0068689

SAF-B02-036
105D & H Rx Soils Interim Closure Sampling (Overburden, shallow, deep, side slope, decon area)
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2) MJP 02/15/06
INITIAL/DATE

SDG H2540 **SAF-B02-036**

LOCATION : 105-H

RECEIVED
FEB 23 2006
EDMC

Date: 7 February 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 105H Rx Soils Interim Closure Sampling
Subject: Radiochemistry - Data Package No. H2540-EB

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2540 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
J018D5	3/22/04	Soil	C	See note 1
J018D7	3/22/04	Soil	C	See note 1
J018D9	3/22/04	Soil	C	See note 1
J018F1	3/22/04	Soil	C	See note 1
J018F3	3/22/04	Soil	C	See note 1
J018F5	3/22/04	Soil	C	See note 1
J018B9	3/22/04	Soil	C	See note 1
J018C1	3/22/04	Soil	C	See note 1
J018C3	3/22/04	Soil	C	See note 1
J018C5	3/22/04	Soil	C	See note 1
J018F4	3/24/04	Soil	C	See note 1
J018F6	3/24/04	Soil	C	See note 1
J018C0	3/24/04	Soil	C	See note 1
J018C2	3/24/04	Soil	C	See note 1
J018C7	3/22/04	Soil	C	See note 1
J018C9	3/22/04	Soil	C	See note 1
J018D1	3/22/04	Soil	C	See note 1
J018D3	3/22/04	Soil	C	See note 1

1 – Tritium, nickel-63, carbon-14, alpha spectroscopy, total strontium and gamma spectroscopy.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the Sampling and Analysis Plan for Interim Closure of the 105-D and 105-H Reactor Below-Grade Structures and Underlying Soils (DOE/RL-2001-18, July 2001). 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 equipment 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 70-130%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30% and tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

Due to the lack of a matrix spike analysis, all carbon-14 results were qualified as estimates and flagged "J".

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

All other accuracy results were acceptable.

- **Laboratory Duplicates**

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

Due to an RPD outside QC limits (39%), all thorium-228(gea) results were qualified was estimates and flagged "J".

All other duplicate results were acceptable.

Field Duplicates

Two sets of field duplicates (J018F5/J018B9 and J018F6/J018C0) were submitted for analysis. Field duplicate results are compared using the same criteria as for laboratory blanks. All field duplicate results were acceptable.

- **Detection Levels**

Reported analytical detection levels for undetected analytes are compared against the 105 SAP RQLs to ensure that laboratory detection levels meet the required criteria. Fifty-two analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

- **Completeness**

Data package No. H2540 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to the lack of a matrix spike analysis, all carbon-14 results were qualified as estimates and flagged "J". Due to the lack of an LCS analysis, all thorium-228(aspec) and thorium-232(aspec) results were qualified as estimates and flagged "J". Due to an RPD outside QC limits (39%), all thorium-228(gea) results were qualified was estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods. Due to an RPD outside QC limits (39%), all thorium-228(gea) results were qualified was estimates and flagged "J".

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

REFERENCES

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

DOE/RL-2001-18, Rev. 0, July 2001, *Sampling and Analysis Plan for Interim Closure of the 105-D and 105-H Reactor Below-Grade Structures and Underlying Soils*, July 2001.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the BHI 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: H2540	REVIEWER: TLF	Project: 105-H	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Carbon-14	J	All	No MS analysis
Thorium-228(aspec) Thorium-232(aspec)	J	All	No LCS analysis
Throium-228(aspec)	J	All	RPD

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: WASHINGTON CLOSURE HANFORD																			
Laboratory: EB																			
Case	SDG: H2540																		
Sample Number		J018D5		J018D7		J018D9		J018F1		J018F3		J018F5		J018B9		J018C1		J018C3	
Remarks												Duplicate		orig					
Sample Date		3/22/04		3/22/04		3/22/04		3/22/04		3/22/04		3/22/04		3/22/04		3/22/04		3/22/04	
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Tritium	400	0.220	U	-0.124	U	-0.135	U	-0.027	U	0.086	U	0.137	U	0.050	U	0.090	U	0.247	U
Carbon-14	50	3.34	UJ	25.4	UJ	4.90	UJ	0.316	UJ	0.461	UJ	1.07	UJ	1.20	UJ	-0.078	UJ	1.01	UJ
Nickel-63	30	57.5		41.9		25.0		0.189	U	1.86	U	-0.721	U	4.86		2.32	U	21.7	
Total Strontium	1	8.90		5.90		0.629		0.552		0.271		0.091	U	0.012	U	0.122	U	12.6	
Thorium-228	1	0.554	J	0.846	J	0.949	J	0.718	J	0.658	J	0.848	J	0.752	J	0.417	J	0.452	J
Thorium-230		1.06		0.338		0.579		0.340		0.734		0.660		0.107	U	0.151	U	0.613	
Thorium-232	1	0.595	J	0.719	J	1.16	J	0.755	J	0.928	J	0.673	J	0.429	J	0.530	J	0.548	J
Uranium-233/234	1	0.665		0.492		0.574		0.536		0.541		0.527		0.450		0.486		0.459	
Uranium-235	1	0.034		0.020	U	0.017		0.024	U	0.038		0.042		0.020	U	0.009	U	0.028	
Uranium-238	1	0.665		0.511		0.578		0.573		0.496		0.511		0.420		0.420		0.557	
Neptumium-237		0.042	U	0.014	U	0.029		0.008	U	0	U	0.014	U	0.009	U	0.011	U	0.019	U
Plutonium-238	1	0.052	U	0.091	U	0	U	0	U	0	U	0	U	0.004	U	0	U	0.061	U
Plutonium-239/240	1	1.64		0.974		0.400		0.114	U	0	U	0	U	0.004	U	0.083	U	1.65	
Americium-241	1	0.765		0.427		0.297		0.024	U	-0.047		0.027	U	0.023	U	0.193	U	0.511	
Potassium-40		9.16		10.5		10.0		9.51		8.92		8.38		8.03		8.78		8.42	
Cobalt 60	0.05	0.374		0.280		0.213		U	U	U	U	U	U	U	U*	U	U	0.179	
Cesium 137	0.1	16.0		9.82		3.26		0.487		0.140		U	U	U	U	0.099		4.28	
Radium-226		0.436		0.610		0.248		0.378		0.340		0.293		0.388		0.202		0.276	
Radium-228		0.526		U	U	0.562		0.576		0.332		0.413		0.433		0.360		U	U
Europium 152	0.1	5.30		6.42		5.17		U	U*	U	U*	U	U*	U	U*	U	U*	1.25	
Europium 154	0.1	U	U*	0.893		0.660		U	U*	U	U*	U	U*	U	U*	U	U*	0.222	
Europium 155	0.1	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U	U	U*
Thorium-228(gea)		U	UJ	0.489	J	0.398	J	0.573	J	0.578	J	0.394	J	0.371	J	0.390	J	0.287	J
Thorium-232(gea)		0.526		U	U	0.562		0.576		0.332		0.413		0.433		0.360		U	U
Uranium-235(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Uranium-238(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Americium-241(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

000010

* - RQL exceeded

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

Project: WASHINGTON CLOSURE HANFORD																			
Laboratory: EB																			
Case	SDG: H2540																		
Sample Number		J018C5		J018F4		J018F6		J018C0		J018C2		J018C7		J018C9		J018D1		J018D3	
Remarks						Duplicate		orig											
Sample Date		3/22/04		3/24/04		3/24/04		3/24/04		3/24/04		3/22/04		3/22/04		3/22/04		3/22/04	
Radiochemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Tritium	400	-0.043	U	0.232	U	0.270	U	0.153	U	0.398	U	0.014	U	-0.140	U	-0.081	U	-0.075	U
Carbon-14	50	-0.987	UJ	1.76	UJ	0.673	UJ	0.588	UJ	-0.320	UJ	0.669	UJ	1.95	UJ	2.04	UJ	0.554	UJ
Nickel-63	30	5.17		-1.52	U	1.00	U	3.62	U	3.56	U	1.27	U	13.3		8.34		5.69	
Total Strontium	1	3.08		0.004	U	-0.015	U	-0.027	U	-0.050	U	0.127	U	1.85		3.49		0.868	
Thorium-228	1	0.488	J	0.396	J	0.423	J	0.340	J	0.233	J	0.450	J	0.894	J	0.899	J	0.571	J
Thorium-230		0.600		0.402		0.503		0.378		0.813		0.225	U	0.649		0.412		0.646	
Thorium-232	1	0.600	J	0.339	J	0.416	J	0.453	J	0.426	J	0.637	J	0.365	J	0.449	J	0.837	J
Uranium-233/234	1	0.520		0.341		0.352		0.328		0.362		0.457		0.491		0.502		0.529	
Uranium-235	1	0.022	U	0.016	U	0.020	U	0.021	U	0.021	U	0.032		0.034		0.027	U	0.047	
Uranium-238	1	0.553		0.355		0.382		0.450		0.296		0.486		0.467		0.416		0.490	
Neptumium-237		0.048		0.006	U	0.021	U	0	U	-0.006	U	0.014	U	0.029		0.021	U	0.023	U
Plutonium-238	1	0.027	U	0	U	0	U	0	U	0	U	0	U	0.027	U	0.026	U	0	U
Plutonium-239/240	1	0.378		0	U	0	U	0	U	0	U	0.029	U	0.382		0.438		0.166	U
Americium-241	1	0.137	U	-0.025	U	0.120	U	0	U	0.048	U	0	U	0.084	U	0.209		0.026	U
Potassium-40		8.97		9.27		9.33		9.59		8.52		8.69		9.86		10.3		10.4	
Cobalt 60	0.05	0.210		U	U*	U	U*	U	U	U	U	U	U	U	U*	0.100		U	U*
Cesium 137	0.1	1.27		U	U	U	U	U	U	U	U	0.356		2.24		29.0		0.659	
Radium-226		0.265		0.342		0.225		0.235		0.300		0.331		0.631		0.433		0.330	
Radium-228		0.626		0.484		0.411		0.359		U	U	0.532		0.410	U	0.612		0.660	
Europium 152	0.1	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	1.04		0.869		0.164	
Europium 154	0.1	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	U	U*	0.218		U	U*
Europium 155	0.1	U	U*	U	U*	U	U*	U	U	U	U*	U	U*	U	U*	U	U*	U	U*
Thorium-228(gea)		0.552	J	0.397	J	0.360	J	0.381	J	0.353	J	0.693	J	0.451	J	0.363	J	0.514	J
Thorium-232(gea)		0.626		0.484		0.411		0.359		U	U	0.532		0.410		0.612		0.660	
Uranium-235(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Uranium-238(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Americium-241(gea)		U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U

000011

* - 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 H2540

7007-011 J018D5

DATA SHEET

SDG	7007	Client/Case no	Hanford	SDG H2540	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R403129-11	Client sample id	J018D5		
Dept sample id	7007-011	Location/Matrix	105-H FSB Soil (0-1 ft)	SOLID	
Received	03/26/04	Collected/Weight	03/22/04 12:50	1571 g	
% solids	98.1	Custody/SAF No	B02-036-12	B02-036	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.220	0.24	0.50	400	U	H
Carbon 14	14762-75-5	3.34	3.4	5.6	50	U J	C
Nickel 63	13981-37-8	57.5	4.8	4.7	30		NI_L
Total Strontium	SR-RAD	8.90	0.50	0.21	1.0		SR
Thorium 228	14274-82-9	0.554	0.34	0.33		J	TH
Thorium 230	14269-63-7	1.06	0.44	0.33	1.0		TH
Thorium 232	TH-232	0.595	0.34	0.33	1.0	J	TH
Uranium 233/234	U-233/234	0.665	0.095	0.030	1.0		U
Uranium 235	15117-96-1	0.034	0.023	0.029	1.0		U
Uranium 238	U-238	0.665	0.095	0.024	1.0		U
Neptunium 237	13994-20-2	0.042	0.042	0.053	1.0	U	NP
Plutonium 238	13981-16-3	0.052	0.052	0.20	1.0	U	PU
Plutonium 239/240	PU-239/240	1.64	0.43	0.20	1.0		PU
Americium 241	14596-10-2	0.765	0.31	0.20	1.0		AM
Potassium 40	13966-00-2	9.16	1.1	0.73			GAM
Cobalt 60	10198-40-0	0.374	0.082	0.058	0.050		GAM
Cesium 137	10045-97-3	16.0	0.33	0.15	0.10		GAM
Radium 226	13982-63-3	0.436	0.21	0.23	0.10		GAM
Radium 228	15262-20-1	0.526	0.27	0.34	0.20		GAM
Europium 152	14683-23-9	5.30	0.56	0.54	0.10		GAM
Europium 154	15585-10-1	U		0.39	0.10	U	GAM
Europium 155	14391-16-3	U		0.39	0.10	U	GAM
Thorium 228	14274-82-9	U		0.25		U J	GAM
Thorium 232	TH-232	0.526	0.27	0.34			GAM
Uranium 235	15117-96-1	U		0.60		U	GAM
Uranium 238	U-238	U		15		U	GAM
Americium 241	14596-10-2	U		0.37		U	GAM

105D&H Rx Soils Interim Closure Samp

1/31/05

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/12/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2540

7007-012 J018D7

DATA SHEET

SDG	7007	Client/Case no	Hanford SDG H2540
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R403129-12	Client sample id	J018D7
Dept sample id	7007-012	Location/Matrix	105-H FSB Soil (0-1 ft) SOLID
Received	03/26/04	Collected/Weight	03/22/04 13:00 1493 g
% solids	97.8	Custody/SAF No	B02-036-12 B02-036

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.124	0.29	0.51	400	U	H
Carbon 14	14762-75-5	25.4	4.1	5.3	50	J	C
Nickel 63	13981-37-8	41.9	4.2	4.6	30		NI_L
Total Strontium	SR-RAD	5.90	0.42	0.23	1.0		SR
Thorium 228	14274-82-9	0.846	0.35	0.32		J	TH
Thorium 230	14269-63-7	0.338	0.34	0.32	1.0		TH
Thorium 232	TH-232	0.719	0.34	0.32	1.0	J	TH
Uranium 233/234	U-233/234	0.492	0.085	0.025	1.0		U
Uranium 235	15117-96-1	0.020	0.024	0.030	1.0	U	U
Uranium 238	U-238	0.511	0.085	0.025	1.0		U
Neptunium 237	13994-20-2	0.014	0.028	0.053	1.0	U	NP
Plutonium 238	13981-16-3	0.091	0.12	0.23	1.0	U	PU
Plutonium 239/240	PU-239/240	0.974	0.37	0.23	1.0		PU
Americium 241	14596-10-2	0.427	0.23	0.22	1.0		AM
Potassium 40	13966-00-2	10.5	1.6	1.1			GAM
Cobalt 60	10198-40-0	0.280	0.11	0.12	0.050		GAM
Cesium 137	10045-97-3	9.82	0.36	0.22	0.10		GAM
Radium 226	13982-63-3	0.610	0.26	0.31	0.10		GAM
Radium 228	15262-20-1	U		0.72	0.20	U	GAM
Europium 152	14683-23-9	6.42	0.42	0.40	0.10		GAM
Europium 154	15585-10-1	0.893	0.32	0.32	0.10		GAM
Europium 155	14391-16-3	U		0.40	0.10	U J	GAM
Thorium 228	14274-82-9	0.489	0.14	0.19			GAM
Thorium 232	TH-232	U		0.72		U	GAM
Uranium 235	15117-96-1	U		0.52		U	GAM
Uranium 238	U-238	U		18		U	GAM
Americium 241	14596-10-2	U		0.38		U	GAM

105D&H Rx Soils Interim Closure Samp

1/31/02

Lab id	EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2540

7007-013 J018D9

DATA SHEET

SDG	7007	Client/Case no	Hanford SDG H2540
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R403129-13	Client sample id	J018D9
Dept sample id	7007-013	Location/Matrix	105-H FSB Soil (0-1 ft) SOLID
Received	03/26/04	Collected/Weight	03/22/04 13:10 1637 g
% solids	97.6	Custody/SAF No	B02-036-12 B02-036

