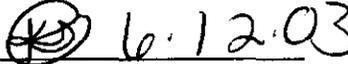


0059878

**SAF-B03-015**  
**Remaining Sites Confirmation**  
**Sampling-Soil**  
**FINAL VALIDATION PACKAGE**

MAIL COMPLETE COPY OF VALIDATION PACKAGE TO:

Jeanette Duncan (2)

  
INITIAL/DATE

COMMENTS: (PLEASE INCLUDE THE FOLLOWING ON THE COVER SHEET)

SDG

H2213

SAF-B03-015

Sample Location/Waste Site: 600-131 & 628-01

**RECEIVED**  
JUL 28 2003  
**EDMC**

**Date:** 2 June 2003  
**To:** Bechtel Hanford Inc. (technical representative)  
**From:** TechLaw, Inc.  
**Project:** Remaining Sites Confirmation Sampling - Soil-  
 Waste Sites 600-131 & 628-01  
**Subject:** Inorganics - Data Package No. H2213-LLI (SDG No. H2213)

**INTRODUCTION**

This memo presents the results of data validation on Data Package No. H2213-LLI 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	Waste Site	Analysis
J00NB5	5/8/03	Soil	C	600-131	See note 1
J00NB6	5/12/03	Soil	C	600-131	See note 1
J00NB7	5/8/03	Soil	C	600-131	See note 1
J00NB8	5/8/03	Soil	C	600-131	See note 1
J00NB9	5/8/03	Soil	C	600-131	See note 1
J00NC0	5/8/03	Soil	C	600-131	See note 1
J00ND7	5/12/03	Soil	C	628-1	See note 1
J00ND8	5/12/03	Soil	C	628-1	See note 1
J00NF1	5/12/03	Soil	C	628-1	See note 1

1 - ICP metals; mercury.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). 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

000001

## **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.

Due to method blank contamination, the chromium and lead results in samples J00NCO and J00NF1 were qualified as undetected and flagged "U".

All other preparation blank results were acceptable.

### **Field (Equipment) Blank**

Two field blanks were submitted for analysis (J00NCO and J00NF1). Barium, chromium and lead were found in both samples. Under the BHI statement of work, no qualification is required.

000002

- **Accuracy**

#### Matrix Spike

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

Due to a matrix spike recovery of 56.2%, all arsenic results were qualified as estimates and flagged "J".

Due to a matrix spike recovery of 335.6%, all detected chromium results were qualified as estimates and flagged "J".

All other matrix spike recovery results were acceptable.

- **Precision**

#### Laboratory Duplicate Samples

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

Due to an RPD outside QC limits (59%), all chromium results were qualified as estimates and flagged "J".

Due to an RPD outside QC limits (45.3%), all lead results were qualified as estimates and flagged "J".

All other laboratory duplicate results were acceptable.

000003

## Field Duplicate

One set of field duplicates (J00NB7/J00NB9) were submitted for analysis. Duplicates are evaluated based on the same criteria as laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. All reported results met the analyte specific RQL.

- **Completeness**

Data package No. H2213-LLI 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 method blank contamination, the chromium and lead results in samples J00NCO and J00NF1 were qualified as undetected and flagged "U". Due to a matrix spike recovery of 56.2%, all arsenic results were qualified as estimates and flagged "J". Due to a matrix spike recovery of 335.6%, all detected chromium results were qualified as estimates and flagged "J". Due to an RPD outside QC limits (59%), all chromium results were qualified as estimates and flagged "J". Due to an RPD outside QC limits (45.3%), all lead 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**

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01249, Rev. 3, *Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort*, Bechtel Hanford Incorporated, March 2003.

000004

**Appendix 1**

**Glossary of Data Reporting Qualifiers**

**000005**

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).

000006

**Appendix 2**  
**Summary of Data Qualification**

**000007**

DATA QUALIFICATION SUMMARY

SDG: H2213	REVIEWER: TLI	DATE: 6/2/03	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Chromium Lead	U	J00NCO J00NF1	Blank contamination
Arsenic	J	All	MS recovery
Chromium	J	All detected analytes	MS recovery
Lead Chromium	J	All	RPD

000008

**Appendix 3**

**Qualified Data Summary and Annotated Laboratory Reports**

**000009**

Project: BECHTEL-HANFORD																												
Laboratory: LLJ																												
Case		SDG: H2213																										
Sample Number		J00NB5			J00NB6			J00NB7			J00NB8			J00NB9			J00NC0			J00ND7			J00ND8			J00NF1		
Remarks																												
Location		600-131			600-131			600-131			600-131			600-131			628-1			628-1			628-1					
Sample Date		5/8/03			5/12/03			5/8/03			5/8/03			5/8/03			5/12/03			5/12/03			5/12/03					
Inorganics	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q					
Silver	0.2	0.11	U	0.12	U	1.6		0.12	U	1.3		0.11	U	0.13	U	0.13	U	0.13	U	0.12	U							
Arsenic		4.3	J	3.2	J	321	J	6	J	281	J	0.31	UJ	3	J	2.4	J	0.32	UJ									
Barium	20	71.8		65.3		183		57.3		168		1.1		8.3		82.4		1.2										
Cadmium	0.2	0.04	U	0.06		1.1		0.04	U	0.92		0.04	U	0.04	U	0.04	U	0.04	U	0.04	U							
Chromium (total)	1	18.2	J	16.7	J	49.8	J	54.7	J	58	J	0.16	UJ	13.2	J	13.6	J	0.21	UJ									
Mercury	0.2	0.02	U	0.02	U	0.03	U	0.02	U	0.04		0.02	U	0.02	U	0.02	U	0.01	U									
Lead	5	72	J	3.4	J	506	J	53.6	J	411	J	0.63	UJ	5.1	J	4.7	J	0.48	UJ									
Selenium	1	0.4	U	0.43	U	0.42	U	0.41	U	0.4	U	0.39	U	0.45	U	0.44	U	0.4	U									

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.

INORGANICS DATA SUMMARY REPORT 05/22/03

CLIENT: TNUHANFORD B03-015 H2213  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L401

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J00NC0	Silver, Total	0.11	u MG/KG	0.11	1.0
		Arsenic, Total	0.31	u J MG/KG	0.31	1.0
		Barium, Total	1.1	MG/KG	0.02	1.0
		Cadmium, Total	0.04	u MG/KG	0.04	1.0
		Chromium, Total	0.16	u J MG/KG	0.09	1.0
		Mercury, Total	0.02	u MG/KG	0.02	1.0
		Lead, Total	0.63	u J MG/KG	0.21	1.0
		Selenium, Total	0.39	u MG/KG	0.39	1.0
-002	J00NB7	Silver, Total	1.6	MG/KG	0.12	1.0
		Arsenic, Total	321	J MG/KG	0.33	1.0
		Barium, Total	183	MG/KG	0.02	1.0
		Cadmium, Total	1.1	MG/KG	0.04	1.0
		Chromium, Total	49.8	J MG/KG	0.1	1.0
		Mercury, Total	0.03	MG/KG	0.02	1.0
		Lead, Total	506	J MG/KG	0.23	1.0
		Selenium, Total	0.42	u MG/KG	0.42	1.0
-003	J00NB8	Silver, Total	0.12	u MG/KG	0.12	1.0
		Arsenic, Total	6.0	J MG/KG	0.32	1.0
		Barium, Total	57.3	MG/KG	0.02	1.0
		Cadmium, Total	0.04	u MG/KG	0.04	1.0
		Chromium, Total	54.7	J MG/KG	0.1	1.0
		Mercury, Total	0.02	u MG/KG	0.02	1.0
		Lead, Total	53.6	J MG/KG	0.23	1.0
		Selenium, Total	0.41	u MG/KG	0.41	1.0
-004	J00NB9	Silver, Total	1.3	MG/KG	0.11	1.0
		Arsenic, Total	281	J MG/KG	0.31	1.0
		Barium, Total	168	MG/KG	0.02	1.0
		Cadmium, Total	0.92	MG/KG	0.04	1.0
		Chromium, Total	56.0	J MG/KG	0.1	1.0
		Mercury, Total	0.04	MG/KG	0.01	1.0
		Lead, Total	411	J MG/KG	0.22	1.0
		Selenium, Total	0.40	u MG/KG	0.40	1.0

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 5/31/03

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*05*

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/22/03

CLIENT: TNUHANFORD B03-015 H2213  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L401

