORAGE	04-26-06 0930	T.R. Klinckman	4-26-06 0930
T.R. Klinckman WCH	4-26-06 1500	Fed Ex	
FED EX		MJM	04/27/06 9:15

SPECIAL INSTRUCTIONS

~~(1) Strontium-89,90 Total Sr Isotopic Thorium [Thorium-232]~~; Isotopic Uranium [Uranium-233/234, Uranium-235, Uranium-238]; ~~Isotopic Plutonium~~ JH 5-2-06

(2) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

Matrix *

Se=Soil
SE=Sediment
SO=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
Li=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-047-314	Page 1 of 1
Collector TILLER, B. TR KLINCKMAN	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 300-49 INVERTEBRATES K0331 (7430)	SAF No. RC-047	Air Quality ☐
Ice Chest No. ERC-03-106	Field Logbook No. EL-1595 / COA BESRAS6520	Method of Shipment FED EX	
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A060408	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 INSECTS"

000016

Preservation	COOL 4C ~~None~~ 1/0 3236	Cool 4C									
Type of Container	G/P	P									
No. of Container(s)	1	1									
Volume	10g	15g									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	See item (2) in Special Instructions.									

Sample No.	Matrix *	Sample Date	Sample Time									
J11KT3	OTHER SOLID	04-25-06	11:40	X								

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
TR KLINCKMAN	04-25-06 11:42	EAS LOCKED STORAGE	04-25-06 11:42
TR KLINCKMAN	04-26-06 0930	EAS LOCKED STORAGE	04-26-06 0930
EAS LOCKED STORAGE	04-26-06		
WCH	4-26-06 1500	Fed Ex	
FED EX		MTM	04/27/06 9:15

SPECIAL INSTRUCTIONS

(1) ~~Strontium-90,90 - Total Sr; Isotopic Thorium [Thorium-232]~~; Isotopic Uranium [Uranium-233/234, Uranium-235, Uranium-238]; ~~Isotopic Plutonium~~ 1/0 3236
(2) ICP Metals - 6010 (Full List) [Aluminum, Antimony, Arsenic, Barium, Beryllium, Bismuth, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Lithium, Magnesium, Manganese, Molybdenum, Nickel, Phosphorus, Potassium, Selenium, Silicon, Silver, Sodium, Strontium, Thallium, Tin, Uranium, Vanadium, Zinc]; Mercury - 7471 - (CV)

Matrix *
S=Soil
SE=Sediment
SO=Solid
St=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-047-246	Page 1 of 1

Collector TILLER, B. TR KLINCKMAN	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-A RIPARIAN #6 INVERTEBRATES K0331 (7430)	SAF No. RC-047	
Ice Chest No. ERC-03-106	Field Logbook No. EL-1595	COA BESRAS6520	Method of Shipment FED EX
Shipped To EBERLINE SERVICES LIONVILLE	Offsite Property No. A060408	Bill of Lading/Air Bill No. SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

POTENTIAL RADIOACTIVE <DOT LIMITS

Special Handling and/or Storage

COOL 4C

Preservation	COOL 4C ~~None~~ DJS 4/26/06	Cool 4C									
Type of Container	G/P	P									
No. of Container(s)	1	1									
Volume	10g	15g									
SAMPLE ANALYSIS	See item (1) in Special Instructions.	ICP Metals - 6010 (Full List); Mercury - 7471 - (CV)									

000017

Sample No.	Matrix *	Sample Date	Sample Time									
J11955	OTHER SOLID	04-25-06	11:10	X	X							

CHAIN OF POSSESSION	Sign/Print Names	SPECIAL INSTRUCTIONS	Matrix *
Relinquished By/Removed From TR KLINCKMAN Date/Time 04-25-06/11:15	Received By/Stored In EAS LOCKED STORAGE Date/Time 04-25-06 11:15	~~(1) Strontium-89,90 — Total Sr; Isotopic Thorium (Thorium-232)~~; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238); ~~Isotopic Plutonium~~ DJS 4/26/06	S=Soil SE=Sediment SO=Solid Sl=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue Wi=Wipe Li=Liquid Ve=Vegetation X=Other
Relinquished By/Removed From EAS LOCKED STORAGE Date/Time 04-26-06 0930	Received By/Stored In TR Klinckman 4-26-06 0930		
Relinquished By/Removed From WCH TR Klinckman 4-26-06 1500	Received By/Stored In Fed Ex Date/Time		
Relinquished By/Removed From FED EX Date/Time	Received By/Stored In Fed Ex 04/27/06 9:15 Date/Time		
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time		
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time		

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

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: RCBRA			DATA PACKAGE: K0331		
VALIDATOR: TLI		LAB: EB		DATE: 9/10/02	
			SDG: K0331		
ANALYSES PERFORMED					
Gross Alpha/Beta	Strontium-90	Technetium-99	Alpha Spectroscopy	Gamma Spectroscopy	
Total Uranium	Radium-22	Tritium			
SAMPLES/MATRIX					
J11955	J11KT2	J11KT3			
					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: no FB

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:

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: _____

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:

Appendix 6

Additional Documentation Requested by Client

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0331

R604201-05 Method Blank

METHOD BLANK

SDG	7430	Client/Case no	Hanford SDG K0331
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R604201-05	Client sample id	Method Blank
Dept sample id	7430-005	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
Uranium 233/234	U-233/234	0	0.076	0.29	1.0	U	U
Uranium 235	15117-96-1	0	0.092	0.35	1.0	U	U
Uranium 238	U-238	0	0.076	0.29	1.0	U	U

100&300Area Compnt RCBRA Sediment&Ti

QC-BLANK 56948

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	05/31/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0331

R604201-04

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7430

Contact Melissa C. Mannion

Client/Case no Hanford SDG K0331

Contract No. 630

Lab sample id R604201-04

Dept sample id 7430-004

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
Uranium 233/234	16.9	2.0	0.94	1.0		U	18.6	0.74	91	82-118	80-120
Uranium 235	14.5	1.8	0.24	1.0		U	15.1	0.60	96	80-120	80-120
Uranium 238	18.0	2.1	0.90	1.0		U	20.2	0.81	89	82-118	80-120

100&300Area Compnt RCBRA Sediment&Ti

QC-LCS 56947

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 05/31/06

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP K0331

R604201-06 J11KT3

DUPLICATE

SDG 7430 Client/Case no Hanford SDG K0331

Contact Melissa C. Mannion Contract No. 630

DUPLICATE		ORIGINAL			
Lab sample id	R604201-06	Lab sample id	R604201-02	Client sample id	J11KT3
Dept sample id	7430-006	Dept sample id	7430-002	Location/Matrix	300-49 INVERTEBRATES SOLID
		Received	04/27/06	Collected/Weight	04/25/06 11:40 2.18 g
% solids	100.0	% solids	100.0	Custody/SAF No	RC-047-314 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
Uranium 233/234	0	0.069	0.26	1.0	U	U	0.072	0.073	0.28	U	-		1.4
Uranium 235	0	0.084	0.32	1.0	U	U	0	0.088	0.34	U	-		0
Uranium 238	0	0.069	0.26	1.0	U	U	0	0.072	0.28	U	-		0

100&300Area Compnt RCBRA Sediment&Ti

QC-DUP#2 56949

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-DUP
Version 3.06
Report date 05/31/06