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.135	0.31	0.56	400	U	H
Carbon 14	14762-75-5	4.90	3.4	5.5	50	U J	C
Nickel 63	13981-37-8	25.0	3.7	4.6	30		NI_L
Total Strontium	SR-RAD	0.629	0.17	0.22	1.0		SR
Thorium 228	14274-82-9	0.949	0.43	0.40		J	TH
Thorium 230	14269-63-7	0.579	0.43	0.40	1.0		TH
Thorium 232	TH-232	1.16	0.54	0.40	1.0	J	TH
Uranium 233/234	U-233/234	0.574	0.091	0.026	1.0		U
Uranium 235	15117-96-1	0.017	0.017	0.032	1.0	U	U
Uranium 238	U-238	0.578	0.091	0.026	1.0		U
Neptunium 237	13994-20-2	0.029	0.029	0.021	1.0		NP
Plutonium 238	13981-16-3	0	0.057	0.22	1.0	U	PU
Plutonium 239/240	PU-239/240	0.400	0.23	0.22	1.0		PU
Americium 241	14596-10-2	0.297	0.18	0.23	1.0		AM
Potassium 40	13966-00-2	10.0	1.1	0.69			GAM
Cobalt 60	10198-40-0	0.213	0.060	0.052	0.050		GAM
Cesium 137	10045-97-3	3.26	0.15	0.10	0.10		GAM
Radium 226	13982-63-3	0.248	0.15	0.17	0.10		GAM
Radium 228	15262-20-1	0.562	0.23	0.28	0.20		GAM
Europium 152	14683-23-9	5.17	0.24	0.20	0.10		GAM
Europium 154	15585-10-1	0.660	0.24	0.22	0.10		GAM
Europium 155	14391-16-3	U		0.20	0.10	U	GAM
Thorium 228	14274-82-9	0.398	0.074	0.10		J	GAM
Thorium 232	TH-232	0.562	0.23	0.28			GAM
Uranium 235	15117-96-1	U		0.25		U	GAM
Uranium 238	U-238	U		11		U	GAM
Americium 241	14596-10-2	U		0.17		U	GAM

105D&H Rx Soils Interim Closure Samp

1/31/06

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

SAMPLE DELIVERY GROUP H2540

7007-014 J018F1

DATA SHEET

SDG	7007	Client/Case no	Hanford SDG H2540
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R403129-14	Client sample id	J018F1
Dept sample id	7007-014	Location/Matrix	105-H FSB Soil (0-1 ft) SOLID
Received	03/26/04	Collected/Weight	03/22/04 13:20 1394 g
% solids	97.4	Custody/SAF No	B02-036-12 B02-036

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Tritium	10028-17-8	-0.027	0.28	0.49	400	U	H
Carbon 14	14762-75-5	0.316	3.4	5.8	50	U J	C
Nickel 63	13981-37-8	0.189	2.7	4.5	30	U	NI_L
Total Strontium	SR-RAD	0.552	0.16	0.22	1.0		SR
Thorium 228	14274-82-9	0.718	0.31	0.29		J	TH
Thorium 230	14269-63-7	0.340	0.30	0.29	1.0		TH
Thorium 232	TH-232	0.755	0.38	0.29	1.0	J	TH
Uranium 233/234	U-233/234	0.536	0.088	0.032	1.0		U
Uranium 235	15117-96-1	0.024	0.024	0.031	1.0	U	U
Uranium 238	U-238	0.573	0.088	0.032	1.0		U
Neptunium 237	13994-20-2	0.008	0.033	0.063	1.0	U	NP
Plutonium 238	13981-16-3	0	0.057	0.22	1.0	U	PU
Plutonium 239/240	PU-239/240	0.114	0.11	0.22	1.0	U	PU
Americium 241	14596-10-2	0.024	0.095	0.18	1.0	U	AM
Potassium 40	13966-00-2	9.51	1.3	0.63			GAM
Cobalt 60	10198-40-0	U		0.074	0.050	U	GAM
Cesium 137	10045-97-3	0.487	0.082	0.076	0.10		GAM
Radium 226	13982-63-3	0.378	0.12	0.12	0.10		GAM
Radium 228	15262-20-1	0.576	0.27	0.28	0.20		GAM
Europium 152	14683-23-9	U		0.20	0.10	U	GAM
Europium 154	15585-10-1	U		0.24	0.10	U	GAM
Europium 155	14391-16-3	U		0.16	0.10	U	GAM
Thorium 228	14274-82-9	0.573	0.12	0.12		J	GAM
Thorium 232	TH-232	0.576	0.27	0.28			GAM
Uranium 235	15117-96-1	U		0.27		U	GAM
Uranium 238	U-238	U		7.4		U	GAM
Americium 241	14596-10-2	U		0.26		U	GAM

105D&H Rx Soils Interim Closure Samp

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2540

7007-015 J018F3

DATA SHEET

SDG	7007	Client/Case no	Hanford SDG H2540
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R403129-15	Client sample id	J018F3
Dept sample id	7007-015	Location/Matrix	105-H FSB Soil (0-1 ft) SOLID
Received	03/26/04	Collected/Weight	03/22/04 13:30 1567 g
% solids	98.9	Custody/SAF No	B02-036-20 B02-036

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Tritium	10028-17-8	0.086	0.30	0.52	400	U	H
Carbon 14	14762-75-5	0.461	2.9	4.9	50	U J	C
Nickel 63	13981-37-8	1.86	2.8	4.6	30	U	NI_L
Total Strontium	SR-RAD	0.271	0.15	0.24	1.0		SR
Thorium 228	14274-82-9	0.658	0.31	0.30		J	TH
Thorium 230	14269-63-7	0.734	0.39	0.30	1.0		TH
Thorium 232	TH-232	0.928	0.39	0.30	1.0	J	TH
Uranium 233/234	U-233/234	0.541	0.091	0.033	1.0		U
Uranium 235	15117-96-1	0.038	0.025	0.032	1.0		U
Uranium 238	U-238	0.496	0.084	0.033	1.0		U
Neptunium 237	13994-20-2	0	0.031	0.073	1.0	U	NP
Plutonium 238	13981-16-3	0	0.054	0.21	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.054	0.21	1.0	U	PU
Americium 241	14596-10-2	-0.047	0.047	0.18	1.0	U	AM
Potassium 40	13966-00-2	8.92	0.90	0.38			GAM
Cobalt 60	10198-40-0	U		0.067	0.050	U	GAM
Cesium 137	10045-97-3	0.140	0.068	0.060	0.10		GAM
Radium 226	13982-63-3	0.340	0.11	0.11	0.10		GAM
Radium 228	15262-20-1	0.332	0.20	0.20	0.20		GAM
Europium 152	14683-23-9	U		0.18	0.10	U	GAM
Europium 154	15585-10-1	U		0.16	0.10	U	GAM
Europium 155	14391-16-3	U		0.15	0.10	U J	GAM
Thorium 228	14274-82-9	0.578	0.10	0.093			GAM
Thorium 232	TH-232	0.332	0.20	0.20			GAM
Uranium 235	15117-96-1	U		0.25		U	GAM
Uranium 238	U-238	U		7.2		U	GAM
Americium 241	14596-10-2	U		0.088		U	GAM

105D&H Rx Soils Interim Closure Samp

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2540

7007-016 J018F5

DATA SHEET

SDG	7007	Client/Case no	Hanford SDG H2540
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R403129-16	Client sample id	J018F5
Dept sample id	7007-016	Location/Matrix	105-H FSB Soil (0-1 ft) SOLID
Received	03/26/04	Collected/Weight	03/22/04 11:30 1833 g
% solids	99.0	Custody/SAF No	B02-036-20 B02-036

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Tritium	10028-17-8	0.137	0.29	0.49	400	U	H
Carbon 14	14762-75-5	1.07	2.9	4.9	50	U J	C
Nickel 63	13981-37-8	-0.721	2.7	4.7	30	U	NI_L
Total Strontium	SR-RAD	0.091	0.13	0.24	1.0	U	SR
Thorium 228	14274-82-9	0.848	0.16	0.067		J	TH
Thorium 230	14269-63-7	0.660	0.18	0.22	1.0		TH
Thorium 232	TH-232	0.673	0.14	0.053	1.0	J	TH
Uranium 233/234	U-233/234	0.527	0.084	0.030	1.0		U
Uranium 235	15117-96-1	0.042	0.023	0.029	1.0		U
Uranium 238	U-238	0.511	0.084	0.030	1.0		U
Neptunium 237	13994-20-2	0.014	0.028	0.068	1.0	U	NP
Plutonium 238	13981-16-3	0	0.057	0.22	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.057	0.22	1.0	U	PU
Americium 241	14596-10-2	0.027	0.11	0.20	1.0	U	AM
Potassium 40	13966-00-2	8.38	1.4	0.94			GAM
Cobalt 60	10198-40-0	U		0.074	0.050	U	GAM
Cesium 137	10045-97-3	U		0.077	0.10	U	GAM
Radium 226	13982-63-3	0.293	0.095	0.11	0.10		GAM
Radium 228	15262-20-1	0.413	0.34	0.32	0.20		GAM
Europium 152	14683-23-9	U		0.17	0.10	U	GAM
Europium 154	15585-10-1	U		0.30	0.10	U	GAM
Europium 155	14391-16-3	U		0.18	0.10	U	GAM
Thorium 228	14274-82-9	0.394	0.11	0.12		J	GAM
Thorium 232	TH-232	0.413	0.34	0.32			GAM
Uranium 235	15117-96-1	U		0.25		U	GAM
Uranium 238	U-238	U		11		U	GAM
Americium 241	14596-10-2	U		0.19		U	GAM

105D&H Rx Soils Interim Closure Samp

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Lab id	EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2540

7007-001 J018B9

DATA SHEET

SDG	7007	Client/Case no	Hanford SDG H2540
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R403129-01	Client sample id	J018B9
Dept sample id	7007-001	Location/Matrix	105-H FSB Soil (0-1 ft) SOLID
Received	03/26/04	Collected/Weight	03/22/04 11:30 1792 g
% solids	99.2	Custody/SAF No	B02-036-10 B02-036

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Tritium	10028-17-8	0.050	0.15	0.25	400	U	H
Carbon 14	14762-75-5	1.20	2.8	4.7	50	U J	C
Nickel 63	13981-37-8	4.86	3.0	4.7	30		NI_L
Total Strontium	SR-RAD	0.012	0.099	0.20	1.0	U	SR
Thorium 228	14274-82-9	0.752	0.36	0.27		J	TH
Thorium 230	14269-63-7	0.107	0.21	0.27	1.0	U	TH
Thorium 232	TH-232	0.429	0.29	0.27	1.0	J	TH
Uranium 233/234	U-233/234	0.450	0.079	0.036	1.0		U
Uranium 235	15117-96-1	0.020	0.024	0.030	1.0	U	U
Uranium 238	U-238	0.420	0.073	0.025	1.0		U
Neptunium 237	13994-20-2	0.009	0.036	0.085	1.0	U	NP
Plutonium 238	13981-16-3	0.004	0.015	0.030	1.0	U	PU
Plutonium 239/240	PU-239/240	0.004	0.015	0.030	1.0	U	PU
Americium 241	14596-10-2	0.023	0.092	0.18	1.0	U	AM
Potassium 40	13966-00-2	8.03	1.6	1.2			GAM
Cobalt 60	10198-40-0	U		0.085	0.050	U	GAM
Cesium 137	10045-97-3	U		0.091	0.10	U	GAM
Radium 226	13982-63-3	0.388	0.15	0.15	0.10		GAM
Radium 228	15262-20-1	0.433	0.29	0.34	0.20		GAM
Europium 152	14683-23-9	U		0.19	0.10	U	GAM
Europium 154	15585-10-1	U		0.28	0.10	U	GAM
Europium 155	14391-16-3	U		0.28	0.10	U	GAM
Thorium 228	14274-82-9	0.371	0.098	0.12		J	GAM
Thorium 232	TH-232	0.433	0.29	0.34			GAM
Uranium 235	15117-96-1	U		0.28		U	GAM
Uranium 238	U-238	U		10		U	GAM
Americium 241	14596-10-2	U		0.19		U	GAM

105D&H Rx Soils Interim Closure Samp

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Lab id	EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2540

7007-002 J018C1

DATA SHEET

SDG	7007	Client/Case no	Hanford SDG H2540
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R403129-02	Client sample id	J018C1
Dept sample id	7007-002	Location/Matrix	105-H FSB Soil (0-1 ft) SOLID
Received	03/26/04	Collected/Weight	03/22/04 11:40 1684 g
% solids	98.8	Custody/SAF No	B02-036-10 B02-036

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Tritium	10028-17-8	0.090	0.14	0.23	400	U	H
Carbon 14	14762-75-5	-0.078	3.3	5.7	50	U J	C
Nickel 63	13981-37-8	2.32	2.8	4.6	30	U	NI_L
Total Strontium	SR-RAD	0.122	0.11	0.20	1.0	U	SR
Thorium 228	14274-82-9	0.417	0.30	0.29		J	TH
Thorium 230	14269-63-7	0.151	0.23	0.29	1.0	U	TH
Thorium 232	TH-232	0.530	0.31	0.29	1.0	J	TH
Uranium 233/234	U-233/234	0.486	0.089	0.028	1.0		U
Uranium 235	15117-96-1	0.009	0.018	0.034	1.0	U	U
Uranium 238	U-238	0.420	0.082	0.028	1.0		U
Neptunium 237	13994-20-2	0.011	0.022	0.043	1.0	U	NP
Plutonium 238	13981-16-3	0	0.056	0.21	1.0	U	PU
Plutonium 239/240	PU-239/240	0.083	0.11	0.21	1.0	U	PU
Americium 241	14596-10-2	0.193	0.19	0.25	1.0	U	AM
Potassium 40	13966-00-2	8.78	0.86	0.50			GAM
Cobalt 60	10198-40-0	U		0.054	0.050	U	GAM
Cesium 137	10045-97-3	0.099	0.061	0.061	0.10		GAM
Radium 226	13982-63-3	0.202	0.083	0.092	0.10		GAM
Radium 228	15262-20-1	0.360	0.15	0.17	0.20		GAM
Europium 152	14683-23-9	U		0.11	0.10	U	GAM
Europium 154	15585-10-1	U		0.14	0.10	U	GAM
Europium 155	14391-16-3	U		0.094	0.10	U	GAM
Thorium 228	14274-82-9	0.390	0.065	0.073		J	GAM
Thorium 232	TH-232	0.360	0.15	0.17			GAM
Uranium 235	15117-96-1	U		0.14		U	GAM
Uranium 238	U-238	U		6.1		U	GAM
Americium 241	14596-10-2	U		0.10		U	GAM

105D&H Rx Soils Interim Closure Samp

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Lab id	EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2540

7007-003 J018C3

DATA SHEET

SDG	7007	Client/Case no	Hanford	SDG H2540	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R403129-03	Client sample id	J018C3		
Dept sample id	7007-003	Location/Matrix	105-H FSB Soil (0-1 ft)	SOLID	
Received	03/26/04	Collected/Weight	03/22/04 11:50	1516 g	
% solids	98.6	Custody/SAF No	B02-036-10	B02-036	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.247	0.14	0.23	400		H
Carbon 14	14762-75-5	1.01	3.7	6.2	50	U J	C
Nickel 63	13981-37-8	21.7	3.5	4.5	30		NI_L
Total Strontium	SR-RAD	12.6	0.57	0.20	1.0		SR
Thorium 228	14274-82-9	0.452	0.26	0.25		J	TH
Thorium 230	14269-63-7	0.613	0.33	0.25	1.0		TH
Thorium 232	TH-232	0.548	0.26	0.25	1.0	J	TH
Uranium 233/234	U-233/234	0.459	0.076	0.032	1.0		U
Uranium 235	15117-96-1	0.028	0.021	0.027	1.0		U
Uranium 238	U-238	0.557	0.082	0.022	1.0		U
Neptunium 237	13994-20-2	0.019	0.026	0.049	1.0	U	NP
Plutonium 238	13981-16-3	0.061	0.061	0.23	1.0	U	PU
Plutonium 239/240	PU-239/240	1.65	0.45	0.23	1.0		PU
Americium 241	14596-10-2	0.511	0.26	0.20	1.0		AM
Potassium 40	13966-00-2	8.42	1.1	0.46			GAM
Cobalt 60	10198-40-0	0.179	0.066	0.063	0.050		GAM
Cesium 137	10045-97-3	4.28	0.19	0.10	0.10		GAM
Radium 226	13982-63-3	0.276	0.13	0.15	0.10		GAM
Radium 228	15262-20-1	U		0.45	0.20	U	GAM
Europium 152	14683-23-9	1.25	0.19	0.22	0.10		GAM
Europium 154	15585-10-1	0.222	0.19	0.19	0.10		GAM
Europium 155	14391-16-3	U		0.22	0.10	U	GAM
Thorium 228	14274-82-9	0.287	0.13	0.16		J	GAM
Thorium 232	TH-232	U		0.45		U	GAM
Uranium 235	15117-96-1	U		0.33		U	GAM
Uranium 238	U-238	U		9.7		U	GAM
Americium 241	14596-10-2	U		0.35		U	GAM

105D&H Rx Soils Interim Closure Samp

1/31/06

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

SAMPLE DELIVERY GROUP H2540

7007-004 J018C5

DATA SHEET

SDG	7007	Client/Case no	Hanford SDG H2540
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R403129-04	Client sample id	J018C5
Dept sample id	7007-004	Location/Matrix	105-H FSB Soil (0-1 ft) SOLID
Received	03/26/04	Collected/Weight	03/22/04 12:00 1802 g
% solids	98.8	Custody/SAF No	B02-036-10 B02-036