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	J00NB5	Silver, Total	0.11	u MG/KG	0.11	1.0
		Arsenic, Total	4.3	J MG/KG	0.31	1.0
		Barium, Total	71.8	MG/KG	0.02	1.0
		Cadmium, Total	0.04	u MG/KG	0.04	1.0
		Chromium, Total	18.2	J MG/KG	0.1	1.0
		Mercury, Total	0.02	u MG/KG	0.02	1.0
		Lead, Total	72.0	J MG/KG	0.22	1.0
		Selenium, Total	0.40	u MG/KG	0.40	1.0
-006	J00NB6	Silver, Total	0.12	u MG/KG	0.12	1.0
		Arsenic, Total	3.2	J MG/KG	0.34	1.0
		Barium, Total	65.3	MG/KG	0.02	1.0
		Cadmium, Total	0.06	MG/KG	0.04	1.0
		Chromium, Total	16.7	J MG/KG	0.10	1.0
		Mercury, Total	0.02	u MG/KG	0.02	1.0
		Lead, Total	3.4	J MG/KG	0.24	1.0
		Selenium, Total	0.43	u MG/KG	0.43	1.0
-007	J00NF1	Silver, Total	0.12	u MG/KG	0.12	1.0
		Arsenic, Total	0.32	u J MG/KG	0.32	1.0
		Barium, Total	1.2	MG/KG	0.02	1.0
		Cadmium, Total	0.04	u MG/KG	0.04	1.0
		Chromium, Total	0.21	U J MG/KG	0.1	1.0
		Mercury, Total	0.01	u MG/KG	0.01	1.0
		Lead, Total	0.48	U J MG/KG	0.22	1.0
		Selenium, Total	0.40	u MG/KG	0.40	1.0
-008	J00ND7	Silver, Total	0.13	u MG/KG	0.13	1.0
		Arsenic, Total	3.0	J MG/KG	0.36	1.0
		Barium, Total	83.0	MG/KG	0.02	1.0
		Cadmium, Total	0.04	u MG/KG	0.04	1.0
		Chromium, Total	13.2	J MG/KG	0.11	1.0
		Mercury, Total	0.02	u MG/KG	0.02	1.0
		Lead, Total	5.1	J MG/KG	0.25	1.0
		Selenium, Total	0.45	u MG/KG	0.45	1.0

*per* 5/31/03

000012

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/22/03

CLIENT: TNUHANFORD B03-015 H2213  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L401

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-009	J00ND8	Silver, Total	0.13	u MG/KG	0.13	1.0
		Arsenic, Total	2.4	J MG/KG	0.35	1.0
		Barium, Total	82.4	MG/KG	0.02	1.0
		Cadmium, Total	0.04	u MG/KG	0.04	1.0
		Chromium, Total	13.6	J MG/KG	0.11	1.0
		Mercury, Total	0.02	u MG/KG	0.02	1.0
		Lead, Total	4.7	J MG/KG	0.24	1.0
		Selenium, Total	0.44	u MG/KG	0.44	1.0

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**Appendix 4**

**Laboratory Narrative and Chain-of-Custody Documentation**

**000014**



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Analytical Report

Client: TNU-HANFORD B03-015  
LVL#: 0305L401  
SDG/SAF#: H2213/B03-015

W.O.#: 11343-606-001-9999-00  
Date Received: 05-14-03

**METALS CASE NARRATIVE**

1. This narrative covers the analyses of 9 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 LVL's sample acceptance policy.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits.
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. The matrix spike (MS) recoveries for 3 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A serial dilution is performed for Mercury. A PDS was prepared at meaningful concentration level for the following analytes:

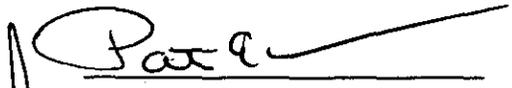
The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 23 pages.

000015

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<u>Sample ID</u>	<u>Element</u>	<u>PDS Concentration (ppb)</u>	<u>PDS % Recovery</u>
J00NC0	Arsenic	1200	99.6
	Chromium	200	101.9
	Lead	1200	101.1

12. The duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
13. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
14. 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  
 jjw/m05-401

05-23-03  
 Date

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B03-015-93		Page 1 of 1										
Collector Doug Bowers		Company Contact Mike Stankovich		Telephone No. 372-9082		Project Coordinator KESSNER, JH		Price Code 8B Data Turnaround 7 Days										
Project Designation Remaining Sites Confirmation Sampling-Soil		Sampling Location 600-131 (600 area)		SAF No. B03-015		Air Quality <input type="checkbox"/>												
Ice Chest No. ERC 02 003		Field Logbook No. EL-1478/118-2 BX 5-8-03		COA C17HXU600C		Method of Shipment Fed Ex												
Shipped To TMA (RECRA)		Offsite Property No. A030228				Bill of Lading/Air Bill No. SEE OSPC												
POSSIBLE SAMPLE HAZARDS/REMARKS  Samples did not originate in radiological controlled area. No total activity associated with sample/samples.					Preservation	None	Cool 4C	Cool 4C										
					Type of Container	aG	aG	aG										
					No. of Container(s)	1	1	1										
					Volume	60mL	120mL	60mL										
SAMPLE ANALYSIS  000017					See item (1) in Special Instructions.	Semi-VOA - \$270A (TCL)	VOA - \$260A (TCL)											
					Sample No.	Matrix *	Sample Date	Sample Time										
J00NCO	SOIL	5-8-03	0955	X	X													
CHAIN OF POSSESSION					SPECIAL INSTRUCTIONS					Matrix *								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		Do not use this sample for QA/QC *  (1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)  Personnel not available to relinquish samples from the 3728 Ref # 36 on 5/13/03					S=Soil SE=Settlement SO=Solid SL=Sediment W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Trace Wt=Wipe L=Liquid V=Vegetation X=Other					
Doug Bowers		5-8-03/1549		R. Y. JC		5-8-03/1549												
REF 3C 3728		51303 1100		S. GALE		51303 1100												
S. GALE		51303 1100		FED EX														
Med Ex		5-14-03 0935		D. J. Smith		5/14/03 0935												
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					B03-015-92		Page 1 of 1					
Collector Doug Bowers		Company Contact Mike Stankovich		Telephone No. 372-9082		Project Coordinator KESSNER, JH		Price Code 8B		Data Turnaround 7 Days				
Project Designation Remaining Sites Confirmation Sampling-Soil		Sampling Location 600-131 (600 area)			SAF No. B03-015		Air Quality <input type="checkbox"/>							
Ice Chest No. ERC 02 003		Field Logbook No. 5-8-03 EL-1528/1518-207A/1518-2		COA C17HXU600C		Method of Shipment Fed Ex								
Shipped To TMA/RECRA		Offsite Property No. A030228			Bill of Lading/Air Bill No. SEE OSC									
POSSIBLE SAMPLE HAZARDS/REMARKS  Samples did not originate in radiological controlled area. No total activity associated with sample/samples.				Preservation		None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	4°C	4°C		
				Type of Container		aG	aG	aG	aG	aG	aG	aG	aG	aG
				No. of Container(s)		1	1	1	1	1	1	1	1	1
				Volume		60mL	250mL	120mL	60mL	60mL	125ml	125ml		
SAMPLE ANALYSIS  000018				See item (1) in Special Instructions.		PCBs - 8062; Pesticides - 8081; Chloro-Herbicides - EPA8151	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1	Sulfides 9030	Total Cyanide 9010			
				Sample No.	Matrix *	Sample Date	Sample Time							
J00NB7	SOIL	5-8-03	1015	X	X	X			X	X				
J00NB8	SOIL	5-8-03	1400	X	X	X		X						
J00NB9	SOIL	5-8-03	1015	X	X	X			X	X				
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *		
Relinquished By/Removed From Doug Bowers 5-8-03/1545		Date/Time		Received By/Stored In Ref 3C 3728 5-8-9/1545		Date/Time		(1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)  Personnel not available to relinquish samples from the 3728 Ref # 3C on 5/13/03				S=Soil SS=Sludgment SO=Soil S=Sludge W=Water O=Oil A=Air DS=Drawn Solids DL=Drawn Liquids T=Trace W=Wipe L=Liquid V=Vegetation X=Other		
Relinquished By/Removed From REF 3C 3728 5/30/03 1100		Date/Time		Received By/Stored In SJOALE/DEL 5/30/03 1100		Date/Time								
Relinquished By/Removed From SJOALE/DEL 5/30/03 1100		Date/Time		Received By/Stored In FED EX		Date/Time								
Relinquished By/Removed From Klodon 5-14-03 0935		Date/Time		Received By/Stored In NYP/DEL 5/14/03 0935		Date/Time								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time								
LABORATORY SECTION		Received By		Title				Date/Time						
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By				Date/Time						