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.043	0.12	0.21	400	U	H
Carbon 14	14762-75-5	-0.987	3.2	5.6	50	U J	C
Nickel 63	13981-37-8	5.17	2.9	4.5	30		NI_L
Total Strontium	SR-RAD	3.08	0.29	0.18	1.0		SR
Thorium 228	14274-82-9	0.488	0.30	0.29		J	TH
Thorium 230	14269-63-7	0.600	0.38	0.29	1.0		TH
Thorium 232	TH-232	0.600	0.30	0.29	1.0	J	TH
Uranium 233/234	U-233/234	0.520	0.089	0.028	1.0		U
Uranium 235	15117-96-1	0.022	0.018	0.034	1.0	U	U
Uranium 238	U-238	0.553	0.089	0.028	1.0		U
Neptunium 237	13994-20-2	0.048	0.032	0.016	1.0		NP
Plutonium 238	13981-16-3	0.027	0.054	0.21	1.0	U	PU
Plutonium 239/240	PU-239/240	0.378	0.22	0.21	1.0		PU
Americium 241	14596-10-2	0.137	0.14	0.17	1.0	U	AM
Potassium 40	13966-00-2	8.97	1.0	0.58			GAM
Cobalt 60	10198-40-0	0.210	0.096	0.077	0.050		GAM
Cesium 137	10045-97-3	1.27	0.13	0.091	0.10		GAM
Radium 226	13982-63-3	0.265	0.13	0.14	0.10		GAM
Radium 228	15262-20-1	0.626	0.34	0.29	0.20		GAM
Europium 152	14683-23-9	U		0.25	0.10	U	GAM
Europium 154	15585-10-1	U		0.23	0.10	U	GAM
Europium 155	14391-16-3	U		0.19	0.10	U J	GAM
Thorium 228	14274-82-9	0.552	0.14	0.13			GAM
Thorium 232	TH-232	0.626	0.34	0.29			GAM
Uranium 235	15117-96-1	U		0.29		U	GAM
Uranium 238	U-238	U		8.8		U	GAM
Americium 241	14596-10-2	U		0.10		U	GAM

105D&H Rx Soils Interim Closure Samp

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Lab id	EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2540

7007-017 J018F4

DATA SHEET

SDG	7007	Client/Case no	Hanford	SDG H2540	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R403129-17	Client sample id	J018F4		
Dept sample id	7007-017	Location/Matrix	105-H FSB Soil (8-10 ft)	SOLID	
Received	03/26/04	Collected/Weight	03/24/04 13:10	1654 g	
% solids	98.2	Custody/SAF No	B02-036-16	B02-036	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.232	0.30	0.50	400	U	H
Carbon 14	14762-75-5	1.76	3.0	5.0	50	U J	C
Nickel 63	13981-37-8	-1.52	2.6	4.6	30	U	NI_L
Total Strontium	SR-RAD	0.004	0.11	0.23	1.0	U	SR
Thorium 228	14274-82-9	0.396	0.11	0.078		J	TH
Thorium 230	14269-63-7	0.402	0.16	0.22	1.0		TH
Thorium 232	TH-232	0.339	0.10	0.068	1.0	J	TH
Uranium 233/234	U-233/234	0.341	0.068	0.032	1.0		U
Uranium 235	15117-96-1	0.016	0.025	0.031	1.0	U	U
Uranium 238	U-238	0.355	0.068	0.026	1.0		U
Neptunium 237	13994-20-2	0.006	0.026	0.050	1.0	U	NP
Plutonium 238	13981-16-3	0	0.055	0.21	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.055	0.21	1.0	U	PU
Americium 241	14596-10-2	-0.025	0.050	0.19	1.0	U	AM
Potassium 40	13966-00-2	9.27	1.4	0.99			GAM
Cobalt 60	10198-40-0	U		0.087	0.050	U	GAM
Cesium 137	10045-97-3	U		0.077	0.10	U	GAM
Radium 226	13982-63-3	0.342	0.11	0.13	0.10		GAM
Radium 228	15262-20-1	0.484	0.27	0.29	0.20		GAM
Europium 152	14683-23-9	U		0.17	0.10	U	GAM
Europium 154	15585-10-1	U		0.25	0.10	U	GAM
Europium 155	14391-16-3	U		0.16	0.10	U J	GAM
Thorium 228	14274-82-9	0.397	0.095	0.11			GAM
Thorium 232	TH-232	0.484	0.27	0.29			GAM
Uranium 235	15117-96-1	U		0.25		U	GAM
Uranium 238	U-238	U		9.0		U	GAM
Americium 241	14596-10-2	U		0.19		U	GAM

105D&H Rx Soils Interim Closure Samp

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Lab id	EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2540

7007-018 J018F6

DATA SHEET

SDG	7007	Client/Case no	Hanford SDG H2540
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R403129-18	Client sample id	J018F6
Dept sample id	7007-018	Location/Matrix	105-H FSB Soil (8-10 ft) SOLID
Received	03/26/04	Collected/Weight	03/24/04 12:30 1500 g
% solids	98.1	Custody/SAF No	B02-036-16 B02-036

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.270	0.35	0.58	400	U	H
Carbon 14	14762-75-5	0.673	3.3	5.5	50	U J	C
Nickel 63	13981-37-8	1.00	2.7	4.5	30	U	NI_L
Total Strontium	SR-RAD	-0.015	0.12	0.24	1.0	U	SR
Thorium 228	14274-82-9	0.423	0.12	0.090		J	TH
Thorium 230	14269-63-7	0.503	0.16	0.19	1.0		TH
Thorium 232	TH-232	0.416	0.12	0.070	1.0	J	TH
Uranium 233/234	U-233/234	0.352	0.074	0.032	1.0		U
Uranium 235	15117-96-1	0.020	0.016	0.031	1.0	U	U
Uranium 238	U-238	0.382	0.074	0.025	1.0		U
Neptunium 237	13994-20-2	0.021	0.028	0.054	1.0	U	NP
Plutonium 238	13981-16-3	0	0.068	0.26	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.068	0.26	1.0	U	PU
Americium 241	14596-10-2	0.120	0.12	0.23	1.0	U	AM
Potassium 40	13966-00-2	9.33	1.2	0.72			GAM
Cobalt 60	10198-40-0	U		0.066	0.050	U	GAM
Cesium 137	10045-97-3	U		0.056	0.10	U	GAM
Radium 226	13982-63-3	0.225	0.079	0.089	0.10		GAM
Radium 228	15262-20-1	0.411	0.25	0.24	0.20		GAM
Europium 152	14683-23-9	U		0.15	0.10	U	GAM
Europium 154	15585-10-1	U		0.18	0.10	U	GAM
Europium 155	14391-16-3	U		0.15	0.10	U	GAM
Thorium 228	14274-82-9	0.360	0.10	0.11		J	GAM
Thorium 232	TH-232	0.411	0.25	0.24			GAM
Uranium 235	15117-96-1	U		0.22		U	GAM
Uranium 238	U-238	U		6.9		U	GAM
Americium 241	14596-10-2	U		0.21		U	GAM

105D&H Rx Soils Interim Closure Samp

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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2540

7007-005 J018C0

DATA SHEET

SDG	7007	Client/Case no	Hanford SDG H2540
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R403129-05	Client sample id	J018C0
Dept sample id	7007-005	Location/Matrix	105-H FSB Soil (8-10 ft) SOLID
Received	03/26/04	Collected/Weight	03/24/04 12:30 1519 g
% solids	98.0	Custody/SAF No	B02-036-13 B02-036

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.153	0.24	0.50	400	U	H
Carbon 14	14762-75-5	0.588	3.6	6.2	50	U J	C
Nickel 63	13981-37-8	3.62	2.8	4.6	30	U	NI_L
Total Strontium	SR-RAD	-0.027	0.087	0.19	1.0	U	SR
Thorium 228	14274-82-9	0.340	0.23	0.29		J	TH
Thorium 230	14269-63-7	0.378	0.30	0.29	1.0		TH
Thorium 232	TH-232	0.453	0.30	0.29	1.0	J	TH
Uranium 233/234	U-233/234	0.328	0.070	0.033	1.0		U
Uranium 235	15117-96-1	0.021	0.017	0.032	1.0	U	U
Uranium 238	U-238	0.450	0.078	0.027	1.0		U
Neptunium 237	13994-20-2	0	0.011	0.040	1.0	U	NP
Plutonium 238	13981-16-3	0	0.055	0.21	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.055	0.21	1.0	U	PU
Americium 241	14596-10-2	0	0.093	0.18	1.0	U	AM
Potassium 40	13966-00-2	9.59	0.94	0.50			GAM
Cobalt 60	10198-40-0	U		0.043	0.050	U	GAM
Cesium 137	10045-97-3	U		0.045	0.10	U	GAM
Radium 226	13982-63-3	0.235	0.073	0.079	0.10		GAM
Radium 228	15262-20-1	0.359	0.22	0.22	0.20		GAM
Europium 152	14683-23-9	U		0.11	0.10	U	GAM
Europium 154	15585-10-1	U		0.18	0.10	U	GAM
Europium 155	14391-16-3	U		0.089	0.10	U	GAM
Thorium 228	14274-82-9	0.381	0.061	0.067		J	GAM
Thorium 232	TH-232	0.359	0.22	0.22			GAM
Uranium 235	15117-96-1	U		0.13		U	GAM
Uranium 238	U-238	U		5.6		U	GAM
Americium 241	14596-10-2	U		0.099		U	GAM

105D&H Rx Soils Interim Closure Samp

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Lab id	EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2540

7007-006 J018C2

DATA SHEET

SDG	7007	Client/Case no	Hanford SDG H2540
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R403129-06	Client sample id	J018C2
Dept sample id	7007-006	Location/Matrix	105-H FSB Soil (8-10 ft) SOLID
Received	03/26/04	Collected/Weight	03/24/04 12:51 1651 g
% solids	97.8	Custody/SAF No	B02-036-13 B02-036

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.398	0.25	0.49	400	U	H
Carbon 14	14762-75-5	-0.320	3.4	5.9	50	U J	C
Nickel 63	13981-37-8	3.56	2.8	4.6	30	U	NI_L
Total Strontium	SR-RAD	-0.050	0.096	0.21	1.0	U	SR
Thorium 228	14274-82-9	0.233	0.23	0.30		U J	TH
Thorium 230	14269-63-7	0.813	0.39	0.30	1.0		TH
Thorium 232	TH-232	0.426	0.24	0.30	1.0	J	TH
Uranium 233/234	U-233/234	0.362	0.077	0.043	1.0		U
Uranium 235	15117-96-1	0.021	0.025	0.032	1.0	U	U
Uranium 238	U-238	0.296	0.063	0.033	1.0		U
Neptunium 237	13994-20-2	-0.006	0.026	0.061	1.0	U	NP
Plutonium 238	13981-16-3	0	0.058	0.22	1.0	U	PU
Plutonium 239/240	PU-239/240	0	0.058	0.22	1.0	U	PU
Americium 241	14596-10-2	0.048	0.096	0.18	1.0	U	AM
Potassium 40	13966-00-2	8.52	1.1	0.54			GAM
Cobalt 60	10198-40-0	U		0.057	0.050	U	GAM
Cesium 137	10045-97-3	U		0.049	0.10	U	GAM
Radium 226	13982-63-3	0.300	0.094	0.10	0.10		GAM
Radium 228	15262-20-1	U		0.30	0.20	U	GAM
Europium 152	14683-23-9	U		0.13	0.10	U	GAM
Europium 154	15585-10-1	U		0.19	0.10	U	GAM
Europium 155	14391-16-3	U		0.13	0.10	U J	GAM
Thorium 228	14274-82-9	0.353	0.082	0.094			GAM
Thorium 232	TH-232	U		0.30		U	GAM
Uranium 235	15117-96-1	U		0.20		U	GAM
Uranium 238	U-238	U		6.6		U	GAM
Americium 241	14596-10-2	U		0.21		U	GAM

105D&H Rx Soils Interim Closure Samp

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

SAMPLE DELIVERY GROUP H2540

7007-007 J018C7

DATA SHEET

SDG	7007	Client/Case no	Hanford SDG H2540
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R403129-07	Client sample id	J018C7
Dept sample id	7007-007	Location/Matrix	105-H FSB Soil (0-1 ft) SOLID
Received	03/26/04	Collected/Weight	03/22/04 12:10 1412 g
% solids	97.7	Custody/SAF No	B02-036-11 B02-036

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	0.014	0.23	0.52	400	U	H
Carbon 14	14762-75-5	0.669	3.6	6.2	50	U J	C
Nickel 63	13981-37-8	1.27	2.7	4.6	30	U	NI_L
Total Strontium	SR-RAD	0.127	0.12	0.21	1.0	U	SR
Thorium 228	14274-82-9	0.450	0.30	0.29		J	TH
Thorium 230	14269-63-7	0.225	0.23	0.29	1.0	U	TH
Thorium 232	TH-232	0.637	0.30	0.29	1.0	J	TH
Uranium 233/234	U-233/234	0.457	0.079	0.036	1.0		U
Uranium 235	15117-96-1	0.032	0.024	0.030	1.0		U
Uranium 238	U-238	0.486	0.079	0.031	1.0		U
Neptunium 237	13994-20-2	0.014	0.027	0.066	1.0	U	NP
Plutonium 238	13981-16-3	0	0.058	0.22	1.0	U	PU
Plutonium 239/240	PU-239/240	0.029	0.058	0.22	1.0	U	PU
Americium 241	14596-10-2	0	0.045	0.17	1.0	U	AM
Potassium 40	13966-00-2	8.69	1.1	0.55			GAM
Cobalt 60	10198-40-0	U		0.063	0.050	U	GAM
Cesium 137	10045-97-3	0.356	0.086	0.066	0.10		GAM
Radium 226	13982-63-3	0.331	0.12	0.12	0.10		GAM
Radium 228	15262-20-1	0.532	0.25	0.24	0.20		GAM
Europium 152	14683-23-9	U		0.20	0.10	U	GAM
Europium 154	15585-10-1	U		0.20	0.10	U	GAM
Europium 155	14391-16-3	U		0.15	0.10	U	GAM
Thorium 228	14274-82-9	0.693	0.10	0.096		J	GAM
Thorium 232	TH-232	0.532	0.25	0.24			GAM
Uranium 235	15117-96-1	U		0.24		U	GAM
Uranium 238	U-238	U		6.3		U	GAM
Americium 241	14596-10-2	U		0.089		U	GAM

105D&H Rx Soils Interim Closure Samp

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Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
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Version	3.06
Report date	04/12/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2540

7007-008 J018C9

DATA SHEET

SDG	7007	Client/Case no	Hanford SDG H2540
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R403129-08	Client sample id	J018C9
Dept sample id	7007-008	Location/Matrix	105-H FSB Soil (0-1 ft) SOLID
Received	03/26/04	Collected/Weight	03/22/04 12:20 1451 g
% solids	96.4	Custody/SAF No	B02-036-11 B02-036

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.140	0.21	0.51	400	U	H
Carbon 14	14762-75-5	1.95	3.6	6.0	50	U J	C
Nickel 63	13981-37-8	13.3	3.3	4.7	30		NI_L
Total Strontium	SR-RAD	1.85	0.23	0.19	1.0		SR
Thorium 228	14274-82-9	0.894	0.41	0.31		J	TH
Thorium 230	14269-63-7	0.649	0.41	0.31	1.0		TH
Thorium 232	TH-232	0.365	0.25	0.31	1.0	J	TH
Uranium 233/234	U-233/234	0.491	0.082	0.030	1.0		U
Uranium 235	15117-96-1	0.034	0.023	0.029	1.0		U
Uranium 238	U-238	0.467	0.076	0.030	1.0		U
Neptunium 237	13994-20-2	0.029	0.022	0.028	1.0		NP
Plutonium 238	13981-16-3	0.027	0.055	0.21	1.0	U	PU
Plutonium 239/240	PU-239/240	0.382	0.22	0.21	1.0		PU
Americium 241	14596-10-2	0.084	0.13	0.16	1.0	U	AM
Potassium 40	13966-00-2	9.86	1.6	0.92			GAM
Cobalt 60	10198-40-0	U		0.18	0.050	U	GAM
Cesium 137	10045-97-3	2.24	0.19	0.14	0.10		GAM
Radium 226	13982-63-3	0.631	0.20	0.17	0.10		GAM
Radium 228	15262-20-1	0.410	0.38	0.45	0.20	U	GAM
Europium 152	14683-23-9	1.04	0.23	0.27	0.10		GAM
Europium 154	15585-10-1	U		0.32	0.10	U	GAM
Europium 155	14391-16-3	U		0.25	0.10	U	GAM
Thorium 228	14274-82-9	0.451	0.17	0.19		J	GAM
Thorium 232	TH-232	0.410	0.38	0.45		U	GAM
Uranium 235	15117-96-1	U		0.37		U	GAM
Uranium 238	U-238	U		12		U	GAM
Americium 241	14596-10-2	U		0.25		U	GAM

105D&H Rx Soils Interim Closure Samp

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Lab id	EBRLNE
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EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2540

7007-009 J018D1

DATA SHEET

SDG	7007	Client/Case no	Hanford	SDG H2540	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R403129-09	Client sample id	J018D1		
Dept sample id	7007-009	Location/Matrix	105-H FSB Soil (0-1 ft)	SOLID	
Received	03/26/04	Collected/Weight	03/22/04 12:30	1518 g	
% solids	97.7	Custody/SAF No	B02-036-11	B02-036	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.081	0.25	0.57	400	U	H
Carbon 14	14762-75-5	2.04	3.6	6.0	50	U J	C
Nickel 63	13981-37-8	8.34	3.0	4.6	30		NI_L
Total Strontium	SR-RAD	3.49	0.33	0.22	1.0		SR
Thorium 228	14274-82-9	0.899	0.38	0.29		J	TH
Thorium 230	14269-63-7	0.412	0.30	0.29	1.0		TH
Thorium 232	TH-232	0.449	0.30	0.29	1.0	J	TH
Uranium 233/234	U-233/234	0.502	0.090	0.041	1.0		U
Uranium 235	15117-96-1	0.027	0.027	0.034	1.0	U	U
Uranium 238	U-238	0.416	0.083	0.036	1.0		U
Neptunium 237	13994-20-2	0.021	0.021	0.041	1.0	U	NP
Plutonium 238	13981-16-3	0.026	0.052	0.20	1.0	U	PU
Plutonium 239/240	PU-239/240	0.438	0.21	0.20	1.0		PU
Americium 241	14596-10-2	0.209	0.14	0.18	1.0		AM
Potassium 40	13966-00-2	10.3	1.0	0.56			GAM
Cobalt 60	10198-40-0	0.100	0.052	0.050	0.050		GAM
Cesium 137	10045-97-3	29.0	0.38	0.12	0.10		GAM
Radium 226	13982-63-3	0.433	0.18	0.21	0.10		GAM
Radium 228	15262-20-1	0.612	0.22	0.22	0.20		GAM
Europium 152	14683-23-9	0.869	0.35	0.45	0.10		GAM
Europium 154	15585-10-1	0.218	0.16	0.16	0.10		GAM
Europium 155	14391-16-3	U		0.29	0.10	U	GAM
Thorium 228	14274-82-9	0.363	0.15	0.21		J	GAM
Thorium 232	TH-232	0.612	0.22	0.22			GAM
Uranium 235	15117-96-1	U		0.42		U	GAM
Uranium 238	U-238	U		8.2		U	GAM
Americium 241	14596-10-2	U		0.29		U	GAM

105D&H Rx Soils Interim Closure Samp

R 2/21/04

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/12/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2540

7007-010 J018D3

DATA SHEET

SDG	7007	Client/Case no	Hanford SDG H2540
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R403129-10	Client sample id	J018D3
Dept sample id	7007-010	Location/Matrix	105-H FSB Soil (0-1 ft) SOLID
Received	03/26/04	Collected/Weight	03/22/04 12:40 1497 g
% solids	98.2	Custody/SAF No	B02-036-11 B02-036

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.075	0.23	0.52	400	U	H
Carbon 14	14762-75-5	0.554	3.0	5.1	50	U J	C
Nickel 63	13981-37-8	5.69	3.1	4.8	30		NI_L
Total Strontium	SR-RAD	0.868	0.19	0.22	1.0		SR
Thorium 228	14274-82-9	0.571	0.31	0.29		J	TH
Thorium 230	14269-63-7	0.646	0.38	0.29	1.0		TH
Thorium 232	TH-232	0.837	0.39	0.29	1.0	J	TH
Uranium 233/234	U-233/234	0.529	0.094	0.039	1.0		U
Uranium 235	15117-96-1	0.047	0.026	0.033	1.0		U
Uranium 238	U-238	0.490	0.086	0.027	1.0		U
Neptunium 237	13994-20-2	0.023	0.046	0.073	1.0	U	NP
Plutonium 238	13981-16-3	0	0.055	0.21	1.0	U	PU
Plutonium 239/240	PU-239/240	0.166	0.11	0.21	1.0	U	PU
Americium 241	14596-10-2	0.026	0.10	0.20	1.0	U	AM
Potassium 40	13966-00-2	10.4	1.4	0.73			GAM
Cobalt 60	10198-40-0	U		0.078	0.050	U	GAM
Cesium 137	10045-97-3	0.659	0.092	0.079	0.10		GAM
Radium 226	13982-63-3	0.330	0.098	0.11	0.10		GAM
Radium 228	15262-20-1	0.660	0.28	0.27	0.20		GAM
Europium 152	14683-23-9	0.164	0.13	0.19	0.10	U	GAM
Europium 154	15585-10-1	U		0.23	0.10	U	GAM
Europium 155	14391-16-3	U		0.19	0.10	U	GAM
Thorium 228	14274-82-9	0.514	0.12	0.14		J	GAM
Thorium 232	TH-232	0.660	0.28	0.27			GAM
Uranium 235	15117-96-1	U		0.30		U	GAM
Uranium 238	U-238	U		9.1		U	GAM
Americium 241	14596-10-2	U		0.27		U	GAM

105D&H Rx Soils Interim Closure Samp

1/31/06

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/12/04

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H2540 was composed of eighteen soil samples designated under SAF No. B02-036 with a Project Designation of: 105D & H Rx Soils Interim Closure Sampling (Overburden, s.

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 BHI via e-fax on April 12, 2004.

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

No problems were encountered during the course of the analyses.

2.3 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.4 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.5 Isotopic Thorium Analyses

The relative percent difference in the Th230 result for the sample and its duplicate was 139%, greater than the calculated 3σ limit of 116%. The difference in the two results was less than the required detection limit of 1.0 pCi/g.

2.6 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.7 Neptunium-237 Analyses

No problems were encountered during the course of the analyses.

2.8 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.9 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.10 Gamma Spectroscopy Analyses

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 C. Mannion
Senior Program Manager

4/22/4
Date

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B02-036-10	Page 1 of 1
Collector: Renee Nielson	Company Contact: Rikki Thoren	Telephone No.: 372-2178	Project Coordinator: KESSNER, JH	Price Code: ~~8L~~ 8K RJN 3/22/04
Project Designation: 105D & H FSB Soils Interim Closure Sampling (Overburden; s	Sampling Location: 105-H FSB Underlying Soils (0 - 1 ft. bgs) H2540 (7007)		SAF No.: B02-036	Air Quality ☐
Ice Chest No.: ERC 02-505 ERC 02-506	Field Logbook No.: EL-1516-2	COA: R105HX200C	Method of Shipment: Federal Express	
Shipped To: VEBERLINE SERVICES (Formerly TMA)	Offsite Property No.: A040116		Bill of Lading/Air Bill No.: SEE OSPC	

Data Turnaround: ~~21~~ Days 15 RJN 3/22/04

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive: <2000 pCi/g See Attached Survey

Special Handling and/or Storage: None

Preservation	None	None	Cool 4C	Cool 4C							
Type of Container	P	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	1000mL	500mL	120mL	250mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082							Shipping Screen
Sample No.	Matrix *	Sample Date	Sample Time								
J018B9 ✓	SOIL	3/22/04	1130	X	X	X	X			A1-1	J018B6
J018C1 ✓	SOIL	3/22/04	1140	X	X	X	X			A1-2	J019K7
J018C3 ✓	SOIL	3/22/04	1150	X	X	X	X			A2-1	J019K8
J018C5 ✓	SOIL	3/22/04	1200	X	X	X	X			A2-2	J019K9

DS 3/24/04

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Renee Nielson	3/22/04 1700	Fed Ex # 1B 3728	3/22/04 1700
Fed Ex 1B 3728	3/25/04 1300	MS Stanbouch	3/25/04 1300
MS Stanbouch	3/25/04 1300	Fed Ex	
Fed Ex	3/26/04	[illegible]	3/26/04 10:00

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60; Europium-152; Europium-154, Europium-155); Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 – Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to relinquish samples from 3728 Ref # 1B on 3/25/04

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B02-036-13	Page 1 of 1
Collector: Renee Nielson	Company Contact: Rikki Thoren	Telephone No.: 372-2178	Project Coordinator: KESSNER, JH	Price Code: ~~8L~~ 8K RJN 3/24/04 Data Turnaround: ~~21~~ 15 Days
Project Designation: 105D & H RX Soils/Interim Closure Sampling (Overburden, s	Sampling Location: 105-H FSB Underlying Soils (8 - 10 ft. bgs) H2540 (7007)		SAF No.: B02-036	Air Quality ☐
Ice Chest No.: EKCB2-505 EKCB2-504	Field Logbook No.: EL-1516-2	COA: R105HX200C	Method of Shipment: Federal Express	
Shipped To: EBERLINE SERVICES (Formerly TMA)	Offsite Property No.: 1		Bill of Lading/Air Bill No.: See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS
Radioactive
<2500 pCi/g See Attached Survey

Special Handling and/or Storage
None

Preservation	None	None	Cool 4C	Cool 4C							
Type of Container	P	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	1000mL	500mL	120mL	250mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082							Shipping Screen
Sample No.	Matrix *	Sample Date	Sample Time								
J018G0	SOIL	3-24-04	1230	X						A1-1	J018G1
J018G2	SOIL	3-24-04	1251	X						A1-2	J019K7
J018G4 RJN	SOIL									A2-1	J019K8
J018G6 3/24/04	SOIL									A2-2	J019K9

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time 1440	Received By/Stored In	Date/Time
KOMUNION R Nielson	3-24-04	LAST John	3/24/04 1440
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
	3/25/04 1300		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
	3/26/04 10:00		3/26/04 10:00
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to relinquish samples from 3728
Ref # 13 on 3/25/04

Matrix *
B=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 (03/01/2002)

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B02-036-11

Collector: Renee Nielson	Company Contact: Rikki Thoren	Telephone No.: 372-2178	Project Coordinator: KESSNER, JH
Price Code: ~~8L~~ 8K 3/22/04	Data Turnaround: ~~21 Days~~ 15 RUN 3/22/04		
Air Quality ☐			
Project Destination: 105D & H Rx Soils Interim Closure Sampling (Overburden, s	Sampling Location: 105-H FSB Underlying Soils (0 - 1 ft. bgs) H2540 (7007)		SAF No.: B02-036
Ice Chest No.: ERC-02-505 ERC-02-506	Field Logbook No.: EL-1516-2	COA: R105HX200C	Method of Shipment: Federal Express
Shipped To: EBERLINE SERVICES (Formerly TMA)	Offsite Property No.: A040116		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive: 22000 pCi/g see attached survey

Special Handling and/or Storage

none

Preservation	None	None	Cool 4C	Cool 4C							
Type of Container	P	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	1000mL	500mL	120mL	250mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082							Shipping screen
Sample No.	Matrix *	Sample Date	Sample Time								
J018C7 ✓	SOIL	3/22/04	1210	X	X	X	X				A2-3 J019L0
J018C9 ✓	SOIL	3/22/04	1220	X	X	X	X				A3-1 J019L1
J018D1 ✓	SOIL	3/22/04	1230	X	X	X	X				A3-2 J019L2
J018D3 ✓	SOIL	3/22/04	1240	X	X	X	X				A4-1 J019L3

DS 3/24/04

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Renee R. Nielson	3/22/04 1700	Ref # 1B 3728	3/22/04 1700
Ref 1B 3728	3/25/04 1300	M. Stankovich	3/25/04 1300
M. Stankovich	3/25/04 1300	Fed Ex	
Fed Ex	3/26/04 10:00	[illegible]	3/26/04 10:00

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to Relinquish samples from 3728 Ref # 1B on 3/25/04

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 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-036-12	Page 1 of 1
Collector: Renee Nielson	Company Contact: Rikki Thoren; Telephone No.: 372-2178	Project Coordinator: KESSNER, JH	Price Code: ~~8L~~ 8K RJN 3/22/04; Air Quality ☐
Project Designation: 105B & H Rx Soils Interim Closure Sampling (Overburden, s	Sampling Location: 105-H FSB Underlying Soils (0 - 1ft. bgs) H2540 (7007)	SAF No.: B02-036	Data Turnaround: ~~21~~ Days 15 RJN
Ice Chest No.: EEC-02-505 EEC-02-506	Field Logbook No.: EL-1516-2; COA: R105HX200C	Method of Shipment: Federal Express	
Shipped To: EBERLINE SERVICES (Formerly TMA)	Offsite Property No.: A040116	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive: <20000 pCi/g See Attached Survey

Special Handling and/or Storage: none

Preservation	None	None	Cool 4C	Cool 4C							
Type of Container	P	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	1000mL	500mL	120mL	250mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082							Shipping Screen
Sample No.	Matrix *	Sample Date	Sample Time								
J018D5 ✓	SOIL	3/22/04	1250	X	X	X	X				A4-2 J019L4
J018D7 ✓	SOIL	3/22/04	1300	X	X	X	X				A4-3 J019L5
J018D9 ✓	SOIL	3/22/04	1310	X	X	X	X				CR2 J019L6
J018F1 ✓	SOIL	3/22/04	1320	X	X	X	X				CR3 J019L7

DXS 3/24/04

0000036

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: R. Nielson	3/22/04 1700	Ref # 1B 3728	3/22/04 1700
Relinquished By/Removed From: Ref 1B 3728	3/23/04 1300	M. Stanbach	3/23/04 1300
Relinquished By/Removed From: M. Stanbach	3/25/04 1300	Fed Ex	
Relinquished By/Removed From: Fed Ex	3/26/04 10:00	[illegible]	3/26/04 10:00
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to relinquish samples from 3728 Ref # 1B on 3/25/02

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 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B02-036-20	Page 1 of 1
Collector: Renee Nielson	Company Contact: Rikki Thoren	Telephone No.: 372-2178	Project Coordinator: KESSNER, JH	Price Code: ~~8L~~ 8K RUN 3/22/04 Data Turnaround: ~~21~~ Days 15 RUN
Project Designation: 105D & H Rx Soils Interim Closure Sampling (Overburden, s	Sampling Location: 105-H FSB Underlying Soils (0 - 1 ft. bgs) H2540 (7007)		SAF No.: B02-036	Air Quality ☐
Ice Chest No.: ERC-02-505 ERC-02-506	Field Logbook No.: EL-1516-2	COA: R105HX200C	Method of Shipment: Federal Express	3/22/04
Shipped To: EBERLINE SERVICES (Formerly TMA)	Offsite Property No.: A040116		Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive: <2000 pCi/g See Attached Survey

Special Handling and/or Storage: none

00003?

Preservation	None	None	Cool 4C	Cool 4C								
Type of Container	P	aG	aG	aG								
No. of Container(s)	1	1	1	1								
Volume	1000mL	500mL	120mL	250mL								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082 RD 3/24/04								Shipping screen
Sample No.	Matrix*	Sample Date	Sample Time									
J018E3 ✓	SOIL	3/22/04	1330	X	X	X	X				EX 3	J018E3
J018E5 ✓	SOIL	3/22/04	1130	X	X	X	X					J018E5

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: R. Nielson	3/22/04 1700	Received By/Stored In: Ref # 1B 3728	3/22/04 1700
Relinquished By/Removed From: Ref 1B 3728	3/25/04 1300	Received By/Stored In: M.Z. M Stankovich	3/25/04 1300
Relinquished By/Removed From: M.Z. M Stankovich	3/25/04 1300	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: Fed Ex	3/26/04 10:00	Received By/Stored In: [illegible]	3/26/04 10:00
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to Relinquish samples from 3728 Ref # 1B on 3/25/05

Matrix*: S=Soil; SD=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 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		B02-036-16	Page 1 of 1
Collector: Renee Nielson	Company Contact: Rikki Thoren	Telephone No.: 372-2178	Project Coordinator: KESSNER, JH	Price Code ~~8L~~ 8K Data Turnaround
Project Designation: 105D & H Rx Soils Interim Closure Sampling (Overburden, s	Sampling Location: 105-H FSB Underlying Soils (8 - 10 ft, bgs) H2540 (7007)		SAF No.: B02-036	Air Quality ☐ RJN 3/24/04 ~~21~~ Days 15
Ice Chest No.: ERC-02-505 ERC-02-506	Field Logbook No.: EL-1516-2	COA: R105HX200C	Method of Shipment: Federal Express	
Shipped To: EBERLINE SERVICES (Formerly TMA)	Offsite Property No.: A040116		Bill of Lading/Air Bill No.: See OPSC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive 42000 pCi/g See Attached Survey

Special Handling and/or Storage

none

Preservation	None	None	Cool 4C	Cool 4C							
Type of Container	P	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	1000mL	500mL	120mL	250mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082							Shipping screen

Sample No.	Matrix *	Sample Date	Sample Time										
J018F4	SOIL	3-24-04	1310	X								EX 3	J019B8
J018F6	SOIL	3-24-04	1230	X									J018B6

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: RENEE R. Nielson	3-24-04 1440	Received By/Stored In: [illegible]	3/24/04 1440
Relinquished By/Removed From: [illegible]	3/25/04 1300	Received By/Stored In: FEDEX	
Relinquished By/Removed From: [illegible]	3/26/04 10:00	Received By/Stored In: [illegible]	3/26/04 10:00
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to Relinquish samples from 3728 Ref # 1b on 3/25/04

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 (03/01/2002)