<b>Bechtel Hanford Inc.</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>				B03-015-91	Page 1 of 1
Collector Doug Bowers	Company Contact Mike Stankovich	Telephone No. 372-9082	Project Coordinator KESSNER, JH		Price Code 8B	Data Turnaround 7 Days	
Project Designation Remaining Sites Confirmation Sampling-Soil		Sampling Location 600-131 (600 area)	SAF No. B03-015		Air Quality <input type="checkbox"/>		
Ice Chest No. ERC 02 003	Field Logbook No. EL-1578/5/0 2 028 5-8-03	COA C17HXU600C	Method of Shipment Fed Ex				
Shipped To TMA/RECRA		Offsite Property No. A 030228	Bill of Lading/Air Bill No. SEE OSPC				

POSSIBLE SAMPLE HAZARDS/REMARKS  Samples did not originate in radiological controlled area. No total activity associated with sample/samples.	Preservation	None	Cool 4C	Cool 4C	None						
	Type of Container	aG	aG	aG	aG						
	No. of Container(s)	1	1	1	1						
	Volume	60mL	250mL	120mL	250mL						

000019	SAMPLE ANALYSIS				See Item (1) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Hericides - EPA8151	Semi-VOA - 8270A (TCL)	pH (Soil) - 9045				
						870 5-3-03						

Sample No.	Matrix *	Sample Date	Sample Time									
J00NB5	SOIL	5-8-03	1100	X	X	X	X					
J00NB6	SOIL	5-8-03										

<b>CHAIN OF POSSESSION</b>				<b>Sign/Print Names</b>				<b>SPECIAL INSTRUCTIONS</b>				<b>Matrix *</b> S=Soil SE=Sediment SO=Solid Sl=Sledge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Trash WH=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From Doug Bowers	Date/Time 5-8-03/1145	Received By/Stored In RIF JC	Date/Time 5-8-03/1145	(1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)  Personnel not available to relinquish samples from the 3728 Ref # SC on 5/13/03								
Relinquished By/Removed From REF 3 C 3728	Date/Time 5/13/03 1100	Received By/Stored In SJOALE M. Moh	Date/Time 5/13/03 1100									
Relinquished By/Removed From SJOALE M. Moh	Date/Time 5/13/03 1100	Received By/Stored In FED EX	Date/Time									
Relinquished By/Removed From Fed Ex	Date/Time 5-14-03 0935	Received By/Stored In J. J. D... ..	Date/Time 5/14/03 0935									
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time									
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time									

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

Collector Doug Bowers Company Contact Mike Stankovich Telephone No. 372-9082 Project Coordinator KESSNER, JH Price Code 8B Data Turnaround 7 Days

Project Designation Remaining Sites Confirmation Sampling-Soil Sampling Location 600-131 (600 area) SAF No. B03-015 Air Quality

Ice Chest No. ERC 02 003 Field Logbook No. EL-1578 COA C17HXU600C Method of Shipment Fed Ex

Shipped To TMA/RECRA Offsite Property No. A030228 Bill of Lading/Air Bill No. SER OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples did not originate in radiological controlled area. No total activity associated with sample/samples.

Preservation	None	Cool 4C	Cool 4C	None
Type of Container	aG	aG	aG	aG
No. of Container(s)	1	1	1	1
Volume	60mL	250mL	120mL	250mL

000020

SAMPLE ANALYSIS

See item (1) in Special Instructions. PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - 818151. Semi-VOA - 8270A (TCL). pH (Soil) - 9045.

Sample No.	Matrix *	Sample Date	Sample Time						
J80NB5	SOIL	5-8-03	1100	X	X	X	X		
J00NB6	SOIL	5-12-03	1115	X	X	Y	X		

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS		Matrix *
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	(1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)  Personnel not available to relinquish samples from the 3728 Ref # 38 on 5-14-03		S=Soil SB=Saltman SO=Solid SF=Sludge W=Water O=Oil A=Air DS=Drum Bottle DL=Drum Liquid T=Truss WH=Wipe L=Liquid V=Vegetation X=Other
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			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time			

LABORATORY SECTION Received By Title Date/Time

FINAL SAMPLE DISPOSITION Disposal Method Disposed By Date/Time

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B03-015-96		Page 1 of 1	
Collector Doug Bowers		Company Contact Renee Neilson		Telephone No. 521-2090		Project Coordinator KESSNER, JH		Price Code 8B Data Turnaround 7 Days	
Project Designation Remaining Sites Confirmation Sampling-Soil		Sampling Location 628-1 White Bluffs burn pit			SAF No. B03-015		Air Quality <input type="checkbox"/>		
Ice Chest No. ERC 02 107		Field Logbook No. EL-1578		COA C17HXU600C		Method of Shipment Fed Ex			
Shipped To TMA/RECREA		Offsite Property No. A030228				Bill of Lading/Air Bill No. SEE OSPC			
POSSIBLE SAMPLE HAZARDS/REMARKS					Preservation	None	Cool 4C	Cool 4C	
Special Handling and/or Storage					Type of Container	aG	aG	aG	
					No. of Container(s)	1	1	1	
					Volume	60mL	120mL	60mL	
SAMPLE ANALYSIS					See Item (1) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)		
Sample No.	Matrix *	Sample Date	Sample Time						
J00NF1	SOIL	5-12-03	1205	X	X				
CHAIN OF POSSESSION					SPECIAL INSTRUCTIONS				
Relinquished By/Removed From <i>Doug Bowers</i> Date/Time <i>5-12-03/1645</i>					Received By/Stored In <i>Rof 3A</i> Date/Time <i>5-12-03/1645</i>				
Relinquished By/Removed From <i>REF 3A 3728</i> Date/Time <i>5/30/03 1000</i>					Received By/Stored In <i>SUGALE/SJL</i> Date/Time <i>5/30/03 1000</i>				
Relinquished By/Removed From <i>SUGALE/SJL</i> Date/Time <i>5/30/03 1000</i>					Received By/Stored In <i>FED EX</i> Date/Time				
Relinquished By/Removed From <i>Med E</i> Date/Time <i>5-14-03 0935</i>					Received By/Stored In <i>SJL/Drina D</i> Date/Time <i>5-14-03 0935</i>				
Relinquished By/Removed From					Received By/Stored In				
Relinquished By/Removed From					Received By/Stored In				
LABORATORY SECTION					Title				
Received By					Date/Time				
FINAL SAMPLE DISPOSITION					Disposal Method				
Disposed By					Date/Time				

000021

22

Do not use this sample for QA/QC

(1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)

Personnel not available to relinquish samples from the 3728 Ref # *3A* on *5-13-03*

Matrix \*

- S=Soil
- SE=Soil/rock
- SO=Solid
- SL=Sludge
- W=Water
- O=Oil
- A=Air
- DS=Drum Solids
- DL=Drum Liquids
- T=Flame
- WP=Wipe
- L=Liquid
- V=Vegetation
- X=Other

<b>Bechtel Hanford Inc.</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>				B03-015-95		Page 1 of 1	
Collector Doug Bowers		Company Contact Renee Neilson		Telephone No. 521-2090		Project Coordinator KESSNER, JH		Price Code 8B	
Project Designation Remaining Sites Confirmation Sampling-Soil		Sampling Location 628-1 White Bluffs burn pit		SAF No. B03-015		Air Quality <input type="checkbox"/>		Data Turnaround 7 Days	
Ice Chest No. <b>ERC 02 107</b>		Field Logbook No. EL-1578		COA C17HXU600C		Method of Shipment Fed Ex			
Shipped To <b>TMA/RECRA</b>		Offsite Property No. <b>A030228</b>				Bill of Lading/Air Bill No. <b>SEE OSPC</b>			

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Cool 4C						
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1
	Volume	60mL	250mL	120mL	120mL	60mL	60mL	120mL	120mL

SPECIAL HANDLING AND/OR STORAGE	See Item (1) in Special Instructions.	PCBs - 9082; Pesticides - 9081; Chloro-Herbicides - EPA8151	See Item (2) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1	Sulfides - 9030	Total Cyanide - 9010
	SAMPLE ANALYSIS							

Sample No.	Matrix *	Sample Date	Sample Time							
J00ND7	SOIL	5-12-03	1430	X	X	X	X	X	X	X
J00ND8	SOIL	5-12-03	1500	X	X	X	X	X	X	X