J000038

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-D - 105-H		DATA PACKAGE:	H2540	
VALIDATOR:	TCJ	LAB: EB		DATE: 1/27/06	
			SDG:	H2540	
ANALYSES PERFORMED					
Gross Alpha/Beta	Strontium-90	Technetium-99	Alpha Spectroscopy	Gamma Spectroscopy	
Total Uranium	Radium-22	Tritium			C14 nilcs
SAMPLES/MATRIX					
J018C5	J018F4	J018F6	J018C0	J018C2	J018C7	J018C9
J018D1	J018D3	J018D5	J018D7	J018D9	J018F3	J018F5
J018B9	J018C1	J018C3	J018F1			
						Soil

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: thorium 232 - no LCS J all
thorium-225
~~LP~~ 2/9/04

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: No C-14 MS - J all

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: Th 228 - 39%. Jall

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 FS or PAS

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: over

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Appendix 6

Additional Documentation Requested by Client

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2540

7007-020 Method Blank

METHOD BLANK

SDG	7007	Client/Case no	Hanford	SDG	H2540
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R403129-20	Client sample id	Method Blank		
Dept sample id	7007-020	Material/Matrix		SOLID	
		SAF No	B02-036		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.099	0.34	0.59	400	U	H
Carbon 14	14762-75-5	2.99	4.6	7.6	50	U	C
Nickel 63	13981-37-8	1.41	2.8	4.6	30	U	NI_L
Total Strontium	SR-RAD	0.004	0.10	0.22	1.0	U	SR
Thorium 228	14274-82-9	-0.018	0.053	0.11		U	TH
Thorium 230	14269-63-7	0.044	0.12	0.24	1.0	U	TH
Thorium 232	TH-232	-0.018	0.035	0.084	1.0	U	TH
Uranium 233/234	U-233/234	0.004	0.016	0.031	1.0	U	U
Uranium 235	15117-96-1	0.010	0.019	0.037	1.0	U	U
Uranium 238	U-238	-0.008	0.016	0.038	1.0	U	U
Neptunium 237	13994-20-2	0	0.011	0.042	1.0	U	NP
Plutonium 238	13981-16-3	0	0.059	0.22	1.0	U	PU
Plutonium 239/240	PU-239/240	0.059	0.059	0.22	1.0	U	PU
Americium 241	14596-10-2	-0.054	0.054	0.20	1.0	U	AM
Potassium 40	13966-00-2	U		0.16		U	GAM
Cobalt 60	10198-40-0	U		0.017	0.050	U	GAM
Cesium 137	10045-97-3	U		0.015	0.10	U	GAM
Radium 226	13982-63-3	U		0.032	0.10	U	GAM
Radium 228	15262-20-1	U		0.063	0.20	U	GAM
Europium 152	14683-23-9	U		0.044	0.10	U	GAM
Europium 154	15585-10-1	U		0.047	0.10	U	GAM
Europium 155	14391-16-3	U		0.034	0.10	U	GAM
Thorium 228	14274-82-9	U		0.023		U	GAM
Thorium 232	TH-232	U		0.063		U	GAM
Uranium 235	15117-96-1	U		0.058		U	GAM
Uranium 238	U-238	U		1.7		U	GAM
Americium 241	14596-10-2	U		0.021		U	GAM

105D&H Rx Soils Interim Closure Samp

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/12/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2540

7007-020 Method Blank

BLANK, cont.

SDG	7007	Client/Case no	Hanford	SDG H2540
Contact	Melissa C. Mannion	Contract	No. 630	
Lab sample id	R403129-20	Client sample id	Method Blank	
Dept sample id	7007-020	Material/Matrix		SOLID
		SAF No	B02-036	

QC-BLANK #47112

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	04/12/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2540

7007-019

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7007
Contact Melissa C. Mannion

Client/Case no Hanford SDG H2540
Contract No. 630

Lab sample id R403129-19
Dept sample id 7007-019

Client sample id Lab Control Sample
Material/Matrix SOLID
SAF No B02-036

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
Tritium	12.1	0.80	0.59	400		H	12.7	0.51	95	82-118	80-120
Carbon 14	2100	43	12	50		C	2550	100	82	86-114	80-120
Nickel 63	278	9.0	4.7	30		NI_L	272	11	102	83-117	80-120
Total Strontium	11.8	0.61	0.24	1.0		SR	11.3	0.45	104	81-119	80-120
Thorium 230	46.7	2.2	0.21	1.0		TH	46.4	1.9	101	88-112	80-120
Uranium 233/234	18.7	0.75	0.32	1.0		U	19.3	0.77	97	89-111	80-120
Uranium 235	14.6	0.63	0.032	1.0		U	15.7	0.63	93	89-111	80-120
Uranium 238	19.6	0.77	0.31	1.0		U	21.0	0.84	93	89-111	80-120
Neptunium 237	24.0	1.5	0.066	1.0		NP	21.8	0.87	110	85-115	80-120
Plutonium 238	27.0	2.7	0.22	1.0		PU	26.6	1.1	102	82-118	80-120
Plutonium 239/240	28.3	2.8	0.22	1.0		PU	29.0	1.2	98	83-117	80-120
Americium 241	9.24	1.1	0.18	1.0		AM	11.4	0.46	81	83-117	80-120
Cobalt 60	2.35	0.069	0.029	0.050		GAM	2.73	0.11	86	79-121	80-120
Cesium 137	2.15	0.058	0.042	0.10		GAM	2.50	0.10	86	79-121	80-120

105D&H Rx Soils Interim Closure Samp

QC-LCS #47111

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 04/12/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2540

7007-021 J018B9

DUPLICATE

SDG	7007			Client/Case no	Hanford SDG H2540
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R403129-21	Lab sample id	R403129-01	Client sample id	J018B9
Dept sample id	7007-021	Dept sample id	7007-001	Location/Matrix	105-H FSB Soil (0-1 ft) . SOLID
		Received	03/26/04	Collected/Weight	03/22/04 11:30 1792 g
% solids	99.2	% solids	99.2	Custody/SAF No	B02-036-10 B02-036

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	PROT LIMIT
Tritium	-0.205	0.32	0.58	400	U	H	0.050	0.15	0.25	U	-		
Carbon 14	1.21	3.1	5.3	50	U	C	1.20	2.8	4.7	U	-		
Nickel 63	-0.847	2.7	4.7	30	U	NI_L	4.86	3.0	4.7		200	214	
Total Strontium	0.010	0.11	0.22	1.0	U	SR	0.012	0.099	0.20	U	-		
Thorium 228	0.468	0.12	0.074			TH	0.752	0.36	0.27		47	94	
Thorium 230	0.598	0.17	0.20	1.0		TH	0.107	0.21	0.27	U	139	116	
Thorium 232	0.460	0.12	0.073	1.0		TH	0.429	0.29	0.27		7	106	
Uranium 233/234	0.324	0.066	0.025	1.0		U	0.450	0.079	0.036		33	41	
Uranium 235	0.012	0.016	0.030	1.0	U	U	0.020	0.024	0.030	U	-		
Uranium 238	0.422	0.073	0.025	1.0		U	0.420	0.073	0.025		0	38	
Neptunium 237	0.012	0.024	0.057	1.0	U	NP	0.009	0.036	0.085	U	-		
Plutonium 238	0.030	0.061	0.23	1.0	U	PU	0.004	0.015	0.030	U	-		
Plutonium 239/240	0	0.061	0.23	1.0	U	PU	0.004	0.015	0.030	U	-		
Americium 241	-0.024	0.048	0.18	1.0	U	AM	0.023	0.092	0.18	U	-		
Potassium 40	8.34	1.1	0.63			GAM	8.03	1.6	1.2		4	48	
Cobalt 60	U		0.063	0.050	U	GAM	U		0.085	U	-		
Cesium 137	U		0.059	0.10	U	GAM	U		0.091	U	-		
Radium 226	0.316	0.11	0.10	0.10		GAM	0.388	0.15	0.15		20	85	
Radium 228	0.575	0.20	0.17	0.20		GAM	0.433	0.29	0.34		28	110	
Europium 152	U		0.18	0.10	U	GAM	U		0.19	U	-		
Europium 154	U		0.18	0.10	U	GAM	U		0.28	U	-		
Europium 155	U		0.15	0.10	U	GAM	U		0.28	U	-		
Thorium 228	0.548	0.11	0.096			GAM	0.371	0.098	0.12		39	58	
Thorium 232	0.575	0.20	0.17			GAM	0.433	0.29	0.34		28	110	
Uranium 235	U		0.24		U	GAM	U		0.28	U	-		
Uranium 238	U		7.0		U	GAM	U		10	U	-		
Americium 241	U		0.088		U	GAM	U		0.19	U	-		

105D&H Rx Soils Interim Closure Samp

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	04/12/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2540

7007-021

J018B9

DUPLICATE, cont.

SDG	7007			Client/Case no	Hanford SDG H2540
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R403129-21	Lab sample id	R403129-01	Client sample id	J018B9
Dept sample id	7007-021	Dept sample id	7007-001	Location/Matrix	105-H FSB Soil (0-1 ft) SOLID
		Received	03/26/04	Collected/Weight	03/22/04 11:30 1792 g
% solids	99.2	% solids	99.2	Custody/SAF No	B02-036-10 B02-036

QC-DUP#1 47113

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	04/12/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2540

7007-022 J018B9

MATRIX SPIKE

SDG	7007			Client/Case no	Hanford SDG H2540
Contact	Melissa C. Mannion			Contract	No. 630
	MATRIX SPIKE		ORIGINAL		
Lab sample id	R403129-22	Lab sample id	R403129-01	Client sample id	J018B9
Dept sample id	7007-022	Dept sample id	7007-001	Location/Matrix	105-H FSB Soil (0-1 ft) SOLID
		Received	03/26/04	Collected/Weight	03/22/04 11:30 1792 g
% solids	99.2	% solids	99.2	Custody/SAF No	B02-036-10 B02-036

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	50.6	1.5	0.55	400	X	H	51.8	2.1	0.050	0.15	98	84-116	60-140

105D&H Rx Soils Interim Closure Samp

QC-MS#1 47114

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-MS
Version	3.06
Report date	04/12/04

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2540

7007-023

J018B9

MATRIX SPIKE

SDG	7007			Client/Case no	Hanford SDG H2540
Contact	Melissa C. Mannion			Contract	No. 630
	MATRIX SPIKE		ORIGINAL		
Lab sample id	R403129-23	Lab sample id	R403129-01	Client sample id	J018B9
Dept sample id	7007-023	Dept sample id	7007-001	Location/Matrix	105-H FSB Soil (0-1 ft) SOLID
		Received	03/26/04	Collected/Weight	03/22/04 11:30 1792 g
% solids	99.2	% solids	99.2	Custody/SAF No	B02-036-10 B02-036

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Nickel 63	888	18	5.5	30	X	NI_L	909	36	4.86	3.0	97	84-116	60-140

105D&H Rx Soils Interim Closure Samp

QC-MS#1 47151

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-MS
Version	3.06
Report date	04/12/04

Date: 7 February 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 105H Rx Soils Interim Closure Sampling
Subject: PCB - Data Package No. H2540-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2540 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
J018D5	3/22/04	Soil	C	See note 1
J018D7	3/22/04	Soil	C	See note 1
J018D9	3/22/04	Soil	C	See note 1
J018F1	3/22/04	Soil	C	See note 1
J018F3	3/22/04	Soil	C	See note 1
J018F5	3/22/04	Soil	C	See note 1
J018B9	3/22/04	Soil	C	See note 1
J018C1	3/22/04	Soil	C	See note 1
J018C3	3/22/04	Soil	C	See note 1
J018C5	3/22/04	Soil	C	See note 1
J018F4	3/24/04	Soil	C	See note 1
J018F6	3/24/04	Soil	C	See note 1
J018C0	3/24/04	Soil	C	See note 1
J018C2	3/24/04	Soil	C	See note 1
J018C7	3/22/04	Soil	C	See note 1
J018C9	3/22/04	Soil	C	See note 1
J018D1	3/22/04	Soil	C	See note 1
J018D3	3/22/04	Soil	C	See note 1

1 – PCBs by 8082.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the Sampling and Analysis Plan for Interim Closure of the 105-D and 105-H Reactor Below-Grade Structures and Underlying Soils (DOE/RL-2001-18, July 2001). 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 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 two 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".
All holding times were acceptable.

- **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 70% to 130%. 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 matrix spike recoveries above QC limits (220% & 231%), all detected PCB 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.

All 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 30%. 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 RPDs outside QC limits (81% & 88%), all PCB results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

Two sets of field duplicates (J018F5/J018B9 and J018F6/J018C0) were submitted for analysis. Field duplicate results are compared using the same criteria as for laboratory blanks. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 105 SAP RQLs to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data Package No. H2540 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to matrix spike recoveries above QC limits (220% & 231%), all detected PCB results were qualified as estimates and flagged "J". Due to RPDs outside QC limits (81% & 88%), all PCB results were qualified as estimates and flagged "J". Data flagged "J" indicates that the associated concentration is an estimate, but under the BHI statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

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

DOE/RL-2001-18, Rev. 0, July 2001, *Sampling and Analysis Plan for Interim Closure of the 105-D and 105-H Reactor Below-Grade Structures and Underlying Soils*, July 2001.

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

PCB DATA QUALIFICATION SUMMARY*

SDG: H2540	REVIEWER: TL	Project: J06-H	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All detected results	J	J018C9, J018D1	MS recovery
All	J	All	RPD

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

PCB ANALYSIS, SOIL MATRIX, (UG/KG)

Project: WASHINGTON CLOSURE HANFORD																			
Laboratory: LLI	SDG: H2540																		
Sample Number		J018D5		J018D7		J018D9		J018F1		J018F3		J018F5		J018B9		J018C1		J018C3	
Remarks												Duplicate		orig					
Sample Date		3/22/04		3/22/04		3/22/04		3/22/04		3/22/04		3/22/04		3/22/04		3/22/04		3/22/04	
Extraction Date		3/29/04		3/29/04		3/29/04		3/29/04		3/29/04		3/29/04		3/29/04		3/29/04		3/29/04	
Analysis Date		3/31/04		4/1/04		4/1/04		4/1/04		4/1/04		4/1/04		4/1/04		4/1/04		4/1/04	
PCB	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	17	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	13	UJ	14	UJ	14	UJ	14	UJ
Aroclor-1221	17	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	13	UJ	14	UJ	14	UJ	14	UJ
Aroclor-1232	17	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	13	UJ	14	UJ	14	UJ	14	UJ
Aroclor-1242	17	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	13	UJ	14	UJ	14	UJ	14	UJ
Aroclor-1248	17	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	13	UJ	14	UJ	14	UJ	14	UJ
Aroclor-1254	17	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	13	UJ	14	UJ	14	UJ	14	UJ
Aroclor-1260	17	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	13	UJ	14	UJ	14	UJ	14	UJ
Sample Number		J018C5		J018F4		J018F6		J018C0		J018C2		J018C7		J018C9		J018D1		J018D3	
Remarks						Duplicate		orig											
Sample Date		3/22/04		3/24/04		3/24/04		3/24/04		3/24/04		3/22/04		3/22/04		3/22/04		3/22/04	
Extraction Date		3/29/04		3/29/04		3/29/04		3/29/04		3/29/04		3/29/04		3/29/04		3/29/04		3/29/04	
Analysis Date		4/1/04		4/1/04		4/1/04		4/1/04		4/1/04		4/1/04		4/2/04		4/2/04		4/2/04	
PCB	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	17	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ
Aroclor-1221	17	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ
Aroclor-1232	17	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ
Aroclor-1242	17	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ
Aroclor-1248	17	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ
Aroclor-1254	17	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	J	24	J	14	UJ
Aroclor-1260	17	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ	14	UJ

000010

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

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 04/15/04 18:41

RFW Batch Number: 0403L154 Client: TNUHANFORD B02-036 H2540 Work Order: 11343606001 Page: 1

	Cust ID:	J018D5	J018D5	J018D5	J018D7	J018D9	J018F1
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Decachlorobiphenyl	130 * %	445 * %	100 %	115 %	105 %	115 %
	Tetrachloro-m-xylene	135 * %	300 * %	95 %	115 %	105 %	115 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		14 U J	220 * %	93 %	14 U J	14 U J	14 U J
Aroclor-1221		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1232		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1242		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1248		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1254		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1260		14 U	231 * %	90 %	14 U	14 U	14 U

	Cust ID:	J018F3	J018F5	J018B9	J018C1	J018C3	J018C5
Sample Information	RFW#:	005	006	007	008	009	010
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Decachlorobiphenyl	115 %	145 * %	125 * %	145 * %	115 %	120 %
	Tetrachloro-m-xylene	110 %	165 * %	120 * %	145 * %	115 %	125 * %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		14 U J	13 U J	14 U J	14 U J	14 U J	14 U J
Aroclor-1221		14 U	13 U	14 U	14 U	14 U	14 U
Aroclor-1232		14 U	13 U	14 U	14 U	14 U	14 U
Aroclor-1242		14 U	13 U	14 U	14 U	14 U	14 U
Aroclor-1248		14 U	13 U	14 U	14 U	14 U	14 U
Aroclor-1254		14 U	13 U	14 U	14 U	14 U	14 U
Aroclor-1260		14 U	13 U	14 U	14 U	14 U	14 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

K 1/31/06

000011

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 04/15/04 18:41

RFW Batch Number: 0403L154 Client: TNUHANFORD B02-036 H2540 Work Order: 11343606001 Page: 2

	Cust ID:	J018F4	J018F6	J018C0	J018C2	J018C7	J018C9
Sample Information	RFW#:	011	012	013	014	015	016
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Decachlorobiphenyl	120 %	115 %	105 %	105 %	115 %	115 %
	Tetrachloro-m-xylene	110 %	105 %	90 %	95 %	110 %	110 %
Aroclor-1016		14 U J	14 U J	14 U J	14 U J	14 U J	14 U J
Aroclor-1221		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1232		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1242		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1248		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1254		14 U	14 U	14 U	14 U	14 U	14
Aroclor-1260		14 U	14 U	14 U	14 U	14 U	14 U

	Cust ID:	J018D1	J018D3	PBLKEH	PBLKEH BS
Sample Information	RFW#:	017	018	04LE0372-MB1	04LE0372-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Decachlorobiphenyl	95 %	115 %	135 * %	120 %
	Tetrachloro-m-xylene	95 %	120 * %	130 * %	115 %
Aroclor-1016		14 U J	14 U J	13 U	101 %
Aroclor-1221		14 U	14 U	13 U	13 U
Aroclor-1232		14 U	14 U	13 U	13 U
Aroclor-1242		14 U	14 U	13 U	13 U
Aroclor-1248		14 U	14 U	13 U	13 U
Aroclor-1254		24	14 U	13 U	13 U
Aroclor-1260		14 U	14 U	13 U	110 %

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

RZ 1/31/06

000012

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU HANFORD B02-036
LVL#: 0403L154
SDG/SAF#: H2540/B02-036

W.O.#: 11343-606-001-9999-00
Date Received: 03-26-04

PCB

The set of samples consisted of eighteen (18) soil samples collected on 03-22-04.