<b>CHAIN OF POSSESSION</b>		<b>Sign/Print Names</b>		<b>SPECIAL INSTRUCTIONS</b>		<b>Matrix *</b> S=Soil SP=Settling SO=Solid SI=Sediment W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Trash W=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From <i>Doug Bowers</i>	Date/Time 5-12-03/1645	Received By/Stored In <i>R. F. 3A</i>	Date/Time 5-12-03/1645	(1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)		
Relinquished By/Removed From <i>REF SA 3728</i>	Date/Time 5-13-03 1000	Received By/Stored In <i>SIGALE</i>	Date/Time 5-13-03 1000	(2) IC Anions - 300.0 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate)		
Relinquished By/Removed From <i>SIGALE</i>	Date/Time 5-13-03 1000	Received By/Stored In <i>FED EX</i>	Date/Time	<b>070 5-7-03</b>		
Relinquished By/Removed From <i>Steve</i>	Date/Time 5-14-03 0925	Received By/Stored In <i>Steve</i>	Date/Time 5-14-03 0925	Personnel not available to relinquish samples from the 3728 Ref # <b>371</b> on <b>5-13-03</b>		
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time			

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

**Appendix 5**  
**Data Validation Supporting Documentation**

**000023**

**INORGANIC ANALYSIS DATA VALIDATION CHECKLIST**

VALIDATION LEVEL:	A	B	<u>C</u>	D	E
PROJECT:	600-131	628-01	DATA PACKAGE: H2213		
VALIDATOR:	TLI	LAB: LLD	DATE: 5/31/05		
CASE:			SDG: H2213		
<b>ANALYSES PERFORMED</b>					
<u>SW-846/ICP</u>	SW-846/GFAA	<u>SW-846/Hg</u>	SW-846 Cyanide		
<b>SAMPLES/MATRIX</b>					
J00NB5 J00NB6 J00NB7 J00NB8 J00NB9 J00NC0					
J00ND7 J00NDY J00NF1					
Sect					

**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: CR - U CO + FI  
Pb - U " "

barium CR + Pb in eb

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

arsenic - I all (56.2)  
CR - I all detects (335.6)  
Pb - I all ~~detects~~ (-186)  $\mu$ m spikes  
shu

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: CR - 57.1 J all  
 Pb - 43.3 J all

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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:

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**INORGANIC ANALYSIS DATA VALIDATION CHECKLIST**

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

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

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**8. HOLDING TIMES (all levels)**

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

Comments: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**INORGANIC ANALYSIS DATA VALIDATION CHECKLIST**

**9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)**

Results reported for all requested analyses? .....  Yes No N/A  
Results supported in the raw data? (Levels D, E) ..... Yes No  N/A  
Samples properly prepared? (Levels D, E) ..... Yes No  N/A  
Detection limits meet RDL? .....  Yes No N/A  
Transcription/calculation errors? (Levels D, E) ..... Yes No  N/A

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Appendix 6**

**Additional Documentation Requested by Client**

**000029**

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/22/03

CLIENT: TNUHANFORD B03-015 H2213

LVL LOT #: 0305L401

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	03L0267-MB1	Silver, Total	0.12 u	MG/KG	0.12	1.0
		Arsenic, Total	0.33 u	MG/KG	0.33	1.0
		Barium, Total	0.03	MG/KG	0.02	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	0.16	MG/KG	0.10	1.0
		Lead, Total	0.27	MG/KG	0.23	1.0
		Selenium, Total	0.42 u	MG/KG	0.42	1.0
BLANK1	03C0115-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

000030

1/2

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 05/22/03

CLIENT: TNUHANFORD B03-015 H2213  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L401

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-002	J00NB7	Silver, Total	6.2	1.6	4.9	93.9	1.0
		Arsenic, Total	430	321	194	56.2	1.0
		Barium, Total	349	183	194	85.6	1.0
		Cadmium, Total	5.5	1.1	4.9	89.8	1.0
		Chromium, Total	115	49.8	19.4	335.6	1.0
		Mercury, Total	0.20	0.03	0.16	105.5	1.0
		Lead, Total	416	506	48.5	-180. *	1.0
		Selenium, Total	174	0.42u	194	89.9	1.0

000031

13

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 05/22/03

CLIENT: TNUHANFORD B03-015 H2213  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L401

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION
			RESULT	REPLICATE	RPD	
-002REP	J00NB7	Silver, Total	1.6	1.7	6.1	1.0
		Arsenic, Total	321	303	6.0	1.0
		Barium, Total	183	222	19.2	1.0
		Cadmium, Total	1.1	1.0	9.5	1.0
		Chromium, Total	49.8	91.6	59.1	1.0
		Mercury, Total	0.03	0.03	10.5	1.0
		Lead, Total	506	802	45.3	1.0
		Selenium, Total	0.42u	0.41u	NC	1.0

000032

*Handwritten mark*

**Date:** 2 June 2003  
**To:** Bechtel Hanford Inc. (technical representative)  
**From:** TechLaw, Inc.  
**Project:** Remaining Sites Confirmation Sampling - Soil - Waste Sites 600-131 & 628-01  
**Subject:** Semivolatile - Data Package No. H2213-LLI (SDG No. H2213)

**INTRODUCTION**

This memo presents the results of data validation on Data Package No. H2213-LLI prepared by Lionville Laboratory Incorporated (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	Waste Site	Analysis
J00NB5	5/8/03	Soil	C	600-131	See note 1
J00NB6	5/12/03	Soil	C	600-131	See note 1
J00NB7	5/8/03	Soil	C	600-131	See note 1
J00NB8	5/8/03	Soil	C	600-131	See note 1
J00NB9	5/8/03	Soil	C	600-131	See note 1
J00NC0	5/8/03	Soil	C	600-131	See note 1
J00ND7	5/12/03	Soil	C	628-1	See note 1
J00ND8	5/12/03	Soil	C	628-1	See note 1
J00NF1	5/12/03	Soil	C	628-1	See note 1

1 - Semivolatiles by 8270C

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). 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

000001

## DATA QUALITY OBJECTIVES

- **Holding Times**

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Water samples must be extracted within 7 days of the date of sample collection and analyzed within 40 days from the date of extraction.

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 met.

- **Method Blanks**

Method blank analyses are conducted 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. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, the bis(2-ethylhexyl)phthalate results in all samples except JOONB8 were raised to the RQL and flagged "U".

All other method blank results were acceptable.

### Field Blanks

Two equipment blanks (JOONCO (waste site 600-131) and JOONF1 (waste site 628-01)) were submitted for analysis. Bis(2-ethylhexyl)phthalate, di-n-butylphthalate and diethylphthalate were detected in both equipment blanks.

000002

Under the BHI statement of work, no qualification is required. All other field blank results were acceptable.

- **Accuracy**

**Matrix Spike/Matrix Spike Duplicate Recoveries**

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected 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.

All matrix spike/matrix spike duplicate results were acceptable.

**Surrogate Recovery**

The analyses of surrogate compounds provide a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the EPA CLP program. If two surrogates of the same class of compounds (base/neutral or acid) are out of control limits, all associated sample results greater than the contract required quantitation limit (CRQL) are qualified as estimates and flagged "J". Sample results less than the CRQL and below the lower control limit are qualified as estimates and flagged "UJ". Sample results less than the CRQL with recoveries above the upper control limit require no qualification. If a surrogate recovery is less than 10%, detects are qualified as estimates and flagged "J" and nondetects are rejected and flagged "UR".

Due to the surrogate being diluted out, all results in sample J00NB8 were qualified as estimates and flagged "J".

All other surrogate results were acceptable.

000003

- **Precision**

**Matrix Spike/Matrix Spike Duplicate Samples**

Matrix spike (MS)/matrix spike duplicate (MSD) results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Samples results must be within RPD limits of +/-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 an RPD of 38%, all pyrene related compounds (phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene and benzo(g,h,i)perylene) were qualified as estimates and flagged "J".

All other MS/MSD RPD results were acceptable.

**Field Duplicate Samples**

One set of field duplicate samples (J00NB7/J00NB9) were submitted for analysis. Field duplicate results are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. Eight analytes exceeded the RQL in all samples (2-nitroaniline, 2,4-dinitrophenol, 3-nitroaniline, 4-nitrophenol, 4-nitroaniline, 4,6-dinitro-2-methylphenol, pentachlorophenol and 2,4,5-trichlorophenol) and all undetected analytes exceeded the RQL in samples J00NB7, J00NB8 and J00NB9. Under the BHI statement of work, no qualification is required.

000004

- **Completeness**

Data package No. H2213-LLI 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 method blank contamination, the bis(2-ethylhexyl)phthalate results in all samples except JOONB8 were raised to the RQL and flagged "U". Due to an RPD of 38%, all pyrene related compounds (phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene and benzo(g,h,i)perylene) were qualified as estimates and flagged "J". Due to the surrogate being diluted out, all results in sample JOONB8 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.

Eight analytes exceeded the RQL in all samples (2-nitroaniline, 2,4-dinitrophenol, 3-nitroaniline, 4-nitrophenol, 4-nitroaniline, 4,6-dinitro-2-methylphenol, pentachlorophenol and 2,4,5-trichlorophenol) and all undetected analytes exceeded the RQL in samples JOONB7, JOONB8 and JOONB9. Under the BHI statement of work, no qualification is required.