The samples and the associated QC samples were extracted on 03-29-04 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 03-31-04 and 04-01,02-04. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

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

2. All required holding times for extraction and analysis have been met.

3. The method blank was below the reporting limits for all target compounds.

4. Fourteen (14) of forty-four (44) surrogate recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

5. All blank spike recoveries were within acceptance criteria.

6. Two (2) of four (4) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

7. All initial calibrations associated with this data set were within acceptance criteria.

8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria with the exception of the target compounds listed on the attachment to the enclosed Sample Discrepancy Report (SDR).

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 8 pages.

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

9. To the best of my knowledge, this data report is in compliance with the terms and conditions of the purchase order, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hard copy data package and in the electronic data submitted on diskette has been authorized by the cognizant laboratory manager or his/her designee to be accurate as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

4/29/04
Date

pefv:\group\data\pest\\mu\04L-154.pcb

LVLI
LIONVILLE LABORATORY INC.

Lionville Laboratory Sample Discrepancy Report (SDR) SDR# 04GC218

Initiator: John Lach	Batch: 0403L154	Parameter: PCB
Date: 04/15/04	Samples: ALL	Matrix: SOIL
Client: TNU	Method: 8082	Prep Batch: 04LE0372

The Calibration Check Verification run 03/31/04 at 20:46 was elevated on both columns.

The Calibration Check Verification run 04/01/04 at 03:43 was elevated on both columns.

No hits were found in the samples in the above two blocks.

The Calibration Check Verification run 04/01/04 at 16:38 was run 13 hours after the previous CCV and was elevated on the RTX-CLP2 column. Quantitation was taken from the RTX-35 column.

The Calibration Check Verification run 04/01/04 at 23:42 was elevated on both columns for Aro1016 on both columns and Aro1260 on the RTX-CLP2 column. Quantitaion for Aro1254 was taken from the RTX-35 Column.

Surrogates are increased (see attached). No hits were found in samples with both surrogates increased.

The matrix spike duplicate was increased for both surrogates and spikes.(see attached) Both the matrix and blank spikes are in control.

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-036-12	Page 1 of 1

Collector: Rence Nielson	Company Contact: Rikki Thoren — Telephone No.: 372-2178	Project Coordinator: KESSNER, JH	Price Code: ~~8L~~ 8K RJN 3/22/04 — Data Turnaround: ~~21~~ Days 15 RJN
Project Designation: 105D & H Rx Soils Interim Closure Sampling (Overburden, s	Sampling Location: 105-H FSB Underlying Soils (0 - 1ft. bgs)	SAF No.: B02-036	Air Quality: 1 1
Ice Chest No.: EKC-96-001 EKC 96-002	Field Logbook No.: EL-1516-2 — COA: R105HX200C	Method of Shipment: Federal Express	
Shipped To: ~~EBERLINE SERVICES (Formerly TMA)~~ ZERRA DAS 3/24/04	Offsite Property No.: A040126	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

000016

Preservation	None	None	Cool 4C	Cool 4C							
Type of Container	P	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	1000mL	500mL	120mL	250mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions. DAS 3/24/04	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082							Shipping Screen
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**								
J018D5	SOIL	3/22/04	1250	X	X	X	X				
J018D7	SOIL	3/22/04	1300	X	X	X	X			A4-2	J019L4
J018D9	SOIL	3/22/04	1310	X	X	X	X			A4-3	J019L5
J018F1	SOIL	3/22/04	1320	X	X	X	X			CR2	J019L6
										CR3	J019L7

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Nielson R. Nielson	3/22/04 1700	Ref # 1B 3728	3/22/04 1700
Ref # 1B/3728	3-25-04 1300	MStankovich	3-25-04 1300
MStankovich	3-25-04 1300	Fed Ex	
Fed Ex	3-26-04 0930	[illegible]	3-26-04 0930

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to relinquish samples from 3728 Ref # 1B on 3/25/04

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 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-036-20	Page 1 of 1

Collector: Renee Nielson	Company Contact: Rikki Thoren — Telephone No.: 372-2178	Project Coordinator: KESSNER, JH	Price Code: ~~8L~~ 8K RUN 3/22/04 — Data Turnaround: ~~21~~ Days 15 RUN — Air Quality: ☐
Project Designation: 105D & H Rx Soils Interim Closure Sampling (Overburden, s	Sampling Location: 105-H FSB Underlying Soils (0 - 1 ft. bgs)	SAF No.: B02-036	
Ice Chest No.: FRC-96-001 FRC-96-002	Field Logbook No.: EL-1516-2 — COA: R105HX200C	Method of Shipment: Federal Express 3/22/04	
Shipped To: DAS 3/24/04 ~~EBERLINE SERVICES (Formerly TMA)~~ REZRA	Offsite Property No.: A040126	Bill of Lading/Air Bill No.: SEE OSAC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

000017

Preservation	None	None	Cool 4C	Cool 4C								
Type of Container	P	aG	aG	aG								
No. of Container(s)	1	1	1	1								
Volume	1000mL	500mL	120mL	250mL								
SAMPLE ANALYSIS	See item (1) in Special Instructions. DAS 3/24/04	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082								Shipping Screen
Sample No.	Matrix *	Sample Date	Sample Time									
J018F3	SOIL	3/22/04	1330	X	X	X	X				EX 3	J019L8
J018F5	SOIL	3/22/04	1130	X	X	X	X					J018BL

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R Nielson	3/22/04 1700	Ref # 18 3728	3/22/04 1700
[illegible]	3.26.04 0930	[illegible]	3.26.04 0930

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to relinquish samples from 3728 Ref# 18 on 3 125 04

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 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-036-10	Page 1 of 1

Collector Renee Nielson	Company Contact Rikki Thoren	Telephone No. 372-2178	Project Coordinator KESSNER, JH	Price Code ~~8L~~ 8K RJN 3/22/04	Data Turnaround ~~21~~ 15 Days RJN 3/22/04
Project Designation 105D & 11 Rx Soils Interim Closure Sampling (Overburden, s	Sampling Location 105-11 FSB Underlying Soils (0 - 1 ft. bgs)		SAF No. B02-036	Air Quality | |	
Ice Chest No. ERC-96-001 ERC-96-002	Field Logbook No. EL-1516-2	COA R105HX200C	Method of Shipment Federal Express		
Shipped To DAS 3/24/04 ~~EBERLINE SERVICES (Formerly TMA)~~ PECPA	Offsite Property No. A040126		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

00000018

Preservation	None	None	Cool 4C	Cool 4C							
Type of Container	P	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	1000mL	500mL	120mL	250mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions. DAS 3/24/04	ICP Metals - 6010A (Add-on) [Lead]; Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082							Shipping Screen
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**								
J018B9	SOIL	3/22/04	1130	X	X	X	X				A1-1 J018B6
J018C1	SOIL	3/22/04	1140	X	X	X	X				A1-2 J019K7
J018C3	SOIL	3/22/04	1150	X	X	X	X				A2-1 J019K8
J018C5	SOIL	3/22/04	1200	X	X	X	X				A2-2 J019K9

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Nielson	3/22/04 1700	Ref # 1B 3728	3/22/04 1700
Ref 1B/3728	3/25/04 1300	mstankovich	3/25/04 1300
mstankovich	3/25/04 1300	Fed Ex	
Fed Ex	3-26-04 0930		3-26-04 0930

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]; Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to Relinquish samples from 3728 Ref # 1B on 3/25/04

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 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-036-16	Page 1 of 1

Collector Renee Nielson	Company Contact Rikki Thoren	Telephone No. 372-2178	Project Coordinator KESSNER, JH	Price Code ~~8L~~ 8K Data Turnaround Air Quality ☐ RIN 3/24/04 ~~21~~ 15 Days
Project Designation 105D & H Rx Soils Interim Closure Sampling (Overburden, s	Sampling Location 105-H FSB Underlying Soils (8 - 10 ft. bgs)		SAF No. B02-036	
Ice Chest No. ERG-96-001 ERG-96-002	Field Logbook No. EL-1516-2	COA R105HX200C	Method of Shipment Federal Express	
Shipped To DAS 3/24/04 ~~EBERLINE SERVICES (Formerly TMA)~~ REZRA	Offsite Property No. A040126		Bill of Lading/Air Bill No. SEC OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

000019

	Preservation	None	None	Cool 4C	Cool 4C							
	Type of Container	P	aG	aG	aG							
	No. of Container(s)	1	1	1	1							
	Volume	1000mL	500mL	120mL	250mL							
SAMPLE ANALYSIS		See item (1) in Special Instructions.	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082							Shipping screen
Sample No.	Matrix *	Sample Date	Sample Time									
J018F4	SOIL	3-24-04	1310		X	X	X				EX3	J019L8
J018F6	SOIL	3-24-04	1230		X	X	X					J018B6

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Nielson / R. Nielson	1440 3-24-04	David St. John	1440 3/24/04
[illegible]	3/25/04 1300	Fed Ex	
Fed Ex	3-26-04 / 0930	[illegible]	3-26-04 / 0930

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to relinquish samples from 3728
Ref # 1D on 3/25/04

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 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-036-13	Page 1 of 1

Collector Renee Nielson	Company Contact Rikki Thoren	Telephone No. 372-2178	Project Coordinator KESSNER, JH
Price Code ~~8L~~ 8K RJN 3/24/04	Data Turnaround ~~21~~ 15 Days	Air Quality ☐	
Project Designation 105D & H Rx Soils Interim Closure Sampling (Overburden, s	Sampling Location 105-H FSB Underlying Soils (8 - 10 ft. bgs)	SAF No. B02-036	
Ice Chest No. ERC-96-001 ERC-96-002	Field Logbook No. EL-1516-2	COA R105HX200C	Method of Shipment Federal Express
Shipped To ~~EBERLINE SERVICES (Formerly TMA)~~ RCRA DAS 3/24/04	Offsite Property No. A040126		Bill of Lading/Air Bill No. see OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

020000

Preservation	None	None	Cool 4C	Cool 4C								
Type of Container	P	aG	aG	aG								
No. of Container(s)	1	1	1	1								
Volume	1000mL	500mL	120mL	250mL								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082								Shipping Screen
Sample No.	Matrix *	Sample Date	Sample Time									
J018C0	SOIL	3-24-04	1230		X	X	X				A1-1	J018B6
J018C2	SOIL	3-24-04	1251		X	X	X				A1-2	J019K7
~~J018C4~~ RJN	SOIL										A2-1	J019K8
~~J018C6~~ 3/24/04	SOIL										A2-2	J019K9

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From R. Nielson	3-24-04 1440	Received By/Stored In Dave Smith	3/24/04 1440
Relinquished By/Removed From Dave Smith	3/25/04 1300	Received By/Stored In FEDEX	
Relinquished By/Removed From FedEx	3.26.04 0930	Received By/Stored In D Smith	3.26.04 0930
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to relinquish samples from 3728
Ref # 10 on 3 25 04

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 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-036-11	Page 1 of 1

Collector: Renee Nielson	Company Contact: Rikki Thoren — Telephone No.: 372-2178	Project Coordinator: KESSNER, JH	Price Code: ~~8K~~ 7K 3/22/04 — Data Turnaround: ~~21~~ Days 15 RJN 3/26/04
Project Designation: 105D & H Rx Soils Interim Closure Sampling (Overburden, s	Sampling Location: 105-H FSB Underlying Soils (0 - 1 ft. bgs)	SAF No.: B02-036	Air Quality: 1
Ice Chest No.: ERC-96-001 ERC-96-002	Field Logbook No.: EL-1516-2 — COA: R105HX200C	Method of Shipment: Federal Express	
Shipped To: DAS 3/24/04 ~~EBERLINE SERVICES (Formerly TMA)~~ PCLEA	Offsite Property No.: A040126	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

000021

Preservation	None	None	Cool 4C	Cool 4C							
Type of Container	P	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	1000mL	500mL	120mL	250mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions. DAS 3/24/04	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082							Shipping Screen
Sample No.	Matrix *	Sample Date	Sample Time								
J018C7	SOIL	3/22/04	1210	X	X	X	X				A2-3 — J019L0
J018C9	SOIL	3/22/04	1220	X	X	X	X				A3-1 — J019L1
J018D1	SOIL	3/22/04	1230	X	X	X	X				A3-2 — J019L2
J018D3	SOIL	3/22/04	1240	X	X	X	X				A4-1 — J019L3

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Nielson	3/22/04 1700	Ref # 1B 3728	3/22/04 1700
Ref 1B/3728	3/25/04 1200	MSTankovich	3/25/04 1300
MSTankovich	3/25/04 1300	Fed Ex	
Fed Ex	3.26.04 0930	Martin	3.26.04 0930

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to relinquish samples from 3728 Ref # 1B on 3/25/04

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 (03/01/2002)

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	10SH		DATA PACKAGE:	H2540	
VALIDATOR:	TLI	LAB:	LLP	DATE:	1/27/06
			SDG:	H2540	

ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		

SAMPLES/MATRIX					
J018D5	J018D7	J018D9	J018F1	J018F3	J018F5
J018D9	J018C4	J018C3	J018C5	J018F4	J018F6
J018C0	J018C2	J018C7	J018C9	J018D1	J018D3
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: _____

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

Initial calibrations 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 PB

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: MS – both over – J all detects no PB

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: RPD – bobcat Jaly

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:

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:

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: 7 February 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 105H Rx Soils Interim Closure Sampling
Subject: Inorganics - Data Package No. H2540-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2540 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
J018D5	3/22/04	Soil	C	See note 1
J018D7	3/22/04	Soil	C	See note 1
J018D9	3/22/04	Soil	C	See note 1
J018F1	3/22/04	Soil	C	See note 1
J018F3	3/22/04	Soil	C	See note 1
J018F5	3/22/04	Soil	C	See note 1
J018B9	3/22/04	Soil	C	See note 1
J018C1	3/22/04	Soil	C	See note 1
J018C3	3/22/04	Soil	C	See note 1
J018C5	3/22/04	Soil	C	See note 1
J018F4	3/24/04	Soil	C	See note 1
J018F6	3/24/04	Soil	C	See note 1
J018C0	3/24/04	Soil	C	See note 1
J018C2	3/24/04	Soil	C	See note 1
J018C7	3/22/04	Soil	C	See note 1
J018C9	3/22/04	Soil	C	See note 1
J018D1	3/22/04	Soil	C	See note 1
J018D3	3/22/04	Soil	C	See note 1

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

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the Sampling and Analysis Plan for Interim Closure of the 105-D and 105-H Reactor Below-Grade Structures and Underlying Soils (DOE/RL-2001-18, July 2001). 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 28 days for mercury and 6 months for ICP metals.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

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

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

All 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 70% to 130%. 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 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

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

All laboratory duplicate results were acceptable.

Field Duplicate

Two sets of field duplicates (J018F5/J018B9 and J018F6/J018C0) were submitted for analysis. Field duplicate results are compared using the same criteria as for laboratory blanks. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 105 SAP RQLs to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package No. H2540 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-2001-18, Rev. 0, July 2001, *Sampling and Analysis Plan for Interim Closure of the 105-D and 105-H Reactor Below-Grade Structures and Underlying Soils*, July 2001.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with BHI 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: H2540	REVIEWER: TLI	PROJECT: 105-H	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																			
Lab: LLI	SDG: H2540																		
Sample Number		J018D5		J018D7		J018D9		J018F1		J018F3		J018F5		J018B9		J018C1		J018C3	
Remarks												Duplicate		orig					
Sample Date		3/22/04		3/22/04		3/22/04		3/22/04		3/22/04		3/22/04		3/22/04		3/22/04		3/22/04	
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Mercury	0.2	0.02	U	0.01	U	0.02	U	0.01	U	0.02	U	0.02	U	0.02	U	0.02	U	0.01	U
Lead	10	8.7		11.5		14.0		34.3		2.2	U	2.4	U	2.4	U	2.5	U	12.4	
Sample Number		J018C5		J018F4		J018F6		J018C0		J018C2		J018C7		J018C9		J018D1		J018D3	
Remarks						Duplicate		orig											
Sample Date		3/22/04		3/24/04		3/24/04		3/24/04		3/24/04		3/22/04		3/22/04		3/22/04		3/22/04	
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Mercury	0.2	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.02	U	0.01	U	0.02	U	0.01	U
Lead	10	2.3	U	2.4	U	2.3	U	2.5	U	2.6	U	19.2		34.8		16.4		20.4	

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.

000010

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/01/04

CLIENT: TNUHANFORD B02-036 H2540 LVL LOT #: 0403L154

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J018D5	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	8.7	MG/KG	2.0	1.0
-002	J018D7	Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Lead, Total	11.5	MG/KG	2.2	1.0
-003	J018D9	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	14.0	MG/KG	2.3	1.0
-004	J018F1	Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Lead, Total	34.3	MG/KG	2.5	1.0
-005	J018F3	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	2.2 u	MG/KG	2.2	1.0
-006	J018F5	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	2.4 u	MG/KG	2.4	1.0
-007	J018B9	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	2.4 u	MG/KG	2.4	1.0
-008	J018C1	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	2.5 u	MG/KG	2.5	1.0
-009	J018C3	Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Lead, Total	12.4	MG/KG	1.9	1.0

11/31/06

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/01/04

CLIENT: TNUHANFORD B02-036 H2540

LVL LOT #: 0403L154

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-010	J018C5	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	2.3 u	MG/KG	2.3	1.0
-011	J018F4	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	2.4 u	MG/KG	2.4	1.0
-012	J018F6	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	2.3 u	MG/KG	2.3	1.0
-013	J018C0	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	2.5 u	MG/KG	2.5	1.0
-014	J018C2	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	2.6 u	MG/KG	2.6	1.0
-015	J018C7	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	19.2	MG/KG	2.4	1.0
-016	J018C9	Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Lead, Total	34.8	MG/KG	2.6	1.0
-017	J018D1	Mercury, Total	0.02 u	MG/KG	0.02	1.0
		Lead, Total	16.4	MG/KG	2.5	1.0
-018	J018D3	Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Lead, Total	20.4	MG/KG	2.5	1.0

11/31/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B02-036
LVL#: 0403L154
SDG/SAF#: H2540/B02-036

W.O.#: 11343-606-001-9999-00
Date Received: 03-26-04

METALS CASE NARRATIVE

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

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.

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

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

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

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

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.

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

9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to the Inorganics Laboratory Control Standards Report.

10. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.

11. All duplicate analyses were within 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

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 22 pages.

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region of less-certain quantification.

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

04-04-04
Date

jjw/m03-154

LVLI
LIONVILLE LABORATORY INC.

Bechtel Hanford Inc. | **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** | B02-036-12 | Page 1 of 1 *

ollector: Renee Nielson	Company Contact: Rikki Thoren	Telephone No.: 372-2178	Project Coordinator: KESSNER, JH
Price Code: ~~8L~~ 8K RJN 3/22/04	Data Turnaround: ~~21~~ Days 15 RJN	Air Quality: 1	
roject Designation: 105D & H Rx Soils Interim Closure Sampling (Overburden, s	Sampling Location: 105-H FSB Underlying Soils (0 - 1ft. bgs)		SAF No.: B02-036
ce Chest No.: EKC-96-001 EKC-96-002 DAS 3/24/04	Field Logbook No.: EL-1516-2	COA: R105HX200C	Method of Shipment: Federal Express
hipped To: ~~EBERLINE SERVICES (Formerly TMA)~~ RECRA	Offsite Property No.: A040126		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C							
Type of Container	P	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	1000mL	500mL	120mL	250mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions. DAS 3/24/04	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082							Shipping Screen
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**								
J018D5	SOIL	3/22/04	1250	X	X	X	X				A4-2 J019L4
J018D7	SOIL	3/22/04	1300	X	X	X	X				A4-3 J019L5
J018D9	SOIL	3/22/04	1310	X	X	X	X				CR2 J019L6
J018F1	SOIL	3/22/04	1320	X	X	X	X				CR3 J019L7

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R.Nielson	3/22/04 1700	Ref # 1B 3728	3/22/04 1700
Ref # 1B/3728	3-25-04 1300	MLT MStankovich	3-25-04 1300
MLT MStankovich	3-25-04 1300	Fed Ex	
Fed Ex	3-26-04 0930	[illegible]	3-26-04 0930

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to relinquish samples from 3728 Ref # 1B on 3/25/04

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

BHDBE-011 (03/01/2002)

Bechtel Hanford Inc. | **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** | B02-036-20

Collector: Renee Nielson	Company Contact: Rikki Thoren	Telephone No.: 372-2178	Project Coordinator: KESSNER, JH
Price Code: ~~8L~~ 8K RUN 3/22/04	Data Turnaround: ~~21~~ Days 15 RUN	Air Quality: ☐	
Project Designation: 105D & H Rx Soils Interim Closure Sampling (Overburden, s	Sampling Location: 105-H FSB Underlying Soils (0 - 1 ft. bgs)		SAF No.: B02-036
Ice Chest No.: ERC-96-001 ERC-96-002	Field Logbook No.: EL-1516-2	COA: R105HX200C	Method of Shipment: Federal Express 3/22/04
Shipped To: DAS 3/24/04 ~~EBERLINE SERVICES (Formerly TMA)~~ REZRA	Offsite Property No.: A040126		Bill of Lading/Air Bill No.: SEE OSAC

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C							
Type of Container	P	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	1000mL	500mL	120mL	250mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions. DAS 3/24/04	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082							Shipping screen
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**								
J018F3	SOIL	3/22/04	1330	X	X	X	X				EX 3	J019L8
J018F5	SOIL	3/22/04	1130	X	X	X	X					J018BL

000001

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R Nielson	3/22/04 1700	Ref # 18 3728	3/22/04 1700
	3.26.04 0930		3.26.04 0930

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to relinquish samples from 3728 Ref # 18 on 3/25/04

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 (03/01/2002)

Bechtel Hanford Inc. | **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** | B02-036-10 | Page 1 of 1

Collector: Renee Nielson	Company Contact: Rikki Thoren	Telephone No.: 372-2178	Project Coordinator: KESSNER, JH
Price Code: ~~8L~~ 8K RJN 3/22/04	Data Turnaround: ~~21~~ 15 Days RJN 3/22/04	Air Quality: 1	
Project Designation: 105D & 11 Rx Soils Interim Closure Sampling (Overburden, s	Sampling Location: 105-11 FSB Underlying Soils (0 - 1 ft. bgs)	SAF No.: B02-036	
Ice Chest No.: ERC-96-001 ERC-96-002	Field Logbook No.: EL-1516-2	COA: R105HX200C	Method of Shipment: Federal Express
Shipped To: DAS 3/24/04 ~~EBERLINE SERVICES (Formerly TMA)~~ REZRA	Offsite Property No.: A040126		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C							
Type of Container	P	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	1000mL	500mL	120mL	250mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions. DAS 3/24/04	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082							Shipping Screen
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**								
J018B9	SOIL	3/22/04	1130	X	X	X	X				A1-1 J018B6
J018C1	SOIL	3/22/04	1140	X	X	X	X				A1-2 J019K7
J018C3	SOIL	3/22/04	1150	X	X	X	X				A2-1 J019K8
J018C5	SOIL	3/22/04	1200	X	X	X	X				A2-2 J019K9

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Nielson R. Nielson	3/22/04 1700	Ref # 1B 3728	3/22/04 1700
Ref 1B/3728	3/25/04 1300	mstankovich	3/25/04 1300
mstankovich	3/25/04 1300	Fed Ex	
Fed Ex	3.26.04 0930	N. Smith	3.26.04 0930

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to Relinquish samples from 3728 Ref # 1B on 3/25/04

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 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-036-16	Page 1 of 1

Collector Renee Nielson	Company Contact Rikki Thoren	Telephone No. 372-2178	Project Coordinator KESSNER, JH
Price Code ~~8L~~ 8K	Data Turnaround ~~21~~ 15 Days	Air Quality ☐ RWN 3/24/04	
Project Designation 105D & H Rx Soils Interim Closure Sampling (Overburden, s	Sampling Location 105-H FSB Underlying Soils (8 - 10 ft. bgs)		SAF No. B02-036
Ice Chest No. ERG-96-001 ERG-96-002	Field Logbook No. EL-1516-2	COA R105HX200C	Method of Shipment Federal Express
Shipped To ~~EBERLINE SERVICES (Formerly TMA)~~ RECRA DAS 3/24/04	Offsite Property No. A040126		Bill of Lading/Air Bill No. SCC OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

000019

Preservation	None	None	Cool 4C	Cool 4C								
Type of Container	P	aG	aG	aG								
No. of Container(s)	1	1	1	1								
Volume	1000mL	500mL	120mL	250mL								
SAMPLE ANALYSIS	See item (1) in Special Instructions.	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082								Shipping screen
Sample No.	Matrix *	Sample Date	Sample Time									
J018F4	SOIL	3-24-04	1310		X	X	X				EX3	J019L8
J018F6	SOIL	3-24-04	1230		X	X	X					J018BL

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Nielson	3-24-04 1440	David St John	3/24/04 1440
	3/25/04 1300	Fed Ex	
Fed Ex	3-26-04 / 0930		3-26-04 / 0930

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to relinquish samples from 3728 Ref # 1D on 3/25/04

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-036-13	Page 1 of 1

Collector Renee Nielson	Company Contact Rikki Thoren	Telephone No. 372-2178	Project Coordinator KESSNER, JH
Price Code ~~8L~~ 8K	Data Turnaround RJN 3/24/04 ~~21~~ 15 Days	Air Quality ☐	
Project Designation 105D & H Rx Soils Interim Closure Sampling (Overburden, s	Sampling Location 105-H FSB Underlying Soils (8 - 10 ft. bgs)		SAF No. B02-036
Ice Chest No. ERC-96-001 ERC-96-002	Field Logbook No. EL-1516-2	COA R105HX200C	Method of Shipment Federal Express
Shipped To DAS 3/24/04 ~~EDERLINE SERVICES (Formerly TMA)~~ RZRA	Offsite Property No. A040126		Bill of Lading/Air Bill No. see OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C							
Type of Container	P	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	1000mL	500mL	120mL	250mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082							Shipping Screen

020000

Sample No.	Matrix *	Sample Date	Sample Time										
J018C0	SOIL	3-24-04	1230		X	X	X					A1-1	J018B6
J018C2	SOIL	3-24-04	1251		X	X	X					A1-2	J019K7
~~J018C4~~ RJN	SOIL											A2-1	J019K8
~~J018C6~~ 3/24/04	SOIL											A2-2	J019K9

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Nielson / R. Nielson	3-24-04 1440	DAS John Bunson	3/24/04 1440
DAS John Bunson	3/25/04 BOD	FEDEX	
Fed Ex	3-26-04 0930	[illegible]	3-26-04 0930

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to relinquish samples from 3728 Ref # 10 on 3/25/04

Matrix *

S=Soil
SE=Sediment
SO=Solid
SI=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wt=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 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-036-11	Page 1 of 1

Collector: Renee Nielson	Company Contact: Rikki Thoren — Telephone No.: 372-2178	Project Coordinator: KESSNER, JH	Price Code: ~~8L~~ 7K 3/22/04 — Air Quality: 1 — Data Turnaround: ~~21~~ Days 15 RUN 3/22/04
Project Designation: 105D & H Rx Soils Interim Closure Sampling (Overburden, s	Sampling Location: 105-H FSB Underlying Soils (0 - 1 ft. bgs)	SAF No.: B02-036	
Ice Chest No.: ERC-96-001 ERC-96-002	Field Logbook No.: EL-1516-2 — COA: R105HX200C	Method of Shipment: Federal Express	
Shipped To: DAS 3/24/04 ~~EBERLINE SERVICES (Formerly TMA)~~ RECD.	Offsite Property No.: A040126	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C							
Type of Container	P	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	1000mL	500mL	120mL	250mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions. DTN 3/24/04	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082							Shipping Screen
Sample No.	**Matrix ***	**Sample Date**	**Sample Time**								
J018C7	SOIL	3/22/04	1210	X	X	X	X				A2-3 — J019L0
J018C9	SOIL	3/22/04	1220	X	X	X	X				A3-1 — J019L1
J018D1	SOIL	3/22/04	1230	X	X	X	X				A3-2 — J019L2
J018D3	SOIL	3/22/04	1240	X	X	X	X				A4-1 — J019L3

000021

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Renee Nielson R. Nielson	3/22/04 1700	Ref # 1B 3728	3/22/04 1700
Ref 1B/3728	3/25/04 1300	MSTankovich	3/25/04 1300
MSTankovich	3/25/04 1300	Fed Ex	
Fed Ex	3.26.04 0930	[illegible]	3.26.04 0930

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to relinquish samples from 3728 Ref # 1B on 3/25/04

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 (03/01/2002)

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 105-H			DATA PACKAGE: H2540		
VALIDATOR: TLI		LAB: LLI		DATE: 1/27/06	
			SDG: H2540		

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

SAMPLES/MATRIX					
J018D5	J018D7	J018D9	J018F1	J018F3	J018F5
J018B9	J018C1	J018C3	J018C5	J018F4	J018F6
J018C0	J018C2	J018C7	J018C9	J018D1	J018D3
					SOIL

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

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

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

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: ~~HG — [illegible] VS [illegible]~~ no PB

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: no PAS

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments:

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

Rresults 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 04/01/04

CLIENT: TNUHANFORD B02-036 H2540 LVL LOT #: 0403L154

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	04C0070-MB1	Mercury, Total	0.02		MG/KG	0.02	1.0
BLANK1	04L0205-MB1	Lead, Total	2.5	u	MG/KG	2.5	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 04/01/04

CLIENT: TNUHANFORD B02-036 H2540 LVL LOT #: 0403L154

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J018D5	Mercury, Total	0.16	0.02u	0.16	103.2	1.0
		Lead, Total	56.4	8.7	49.9	95.6	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 04/01/04

CLIENT: TNUHANFORD B02-036 H2540 LVL LOT #: 0403L154

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J018D5	Mercury, Total	0.02u	0.02u	NC	1.0
		Lead, Total	8.7	8.0	8.4	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 04/01/04

CLIENT: TNUHANFORD B02-036 H2540 LVL LOT #: 0403L154

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	04C0070-LC1	Mercury, LCS	6.0	6.2	MG/KG	96.5
LCS1	04L0205-LC1	Lead, LCS	248	250	MG/KG	99.1

Date: 7 February 2006
To: Washington Closure Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 105H Rx Soils Interim Closure Sampling
Subject: Wet Chemistry - Data Package No. H2540-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2540 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
J018D5	3/22/04	Soil	C	See note 1
J018D7	3/22/04	Soil	C	See note 1
J018D9	3/22/04	Soil	C	See note 1
J018F1	3/22/04	Soil	C	See note 1
J018F3	3/22/04	Soil	C	See note 1
J018F5	3/22/04	Soil	C	See note 1
J018B9	3/22/04	Soil	C	See note 1
J018C1	3/22/04	Soil	C	See note 1
J018C3	3/22/04	Soil	C	See note 1
J018C5	3/22/04	Soil	C	See note 1
J018F4	3/24/04	Soil	C	See note 1
J018F6	3/24/04	Soil	C	See note 1
J018C0	3/24/04	Soil	C	See note 1
J018C2	3/24/04	Soil	C	See note 1
J018C7	3/22/04	Soil	C	See note 1
J018C9	3/22/04	Soil	C	See note 1
J018D1	3/22/04	Soil	C	See note 1
J018D3	3/22/04	Soil	C	See note 1

1 - Chromium VI by 7196A.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the Sampling and Analysis Plan for Interim Closure of the 105-D and 105-H Reactor Below-Grade Structures and Underlying Soils (DOE/RL-2001-18, July 2001). 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 30 days for chromium VI.

If holding times are exceeded, but not by greater than two 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 detectable sample results are qualified as estimates and flagged "J" and all non-detects are rejected and flagged "UR".

All holding times were acceptable.

- **Method Blanks**

Method Blanks

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. All blank results must fall below the contract required detection limit (CRQL) to be acceptable.

All method 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 70% to 130%. 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 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J".

Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

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

All laboratory duplicate results were acceptable.

Field Duplicate

Two sets of field duplicates (J018F5/J018B9 and J018F6/J018C0) were submitted for analysis. Field duplicate results are compared using the same criteria as for laboratory blanks. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. All undetected analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

- **Completeness**

Data package H2540 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

All undetected analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

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

DOE/RL-2001-18, Rev. 0, July 2001, *Sampling and Analysis Plan for Interim Closure of the 105-D and 105-H Reactor Below-Grade Structures and Underlying Soils*, July 2001.