### **REFERENCES**

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01249, Rev. 3, *Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort*, Bechtel Hanford Incorporated, March 2003.

000005

**Appendix 1**

**Glossary of Data Reporting Qualifiers**

**000006**

Qualifiers which may be applied by data validators in compliance with the 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 same 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 usable for decision-making purposes).

000007

**Appendix 2**

**Summary of Data Qualification**

**000008**

DATA QUALIFICATION SUMMARY

SDG: H2213	REVIEWER: TLI	DATE: 6/2/03	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
bis(2-ethylhexyl)phthalate	U	All except J00NB8	Blank contamination
Phenanthrene, anthracene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, indeno(1,2,3-c,d)pyrene benzo(g,h,i)perylene	J	All	RPD
All	J	J00NB8	Surrogate diluted out

000009

**Appendix 3**

**Qualified Data Summary and Annotated Laboratory Reports**

**000010**

Project: BECHTEL-HANFORD																			
Laboratory: LLI																			
Case:		SDG: H2213																	
Sample Number	J00NB5		J00NB6		J00NB7		J00NB8		J00NB9		J00NC0		J00ND7		J00ND8		J00NF1		
Remarks									Duplicate		E. Blank						E. Blank		
Location	600-131		600-131		600-131		600-131		600-131		600-131		628-1		628-1		628-1		
Sample Date	5/8/03		5/12/03		5/8/03		5/8/03		5/8/03		5/8/03		5/12/03		5/12/03		5/12/03		
Extraction Date	4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		
Analysis Date	5/1/03		5/1/03		5/1/03		5/2/03		5/2/03		5/2/03		5/2/03		5/2/03		5/2/03		
Semivolatle (8270C)	RDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Phenol	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
bis(2-Chloroethyl)ether	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
2-Chlorophenol	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
1,3-Dichlorobenzene	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
1,4-Dichlorobenzene	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
1,2-Dichlorobenzene	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
2-Methylphenol	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
2,2'-oxybis(1-chloropropane)	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
3 and/or 4-Methylphenol	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
N-Nitroso-di-n-propylamine	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
Hexachloroethane	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
Nitrobenzene	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
Isophorone	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
2-Nitrophenol	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
2,4-Dimethylphenol	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
bis(2-Chloroethoxy)methane	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
2,4-Dichlorophenol	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
1,2,4-Trichlorobenzene	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
Naphthalene	660	340	U	360	U	140		35000	UJ	3400	U	500	U	360	U	360	U	330	U
4-Chloroaniline	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
Hexachlorobutadiene	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
4-Chloro-3-methylphenol	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
2-Methylnaphthalene	660	340	U	360	U	73		35000	UJ	3400	U	500	U	360	U	360	U	330	U
Hexachlorocyclopentadiene	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
2,4,6-Trichlorophenol	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
2,4,5-Trichlorophenol*	660	860	U	910	U	1700	U	88000	UJ	8500	U	1200	U	910	U	910	U	830	U
2-Chloronaphthalene	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
2-Nitroaniline*	660	860	U	910	U	1700	U	88000	UJ	8500	U	1200	U	910	U	910	U	830	U
Dimethylphthalate	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
Acenaphthylene	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
2,6-Dinitrotoluene	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U

000011

Project: BECHTEL-HANFORD																			
Laboratory: LLI																			
Case:		SDG: H2186																	
Sample Number	J00NB5		J00NB6		J00NB7		J00NB8		J00NB9		J00NC0		J00ND7		J00ND8		J00NF1		
Remarks	E. Blank																		
	600-131		600-131		600-131		600-131		600-131		600-131		628-1		628-1		628-1		
Sample Date	5/8/03		5/12/03		5/8/03		5/8/03		5/8/03		5/8/03		5/12/03		5/12/03		5/12/03		
Extraction Date	4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		4/30/03		
Analysis Date	5/1/03		5/1/03		5/1/03		5/2/03		5/2/03		5/2/03		5/2/03		5/2/03		5/2/03		
Semivolatile (8270C)	RDL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
3-Nitroaniline*	660	860	U	910	U	1700	U	88000	UJ	8500	U	1200	U	910	U	910	U	830	U
Acenaphthene	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
2,4-Dinitrophenol*	660	860	U	910	U	1700	U	88000	UJ	8500	U	1200	U	910	U	910	U	830	U
4-Nitrophenol*	660	860	U	910	U	1700	U	88000	UJ	8500	U	1200	U	910	U	910	U	830	U
Dibenzofuran	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
2,4-Dinitrotoluene	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
Diethylphthalate	660	340	U	360	U	680	U	35000	UJ	3400	U	30		360	U	360	U	18	
4-Chlorophenyl-phenyl ether	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
Fluorene	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
4-Nitroaniline*	660	860	U	910	U	1700	U	88000	UJ	8500	U	1200	U	910	U	910	U	830	U
4,6-Dinitro-2-methylphenol*	660	860	U	910	U	1700	U	88000	UJ	8500	U	1200	U	910	U	910	U	830	U
N-Nitrosodiphenylamine	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
4-Bromophenyl-phenyl ether	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
Hexachlorobenzene	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
Pentachlorophenol*	660	860	U	910	U	1700	U	88000	UJ	8500	U	1200	U	910	U	910	U	830	U
Phenanthrene	660	340	UJ	360	UJ	47	J	7500	J	3400	UJ	500	UJ	360	UJ	360	UJ	330	UJ
Anthracene	660	340	UJ	360	UJ	680	UJ	2200	J	3400	UJ	500	UJ	360	UJ	360	UJ	330	UJ
Carbazole	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
Di-n-butylphthalate	660	340	U	22		680	U	35000	UJ	3400	U	330	U	360	U	360	U	150	
Fluoranthene	660	340	UJ	360	UJ	50	J	35000	UJ	3400	UJ	500	UJ	360	UJ	360	UJ	330	UJ
Pyrene	660	340	UJ	360	UJ	72	J	25000	J	170	J	500	UJ	360	UJ	360	UJ	330	UJ
Butylbenzylphthalate	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
3,3'-Dichlorobenzidine	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
Benzo(a)anthracene	660	340	UJ	360	UJ	80	J	20000	J	3400	UJ	500	UJ	360	UJ	360	UJ	330	UJ
Chrysene	660	340	UJ	360	UJ	220	J	25000	UJ	250	J	500	UJ	360	UJ	360	UJ	330	UJ
bis(2-Ethylhexyl)phthalate	660	660	U	660	U	660	U	35000	UJ	660	U	660	U	660	U	660	U	660	U
Di-n-octylphthalate	660	340	U	360	U	680	U	35000	UJ	3400	U	500	U	360	U	360	U	330	U
Benzo(b)fluoranthene	660	340	UJ	360	UJ	60	J	13000	J	3400	UJ	500	UJ	360	UJ	360	UJ	330	UJ
Benzo(k)fluoranthene	660	340	UJ	360	UJ	52	J	13000	J	3400	UJ	500	UJ	360	UJ	360	UJ	330	UJ
Benzo(a)pyrene	660	340	UJ	360	UJ	680	UJ	9300	J	3400	UJ	500	UJ	360	UJ	360	UJ	330	UJ
Indeno(1,2,3-cd)pyrene	660	340	UJ	360	UJ	37	J	3800	J	3400	UJ	500	UJ	360	UJ	360	UJ	330	UJ
Dibenz(a,h)anthracene	660	340	U	360	U	680	U	2800	J	3400	U	500	U	360	U	360	U	330	U
Benzo(g,h,i)perylene	660	340	UJ	360	UJ	49	J	3600	J	3400	UJ	500	UJ	360	UJ	360	UJ	330	UJ

000012

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.  
Semivolatiles by GC/MS, HSL List