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

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: H2540	REVIEWER: TLI	PROJECT: 105-H	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																			
Lab: LLI	SDG: H2540																		
Sample Number		J018D5		J018D7		J018D9		J018F1		J018F3		J018F5		J018B9		J018C1		J018C3	
Remarks												Duplicate		orig					
Sample Date		3/22/04		3/22/04		3/22/04		3/22/04		3/22/04		3/22/04		3/22/04		3/22/04		3/22/04	
Wet Chemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chromium VI	0.1	0.44		0.94		0.21	U	0.21	U	0.20	U	0.20	U	0.20	U	0.20	U	0.22	
Sample Number		J018C5		J018F4		J018F6		J018C0		J018C2		J018C7		J018C9		J018D1		J018D3	
Remarks						Duplicate		orig											
Sample Date		3/22/04		3/24/04		3/24/04		3/24/04		3/24/04		3/22/04		3/22/04		3/22/04		3/22/04	
Wet Chemistry	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Chromium VI	0.1	0.20	U	0.20	U	0.21	U	0.20	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U

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

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/01/04

CLIENT: TNUHANFORD B02-036 H2540 LVL LOT #: 0403L154
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J018D5	% Solids	97.2	%	0.01	1.0
		Chromium VI	0.44	MG/KG	0.21	1.0
-002	J018D7	% Solids	97.4	%	0.01	1.0
		Chromium VI	0.94	MG/KG	0.20	1.0
-003	J018D9	% Solids	97.2	%	0.01	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
-004	J018F1	% Solids	95.8	%	0.01	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
-005	J018F3	% Solids	98.7	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-006	J018F5	% Solids	99.1	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-007	J018B9	% Solids	98.5	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-008	J018C1	% Solids	97.7	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-009	J018C3	% Solids	98.3	%	0.01	1.0
		Chromium VI	0.22	MG/KG	0.20	1.0

1/31/04

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 04/01/04

CLIENT: TNUHANFORD B02-036 H2540 LVL LOT #: 0403L154

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-010	J018C5	% Solids	98.2	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-011	J018F4	% Solids	98.2	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-012	J018F6	% Solids	97.0	%	0.01	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
-013	J018C0	% Solids	97.6	%	0.01	1.0
		Chromium VI	0.20 u	MG/KG	0.20	1.0
-014	J018C2	% Solids	96.6	%	0.01	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
-015	J018C7	% Solids	96.8	%	0.01	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
-016	J018C9	% Solids	95.8	%	0.01	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
-017	J018D1	% Solids	96.6	%	0.01	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0
-018	J018D3	% Solids	97.1	%	0.01	1.0
		Chromium VI	0.21 u	MG/KG	0.21	1.0

11/31/06

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD B02-036 H2540
LVL#: 0403L154

W.O.#: 11343-606-001-9999-00
Date Received: 03-26-04

INORGANIC NARRATIVE

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

2. The samples were prepared and analyzed in accordance with the methods checked on the attached glossary.

3. Sample holding times as required by the method and/or contract were met.

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

5. The method blank for Chromium VI was within the method criteria.

6. The Laboratory Control Samples (LCS) for Chromium VI were within the laboratory control limits.

7. The matrix spike recoveries for Chromium VI were within the 75-125% control limits.

8. The replicate analyses Percent Solids and Chromium VI were within the 20% Relative Percent Difference (RPD) control limit.

9. Results for solid samples are reported on a dry weight basis.

10. 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 package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

04-04-04
Date

njp\i03-154

The results presented in this report relate to the analytical testing and conditions of the samples upon 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 20 pages.

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

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-036-12	Page 1 of 1

Collector: Renee Nielson	Company Contact: Rikki Thoren — Telephone No.: 372-2178	Project Coordinator: KESSNER, JH	Price Code: ~~8L~~ 8K RJN 3/22/04 — Data Turnaround: ~~21~~ Days 15 RJN — Air Quality: 1
Project Designation: 105D & H Rx Soils Interim Closure Sampling (Overburden, s	Sampling Location: 105-H FSB Underlying Soils (0 - 1ft. bgs)	SAF No.: B02-036	
Ice Chest No.: ERC-96-001 ERC-96-002	Field Logbook No.: EL-1516-2 — COA: R105HX200C	Method of Shipment: Federal Express	
Shipped To: ~~EBERLINE SERVICES (Formerly TMA)~~ ZERA DAS 3/24/04	Offsite Property No.: A040126	Bill of Lading/Air Bill No.: SEE OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C							
Type of Container	P	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	1000mL	500mL	120mL	250mL							

000015

SAMPLE ANALYSIS

Sample No.	Matrix *	Sample Date	Sample Time	See item (1) in Special Instructions. DAS 3/24/04	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082							Shipping Screen
J018D5	SOIL	3/22/04	1250	X	X	X	X							
J018D7	SOIL	3/22/04	1300	X	X	X	X						A4-2	J019L4
J018D9	SOIL	3/22/04	1310	X	X	X	X						A4-3	J019L5
J018F1	SOIL	3/22/04	1320	X	X	X	X						CR2	J019L6
													CR3	J019L7

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Renee Nielson R. Nielson	3/22/04 1700	Ref # 1B 3728	3/22/04 1700
Ref # 1B/3728	3-25-04 1300	MS Stankovich	3-25-04 1300
MS Stankovich	3-25-04 1300	Fed Ex	
Fed Ex	3-26-04 0930	[illegible]	3-26-04 0930

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to relinquish samples from 3728 Ref # 1B on 3/25/04

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 (03/01/2002)

Bechtel Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

B02-036-20 | Page 1 of 1

Collector: Renee Nielson	Company Contact: Rikki Thoren	Telephone No.: 372-2178	Project Coordinator: KESSNER, JH
Price Code: ~~8L~~ 8K RUN 3/22/04	Data Turnaround: ~~21~~ Days 15 RUN	Air Quality: ☐	
Project Designation: 105D & H Rx Soils Interim Closure Sampling (Overburden, s	Sampling Location: 105-H FSB Underlying Soils (0 - 1 ft. bgs)		SAF No.: B02-036
Ice Chest No.: FRC-96-001 FRC-96-002	Field Logbook No.: EL-1516-2	COA: R105HX200C	Method of Shipment: Federal Express 3/22/04
Shipped To: ~~EBERLINE SERVICES (Formerly TMA)~~ REZRA DAS 3/24/04	Offsite Property No.: A040126		Bill of Lading/Air Bill No.: SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C							
Type of Container	P	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	1000mL	500mL	120mL	250mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions. DAS 3/24/04	ICP Metals - 6010A (Add-on) [Lead]; Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082							Shipping screen
Sample No.	Matrix *	Sample Date	Sample Time								
J018F3	SOIL	3/22/04	1330	X	X	X	X				EX 3 J019L8
J018F5	SOIL	3/22/04	1130	X	X	X	X				J018BL

000016

CHAIN OF POSSESSION

Relinquished By/Removed From (Sign/Print Names)	Date/Time	Received By/Stored In (Sign/Print Names)	Date/Time
R Nielson	3/22/04 1700	Ref # 18 3728	3/22/04 1700
	3.26.04 0930		3.26.04 0930

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]; Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to relinquish samples from 3728 Ref # 18 on 3/25/04

Matrix *
S=Soil
SE=Sediment
SD=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 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-036-10	Page 1 of 1

Collector Rence Nielson	Company Contact Rikki Thoren	Telephone No. 372-2178	Project Coordinator KESSNER, JH
Price Code ~~8L~~ 8K RJN 3/22/04 Air Quality 1 1	Data Turnaround ~~21~~ Days 15 RJN 3/22/04		
Project Designation 105D & H Rx Soils Interim Closure Sampling (Overburden, s	Sampling Location 105-H FSB Underlying Soils (0 - 1 ft. bgs)		SAF No. B02-036
Ice Chest No. ERC-96-001 ERC-96-002	Field Logbook No. EL-1516-2	COA R105HX200C	Method of Shipment Federal Express
Shipped To DAS 3/24/04 ~~EBERLINE SERVICES (Formerly TMA)~~ PEXPA	Offsite Property No. A040126		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

000017

Preservation	None	None	Cool 4C	Cool 4C						
Type of Container	P	aG	aG	aG						
No. of Container(s)	1	1	1	1						
Volume	1000mL	500mL	120mL	250mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions. DAS 3/24/04	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082						Shipping Screen
Sample No. / Matrix * / Sample Date / Sample Time										
J018B9 / SOIL / 3/22/04 / 1130	X	X	X	X					A1-1	J018B6
J018C1 / SOIL / 3/22/04 / 1140	X	X	X	X					A1-2	J019K7
J018C3 / SOIL / 3/22/04 / 1150	X	X	X	X					A2-1	J019K8
J018C5 / SOIL / 3/22/04 / 1200	X	X	X	X					A2-2	J019K9

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R. Nielson R. Nielson	3/22/04 1700	Rec # 1B 3728	3/22/04 1700
Rec 1B/3728	3/25/04 1300	mstankovich	3/25/04 1300
mstankovich	3/25/04 1300	Fed Ex	
Fed Ex	3.26.04 0930	D. Yonian	3.26.04 0930

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) [Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155]; Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to Relinquish samples from 3728 Ref # 1B on 3/25/04

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 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-036-16	Page 1 of 1

Collector Renee Nielson	Company Contact Rikki Thoren	Telephone No. 372-2178	Project Coordinator KESSNER, JH	Price Code ~~8L~~ 8K Data Turnaround
Project Designation 105D & H Rx Soils Interim Closure Sampling (Overburden, s	Sampling Location 105-H FSB Underlying Soils (8 - 10 ft. bgs)		SAF No. B02-036	Air Quality ☐ RUN 3/24/04 ~~21~~ Days 15
Ice Chest No. ERG-96-001 ERG-96-002	Field Logbook No. EL-1516-2	COA R105HX200C	Method of Shipment Federal Express	
Shipped To DAS 3/24/04 ~~EDERLINE SERVICES (Formerly TMA)~~ RECRA	Offsite Property No. A040126		Bill of Lading/Air Bill No. SCC OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

000018

SAMPLE ANALYSIS													
Preservation				None	None	Cool 4C	Cool 4C						
Type of Container				P	aG	aG	aG						
No. of Container(s)				1	1	1	1						
Volume				1000mL	500mL	120mL	250mL						
				See item (1) in Special Instructions.	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082						Shipping screen
Sample No.	Matrix *	Sample Date	Sample Time										
J018F4	SOIL	3-24-04	1310		X	X	X					EX3	J019L8
J018F6	SOIL	3-24-04	1230		X	X	X						J018B6

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: R. Nielson 3-24-04	1440	David St. John	1440 3/24/04
Relinquished By/Removed From:	3/25/04 1300	Fed Ex	
Relinquished By/Removed From: Fed Ex	3-26-04 / 0930		3-26-04 / 0930
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to relinquish samples from 3728
Ref # 1B on 3/25/04

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 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-036-13	Page 1 of 1

Collector Renee Nielson	Company Contact Rikki Thoren	Telephone No. 372-2178	Project Coordinator KESSNER, JH	Price Code ~~8L~~ 8K RJN 3/24/04 Data Turnaround ~~21~~ 15 Days
Project Designation 105D & H Rx Soils Interim Closure Sampling (Overburden, s	Sampling Location 105-H FSB Underlying Soils (8 - 10 ft. bgs)		SAF No. B02-036	Air Quality ☐
Ice Chest No. ERC-96-001 ERC-96-002	Field Logbook No. EL-1516-2	COA R105HX200C	Method of Shipment Federal Express	
Shipped To DAS 3/24/04 ~~EDERLINE SERVICES (Formerly TMA)~~ RERA	Offsite Property No. A040126		Bill of Lading/Air Bill No. see OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

000019

Preservation	None	None	Cool 4C	Cool 4C							
Type of Container	P	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	1000mL	500mL	120mL	250mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions.	ICP Metals - 6010A (Add-on) {Lead}; Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082							Shipping Screen

Sample No.	Matrix *	Sample Date	Sample Time										
J018C0	SOIL	3-24-04	1230		X	X	X					A1-1	J018B6
J018C2	SOIL	3-24-04	1251		X	X	X					A1-2	J019K7
~~J018C4~~ RJN	SOIL											A2-1	J019K8
~~J018C6~~ 3/24/04	SOIL											A2-2	J019K9

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: Renee Nielson/R. Nielson	3-24-04 1440	DAS John Dennis	3/24/04 1440
Relinquished By/Removed From: DAS John Dennis	3/25/04 1300	FEDEX	
Relinquished By/Removed From: FedEx	3-26-04 0930	[illegible]	3-26-04 0930
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}; Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to relinquish samples from 3728 Ref # 1D on 3/25/04

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 (03/01/2002)

Bechtel Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	B02-036-11	Page 1 of 1

Collector Renee Nielson	Company Contact Rikki Thoren	Telephone No. 372-2178	Project Coordinator KESSNER, JH
Price Code ~~8L~~ 7K 3/22/04	Data Turnaround ~~21~~ Days 15 RUN 3/22/04	Air Quality	
Project Designation 105D & H Rx Soils Interim Closure Sampling (Overburden, s	Sampling Location 105-H FSB Underlying Soils (0 - 1 ft. bgs)	SAF No. B02-036	
Ice Chest No. ERC-96-001 ERC-96-002	Field Logbook No. EL-1516-2	COA R105HX200C	Method of Shipment Federal Express
Shipped To ~~EBERLINE SERVICES (Formerly TMA)~~ RECEIVED DAS 3/24/04	Offsite Property No. A040126		Bill of Lading/Air Bill No. SEE OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Radioactive

Special Handling and/or Storage

Preservation	None	None	Cool 4C	Cool 4C							
Type of Container	P	aG	aG	aG							
No. of Container(s)	1	1	1	1							
Volume	1000mL	500mL	120mL	250mL							
SAMPLE ANALYSIS	See item (1) in Special Instructions. DAS 3/24/04	ICP Metals - 6010A (Add-on) (Lead); Mercury - 7471 - (CV)	Chromium Hex - 7196	PCBs - 8082							Shipping Screen
Sample No.	Matrix *	Sample Date	Sample Time								
J018C7	SOIL	3/22/04	1210	X	X	X	X				A2-3 J019L0
J018C9	SOIL	3/22/04	1220	X	X	X	X				A3-1 J019L1
J018D1	SOIL	3/22/04	1230	X	X	X	X				A3-2 J019L2
J018D3	SOIL	3/22/04	1240	X	X	X	X				A4-1 J019L3

000020

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
R-Nielson R-Nielson	3/22/04 1700	Ref # 1B 3728	3/22/04 1700
Ref 1B/3728	3/25/04 1300	MS Stankovich	3/25/04 1300
MS Stankovich	3/25/04 1300	Fed Ex	
Fed Ex	3.26.04 0930	[illegible]	3.26.04 0930

SPECIAL INSTRUCTIONS

(1) Americium-241; Carbon-14; Gamma Spectroscopy (TCL List) (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155); Nickel-63; Neptunium-237; Isotopic Plutonium; Strontium-89,90 -- Total Sr; Isotopic Thorium; Isotopic Uranium; Tritium - H3

Personnel not available to relinquish samples from 3728 Ref # 1B on 3/25/04

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 (03/01/2002)

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	105H		DATA PACKAGE:	H2540	
VALIDATOR:	TLJ	LAB:	LLJ	DATE:	1/27/06
			SDG:	H2540	

ANALYSES PERFORMED					
Anions/IC	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	pH	NO_3/NO_2
Sulfate	TDS	TKN	Phosphate		

SAMPLES/MATRIX					
J018D5	J018D7	J018D9	J018F1	J018F3	J018F5
J018B9	J018C1	J018C3	J018C5	J018F4	J018F6
J018C0	J018C2	J018C7	J018C9	J018D1	J018D3
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: _____

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

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

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

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: _____

GENERAL CHEMISTRY 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:

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

Spike samples analyzed? ..... Yes No N/A

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

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

Spike 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:

GENERAL CHEMISTRY 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. HOLDING TIMES (all levels)

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

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

Comments:

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7. 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: all undets ok

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 04/01/04

CLIENT: TNUHANFORD B02-036 H2540 LVL LOT #: 0403L154

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	04LVIA10-MB1	Chromium VI	0.20 u	MG/KG	0.20	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 04/01/04

CLIENT: TNUHANFORD B02-036 H2540

LVL LOT #: 0403L154

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J018D5	Soluble Chromium VI	5.1	0.44	4.1	113.0	1.0
		Insoluble Chromium VI	1160	0.44	1150	100.8	100
BLANK10	04LVIA10-MB1	Soluble Chromium VI	3.9	0.20u	4.0	98.5	1.0
		Insoluble Chromium VI	1430	0.20u	1440	99.6	100

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 04/01/04

CLIENT: TNUHANFORD B02-036 H2540 LVL LOT #: 0403L154

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J018D5	% Solids	97.2	96.7	0.56	1.0
		Chromium VI	0.44	0.51	14.9	1.0