Report Date: 05/23/03 14:48

RFW Batch Number: 0305L401

Client: TNUHANFORD B03-015 H2213

Work Order: 11343606001

Page: 1a

Cust ID:	J00NC0	J00NB7	J00NB7	J00NB7	J00NB7	J00NB8	J00NB9
Sample Information	RFW#: SOIL	001 SOIL	002 SOIL	002 MS SOIL	002 MSD SOIL	003 SOIL	004 SOIL
D.F.:	1.00	2.00	2.00	2.00	2.00	100	10.0
Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Surrogate Recovery	Nitrobenzene-d5	62 %	68 %	65 %	67 %	D %	52 %
	2-Fluorobiphenyl	69 %	77 %	77 %	83 %	D %	74 %
	Terphenyl-d14	102 %	67 %	62 %	86 %	122 %	65 %
	Phenol-d5	63 %	71 %	75 %	84 %	D %	50 %
	2-Fluorophenol	68 %	75 %	77 %	81 %	D %	59 %
	2,4,6-Tribromophenol	72 %	76 %	75 %	89 %	D %	73 %
-----fl-----fl-----fl-----fl-----fl-----fl-----fl							
Phenol	500 U	680 U	66 %	74 %	35000 U	J	3400 U
bis(2-Chloroethyl) ether	500 U	680 U	680 U	680 U	35000 U		3400 U
2-Chlorophenol	500 U	680 U	69 %	72 %	35000 U		3400 U
1,3-Dichlorobenzene	500 U	680 U	680 U	680 U	35000 U		3400 U
1,4-Dichlorobenzene	500 U	680 U	61 %	53 %	35000 U		3400 U
1,2-Dichlorobenzene	500 U	680 U	680 U	680 U	35000 U		3400 U
2-Methylphenol	500 U	680 U	680 U	680 U	35000 U		3400 U
2,2'-oxybis(1-Chloropropane)	500 U	680 U	680 U	680 U	35000 U		3400 U
3- and/or 4-Methylphenol	500 U	680 U	680 U	680 U	35000 U		3400 U
N-Nitroso-di-n-propylamine	500 U	680 U	66 %	89 %	35000 U		3400 U
Hexachloroethane	500 U	680 U	680 U	680 U	35000 U		3400 U
Nitrobenzene	500 U	680 U	680 U	680 U	35000 U		3400 U
Isophorone	500 U	680 U	680 U	680 U	35000 U		3400 U
2-Nitrophenol	500 U	680 U	680 U	680 U	35000 U		3400 U
2,4-Dimethylphenol	500 U	680 U	680 U	680 U	35000 U		3400 U
bis(2-Chloroethoxy)methane	500 U	680 U	680 U	680 U	35000 U		3400 U
2,4-Dichlorophenol	500 U	680 U	680 U	680 U	35000 U		3400 U
1,2,4-Trichlorobenzene	500 U	680 U	64 %	66 %	35000 U		3400 U
Naphthalene	500 U	140 J	68 J	150 J	35000 U		3400 U
4-Chloroaniline	500 U	680 U	680 U	680 U	35000 U		3400 U
Hexachlorobutadiene	500 U	680 U	680 U	680 U	35000 U		3400 U
4-Chloro-3-methylphenol	500 U	680 U	76 %	92 %	35000 U		3400 U
2-Methylnaphthalene	500 U	73 J	43 J	99 J	35000 U		3400 U
Hexachlorocyclopentadiene	500 U	680 U	680 U	680 U	35000 U		3400 U
2,4,6-Trichlorophenol	500 U	680 U	680 U	680 U	35000 U		3400 U
2,4,5-Trichlorophenol	1200 U	1700 U	1700 U	1700 U	88000 U		8500 U

\*= Outside of EPA CLP QC limits.

000013

pc 5/31/03

Cust ID:	J00NC0	J00NB7	J00NB7	J00NB7	J00NB8	J00NB9
RFW#:	001	002	002 MS	002 MSD	003	004

2-Chloronaphthalene	500 U	680 U	680 U	680 U	35000 U	3400 U
2-Nitroaniline	1200 U	1700 U	1700 U	1700 U	88000 U	8500 U
Dimethylphthalate	500 U	680 U	680 U	680 U	35000 U	3400 U
Acenaphthylene	500 U	680 U	680 U	680 U	35000 U	3400 U
2,6-Dinitrotoluene	500 U	680 U	680 U	680 U	35000 U	3400 U
3-Nitroaniline	1200 U	1700 U	1700 U	1700 U	88000 U	8500 U
Acenaphthene	500 U	680 U	72 %	81 %	35000 U	3400 U
2,4-Dinitrophenol	1200 U	1700 U	1700 U	1700 U	88000 U	8500 U
4-Nitrophenol	1200 U	1700 U	66 %	77 %	88000 U	8500 U
Dibenzofuran	500 U	680 U	680 U	680 U	35000 U	3400 U
2,4-Dinitrotoluene	500 U	680 U	68 %	84 %	35000 U	3400 U
Diethylphthalate	30 J	680 U	680 U	680 U	35000 U	3400 U
4-Chlorophenyl-phenylether	500 U	680 U	680 U	680 U	35000 U	3400 U
Fluorene	500 U	680 U	680 U	680 U	35000 U	3400 U
4-Nitroaniline	1200 U	1700 U	1700 U	1700 U	88000 U	8500 U
4,6-Dinitro-2-methylphenol	1200 U	1700 U	1700 U	1700 U	88000 U	8500 U
N-Nitrosodiphenylamine (1)	500 U	680 U	680 U	680 U	35000 U	3400 U
4-Bromophenyl-phenylether	500 U	680 U	680 U	680 U	35000 U	3400 U
Hexachlorobenzene	500 U	680 U	680 U	680 U	35000 U	3400 U
Pentachlorophenol	1200 U	1700 U	66 %	83 %	88000 U	8500 U
Phenanthrene	500 U J	47 J	40 J	65 J	7500 J	3400 U J
Anthracene	500 U J	680 U J	680 U	680 U	2200 J	3400 U J
Carbazole	500 U	680 U	680 U	680 U	35000 U	3400 U
Di-n-butylphthalate	330 J	680 U	680 U	680 U	35000 U	3400 U
Fluoranthene	500 U J	50 J	35 J	65 J	30000 J	3400 U J
Pyrene	500 U J	72 J	58 %	86 %	25000 J	170 J
Butylbenzylphthalate	500 U	680 U	680 U	680 U	35000 U	3400 U
3,3'-Dichlorobenzidine	500 U	680 U	680 U	680 U	35000 U	3400 U
Benzo(a)anthracene	500 U J	80 J	48 J	130 J	20000 J	3400 U J
Chrysene	500 U J	220 J	160 J	430 J	25000 J	250 J
bis(2-Ethylhexyl)phthalate	660 SA 480 U	660 SA 480 U	58 JB	120 JB	35000 U	660 SA 480 U
Di-n-octyl phthalate	500 U	680 U	680 U	680 U	35000 U	3400 U
Benzo(b)fluoranthene	500 U J	60 J	680 U	680 U	13000 J	3400 U J
Benzo(k)fluoranthene	500 U J	52 J	52 J	680 U	13000 J	3400 U J
Benzo(a)pyrene	500 U J	680 U J	680 U	680 U	9300 J	3400 U J
Indeno(1,2,3-cd)pyrene	500 U J	37 J	680 U	45 J	3800 J	3400 U J
Dibenz(a,h)anthracene	500 U	680 U	680 U	46 J	2800 J	3400 U
Benzo(g,h,i)perylene	500 U J	49 J	43 J	76 J	3600 J	3400 U J

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(1) - Cannot be separated from Diphenylamine. \*- Outside of EPA CLP QC limits.

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

Report Date: 05/23/03 14:48

RFW Batch Number: 0305L401

Client: TNUHANFORD B03-015 H2213

Work Order: 11343606001

Page: 2a

	Cust ID:	J00NB5	J00NB6	J00NF1	J00ND7	J00ND8	SBLKTO
Sample Information	RFW#:	005	006	007	008	009	03LE0580-MB1
	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	Nitrobenzene-d5	73 %	53 %	77 %	58 %	56 %	67 %
Recovery	2-Fluorobiphenyl	80 %	57 %	82 %	62 %	64 %	71 %
	Terphenyl-d14	72 %	85 %	115 %	82 %	97 %	92 %
	Phenol-d5	75 %	53 %	77 %	58 %	55 %	68 %
	2-Fluorophenol	81 %	61 %	85 %	62 %	60 %	76 %
	2,4,6-Tribromophenol	75 %	70 %	85 %	63 %	77 %	63 %
-----f1-----f1-----f1-----f1-----f1-----f1-----f1							
	Phenol	340 U	360 U	330 U	360 U	360 U	330 U
	bis(2-Chloroethyl) ether	340 U	360 U	330 U	360 U	360 U	330 U
	2-Chlorophenol	340 U	360 U	330 U	360 U	360 U	330 U
	1,3-Dichlorobenzene	340 U	360 U	330 U	360 U	360 U	330 U
	1,4-Dichlorobenzene	340 U	360 U	330 U	360 U	360 U	330 U
	1,2-Dichlorobenzene	340 U	360 U	330 U	360 U	360 U	330 U
	2-Methylphenol	340 U	360 U	330 U	360 U	360 U	330 U
	2,2'-oxybis(1-Chloropropane)	340 U	360 U	330 U	360 U	360 U	330 U
	3- and/or 4-Methylphenol	340 U	360 U	330 U	360 U	360 U	330 U
	N-Nitroso-di-n-propylamine	340 U	360 U	330 U	360 U	360 U	330 U
	Hexachloroethane	340 U	360 U	330 U	360 U	360 U	330 U
	Nitrobenzene	340 U	360 U	330 U	360 U	360 U	330 U
	Isophorone	340 U	360 U	330 U	360 U	360 U	330 U
	2-Nitrophenol	340 U	360 U	330 U	360 U	360 U	330 U
	2,4-Dimethylphenol	340 U	360 U	330 U	360 U	360 U	330 U
	bis(2-Chloroethoxy)methane	340 U	360 U	330 U	360 U	360 U	330 U
	2,4-Dichlorophenol	340 U	360 U	330 U	360 U	360 U	330 U
	1,2,4-Trichlorobenzene	340 U	360 U	330 U	360 U	360 U	330 U
	Naphthalene	340 U	360 U	330 U	360 U	360 U	330 U
	4-Chloroaniline	340 U	360 U	330 U	360 U	360 U	330 U
	Hexachlorobutadiene	340 U	360 U	330 U	360 U	360 U	330 U
	4-Chloro-3-methylphenol	340 U	360 U	330 U	360 U	360 U	330 U
	2-Methylnaphthalene	340 U	360 U	330 U	360 U	360 U	330 U
	Hexachlorocyclopentadiene	340 U	360 U	330 U	360 U	360 U	330 U
	2,4,6-Trichlorophenol	340 U	360 U	330 U	360 U	360 U	330 U
	2,4,5-Trichlorophenol	860 U	910 U	830 U	910 U	910 U	830 U

\*= Outside of EPA CLP QC limits.

000015

5/21/03

Cust ID:

J00NB5

J00NB6

J00NF1

J00ND7

J00ND8

SBLKTO

RFW#:

005

006

007

008

009

03LE0580-MB1

2-Chloronaphthalene	340 U	360 U	330 U	360 U	360 U	330 U
2-Nitroaniline	860 U	910 U	830 U	910 U	910 U	830 U
Dimethylphthalate	340 U	360 U	330 U	360 U	360 U	330 U
Acenaphthylene	340 U	360 U	330 U	360 U	360 U	330 U
2,6-Dinitrotoluene	340 U	360 U	330 U	360 U	360 U	330 U
3-Nitroaniline	860 U	910 U	830 U	910 U	910 U	830 U
Acenaphthene	340 U	360 U	330 U	360 U	360 U	330 U
2,4-Dinitrophenol	860 U	910 U	830 U	910 U	910 U	830 U
4-Nitrophenol	860 U	910 U	830 U	910 U	910 U	830 U
Dibenzofuran	340 U	360 U	330 U	360 U	360 U	330 U
2,4-Dinitrotoluene	340 U	360 U	330 U	360 U	360 U	330 U
Diethylphthalate	340 U	360 U	18 J	360 U	360 U	330 U
4-Chlorophenyl-phenylether	340 U	360 U	330 U	360 U	360 U	330 U
Fluorene	340 U	360 U	330 U	360 U	360 U	330 U
4-Nitroaniline	860 U	910 U	830 U	910 U	910 U	830 U
4,6-Dinitro-2-methylphenol	860 U	910 U	830 U	910 U	910 U	830 U
N-Nitrosodiphenylamine (1)	340 U	360 U	330 U	360 U	360 U	330 U
4-Bromophenyl-phenylether	340 U	360 U	330 U	360 U	360 U	330 U
Hexachlorobenzene	340 U	360 U	330 U	360 U	360 U	330 U
Pentachlorophenol	860 U	910 U	830 U	910 U	910 U	830 U
Phenanthrene	340 U J	360 U J	330 U J	360 U J	360 U J	330 U
Anthracene	340 U J	360 U J	330 U J	360 U J	360 U J	330 U
Carbazole	340 U	360 U	330 U	360 U	360 U	330 U
Di-n-butylphthalate	340 U	22 J	150 J	360 U	360 U	330 U
Fluoranthene	340 U J	360 U J	330 U J	360 U J	360 U J	330 U
Pyrene	340 U J	360 U J	330 U J	360 U J	360 U J	330 U
Butylbenzylphthalate	340 U	360 U	330 U	360 U	360 U	330 U
3,3'-Dichlorobenzidine	340 U	360 U	330 U	360 U	360 U	330 U
Benzo(a)anthracene	340 U J	360 U J	330 U J	360 U J	360 U J	330 U
Chrysene	340 U J	360 U J	330 U J	360 U J	360 U J	330 U
bis(2-Ethylhexyl)phthalate	660 2 <del>SIN</del> U	660 48 <del>SIN</del> U	660 19 <del>SIN</del> U	660 26 <del>SIN</del> U	660 54 <del>SIN</del> U	29 J
Di-n-octyl phthalate	340 U	360 U	330 U	360 U	360 U	330 U
Benzo(b)fluoranthene	340 U J	360 U J	330 U J	360 U J	360 U J	330 U
Benzo(k)fluoranthene	340 U J	360 U J	330 U J	360 U J	360 U J	330 U
Benzo(a)pyrene	340 U J	360 U J	330 U J	360 U J	360 U J	330 U
Indeno(1,2,3-cd)pyrene	340 U J	360 U J	330 U J	360 U J	360 U J	330 U
Dibenz(a,h)anthracene	340 U	360 U	330 U	360 U	360 U	330 U
Benzo(g,h,i)perylene	340 U J	360 U J	330 U J	360 U J	360 U J	330 U

(1) - Cannot be separated from Diphenylamine. \*= Outside of EPA CLP QC limits.

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JK 5/31/05

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, HSL List

Report Date: 05/23/03 14:48

RFW Batch Number: 0305L401

Client: TNUHANFORD B03-015 H2213

Work Order: 11343606001

Page: 3a

Cust ID: SBLKTO BS

Sample RFW#: 03LE0580-MB1  
 Information Matrix: SOIL  
 D.F.: 1.00  
 Units: ug/Kg

Surrogate	Nitrobenzene-d5	79	%
Recovery	2-Fluorobiphenyl	82	%
	Terphenyl-d14	98	%
	Phenol-d5	76	%
	2-Fluorophenol	79	%
	2,4,6-Tribromophenol	78	%

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Phenol	70	%
bis(2-Chloroethyl) ether	330	U
2-Chlorophenol	70	%
1,3-Dichlorobenzene	330	U
1,4-Dichlorobenzene	64	%
1,2-Dichlorobenzene	330	U
2-Methylphenol	330	U
2,2'-oxybis(1-Chloropropane)	330	U
3- and/or 4-Methylphenol	330	U
N-Nitroso-di-n-propylamine	65	%
Hexachloroethane	330	U
Nitrobenzene	330	U
Isophorone	330	U
2-Nitrophenol	330	U
2,4-Dimethylphenol	330	U
bis(2-Chloroethoxy)methane	330	U
2,4-Dichlorophenol	330	U
1,2,4-Trichlorobenzene	71	%
Naphthalene	330	U
4-Chloroaniline	330	U
Hexachlorobutadiene	330	U
4-Chloro-3-methylphenol	77	%
2-Methylnaphthalene	330	U
Hexachlorocyclopentadiene	330	U
2,4,6-Trichlorophenol	330	U
2,4,5-Trichlorophenol	830	U

*K*  
 5/31/03

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\*= Outside of EPA CLP QC limits.

Cust ID: SBLKTO BS

RFW#: 03LE0580-MB1

2-Chloronaphthalene	330	U
2-Nitroaniline	830	U
Dimethylphthalate	330	U
Acenaphthylene	330	U
2,6-Dinitrotoluene	330	U
3-Nitroaniline	830	U
Acenaphthene	77	%
2,4-Dinitrophenol	830	U
4-Nitrophenol	71	%
Dibenzofuran	330	U
2,4-Dinitrotoluene	78	%
Diethylphthalate	330	U
4-Chlorophenyl-phenylether	330	U
Fluorene	330	U
4-Nitroaniline	830	U
4,6-Dinitro-2-methylphenol	830	U
N-Nitrosodiphenylamine (1)	330	U
4-Bromophenyl-phenylether	330	U
Hexachlorobenzene	330	U
Pentachlorophenol	70	%
Phenanthrene	330	U
Anthracene	330	U
Carbazole	330	U
Di-n-butylphthalate	330	U
Fluoranthene	330	U
Pyrene	81	%
Butylbenzylphthalate	330	U
3,3'-Dichlorobenzidine	330	U
Benzo(a)anthracene	330	U
Chrysene	330	U
bis(2-Ethylhexyl)phthalate	32	JB
Di-n-octyl phthalate	330	U
Benzo(b)fluoranthene	330	U
Benzo(k)fluoranthene	330	U
Benzo(a)pyrene	330	U
Indeno(1,2,3-cd)pyrene	330	U
Dibenz(a,h)anthracene	330	U
Benzo(g,h,i)perylene	330	U

(1) - Cannot be separated from Diphenylamine. \*= Outside of EPA CLP QC limits.

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**Appendix 4**

**Laboratory Narrative and Chain-of-Custody Documentation**

**000019**



Client: TNU-HANFORD B03-015  
LVL #: 0305L401  
SDG/SAF # H2213/B03-015

W.O. #: 11343-606-001-9999-00  
Date Received: 05-14-2003

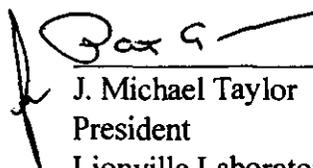
### SEMIVOLATILE

Nine (9) soil samples were collected on 05-08,12-2003.

The samples and their associated QC samples were extracted according to Lionville Laboratory OPs based on method 3550 on 05-15-2003 and analyzed according to criteria set forth in Lionville Laboratory OPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 05-20,21-2003.

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 LVL's sample acceptance policy.
2. Samples were extracted and analyzed within required holding time.
3. Non-target compounds were detected in the samples.
4. Sample J00NB7, J00NB8 and J00NB9 required 2 to 100-fold dilution due to high levels of non-target compounds.
5. All obtainable surrogate recoveries were within EPA QC limits.
6. All matrix spike recoveries were within EPA QC limits.
7. All blank spike recoveries were within EPA QC limits.
8. The method blank contained the common laboratory contaminant Bis (2-Ethylhexyl) phthalate at a level less than the CRQL.
9. Internal standard area criteria were not met for sample J00NB5; however, the GC/MS instrument was inspected for possible malfunction and was judged to be functioning properly; consequently, the sample was not reanalyzed.
10. Manual integrations are performed according to OP 21-06A-125 to produce quality data with the utmost integrity. All manual integrations are required to be technically valid and properly documented. Appropriate technical flags are defined in the Glossary ("Technical Flags For Manual Integration").
11. 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.

  
\_\_\_\_\_  
J. Michael Taylor  
President  
Lionville Laboratory Incorporated

05-23-03  
Date

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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 29 pages.

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<b>Bechtel Hanford Inc.</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>				B03-015-91	Page 1 of 1
Collector Doug Bowers	Company Contact Mike Stankovich	Telephone No. 372-9082	Project Coordinator KESSNER, JH		Price Code 8B	Data Turnaround 7 Days	
Project Designation Remaining Sites Confirmation Sampling-Soil		Sampling Location 600-131 (600 area)	SAF No. B03-015	Air Quality <input type="checkbox"/>			
Ice Chest No. <b>ERC 02 003</b>	Field Logbook No. EL-1578/510 2 028 5-8-03	COA C17HXU600C	Method of Shipment Fed Ex				
Shipped To TMA/RECRA		Offsite Property No. <b>A 030228</b>	Bill of Lading/Air Bill No. <b>SEE OSPC</b>				

<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b>  Samples did not originate in radiological controlled area. No total activity associated with sample/samples.	Preservation	None	Cool 4C	Cool 4C	None						
	Type of Container	aG	aG	aG	aG						
	No. of Container(s)	1	1	1	1						
	Volume	60mL	250mL	120mL	250mL						

000021	<b>SAMPLE ANALYSIS</b>			See item (1) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Hericides - EPA8151 <b>5-8-03</b>	Semi-VOA - 8270A (TCL)	pH (Soil) - 9045						
--------	------------------------	--	--	---------------------------------------	---	------------------------	------------------	--	--	--	--	--	--

Sample No.	Matrix *	Sample Date	Sample Time										
J00NB5	SOIL	5-8-03	1100	X	X	X	X						
<del>J00NB6</del>	<del>SOIL</del>	<del>5-8-03</del>											

<b>CHAIN OF POSSESSION</b>		<b>Sign/Print Names</b>		<b>SPECIAL INSTRUCTIONS</b>				<b>Matrix *</b> S=Soil SE=Soilment SO=Soil SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue W=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From <i>Doug Bowers</i>	Date/Time 5-8-03/1545	Received By/Stored In <i>RIF JC</i>	Date/Time 5-8-03/1745	(1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)  Personnel not available to relinquish samples from the 3728 Ref # <u>SC</u> on <u>5/13/03</u>				
Relinquished By/Removed From <i>REF 3C</i>	Date/Time 5/13/03 1100	Received By/Stored In <i>SJGALE M. Adl</i>	Date/Time 5/13/03 1100					
Relinquished By/Removed From <i>SJGALE M. Adl</i>	Date/Time 5/13/03 1100	Received By/Stored In <i>FED EX</i>	Date/Time					
Relinquished By/Removed From <i>Fed Ex</i>	Date/Time 5/14/03 0935	Received By/Stored In <i>[Signature]</i>	Date/Time 5/14/03 0935					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					

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

<b>Bechtel Hanford Inc.</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>			B03-015-9!	Page 1 of 1
Collector Doug Bowers	Company Contact Mike Stankovich	Telephone No. 372-9082	Project Coordinator KESSNER, JH	Price Code 8B	Data Turnaround <b>7 Days</b>	
Project Designation Remaining Sites Confirmation Sampling-Soil	Sampling Location 600-131 (600 area)	SAF No. B03-015	Air Quality <input type="checkbox"/>			
Ice Chest No. ERC 02 003	Field Logbook No. EL-1578	COA C17HXU600C	Method of Shipment Fed Ex			
Shipped To TMA/RECRA	Offsite Property No. A030228	Bill of Lading/Air Bill No. SER OSPC				

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Cool 4C	Cool 4C	None						
	Type of Container	aG	aG	aG	aG						
	No. of Container(s)	1	1	1	1						
	Volume	60mL	250mL	120mL	250mL						
Samples did not originate in radiological controlled area. No total activity associated with sample/samples.	SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - EPA8151	Semi-VOA - 8270A (TCL)	pH (Soil) - 9045						
		000022									
Sample No.	Matrix *	Sample Date	Sample Time								
J00NB5	SOIL	5-8-03	1100	X	X	X	X				
J00NB6	SOIL	5-12-03	1115	X	X	X	X				

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From Doug Bowers	Date/Time 5-12-03/1645	Received By/Stored In REF 3A 3728	Date/Time 5-12-03/1645	(1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)  Personnel not available to relinquish samples from the 3728 Ref # 3A on 5-12-03				S=Soil SE=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Dry Solids DL=Dry Liquids T=Thane WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From REF 3A 3728	Date/Time 5/13/03 1100	Received By/Stored In SUGALE	Date/Time 5/13/03 1100					
Relinquished By/Removed From SUGALE	Date/Time 5/13/03 1100	Received By/Stored In FED EX	Date/Time					
Relinquished By/Removed From SUGALE	Date/Time 5/14/03 0935	Received By/Stored In SUGALE	Date/Time 5/14/03 0935					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					

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

Collector Doug Bowers	Company Contact Mike Stankovich	Telephone No. 372-9082	Project Coordinator KESSNER, JH	Price Code 8B	Data Turnaround 7 Days
Project Designation Remaining Sites Confirmation Sampling-Soil	Sampling Location 600-131 (600 area)	SAF No. B03-015	Air Quality <input type="checkbox"/>		
Ice Chest No. ERC 02 003	Field Logbook No. 5-8-03 EL-1578/1519-2070/1982	COA C17HXU600C	Method of Shipment Fed Ex		
Shipped To TMA/RECRA	Offsite Property No. A030228	Bill of Lading/Air Bill No. SEE OSPC			

POSSIBLE SAMPLE HAZARDS/REMARKS  Samples did not originate in radiological controlled area. No total activity associated with sample/samples.	Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	4°C	4°C				
	Type of Container	aG	aG	aG	aG	aG	aG	aG				
	No. of Container(s)	1	1	1	1	1	1	1				
	Volume	60mL	250mL	120mL	60mL	60mL	125ml	125ml				

SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - EPA8151	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1	9030	Total cyanide 9010				
	000023										

Sample No.	Matrix *	Sample Date	Sample Time								
J00NB7	SOIL	5-8-03	1015	X	X	X			X	X	
J00NB8	SOIL	5-8-03	1400	X	X	X		X			
J00NB9	SOIL	5-8-03	1015	X	X	X			X	X	

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From Doug Bowers	Date/Time 5-8-03/1545	Received By/Stored In Ref 3C 3728	Date/Time 5-8-03/1545	(1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)  Personnel not available to relinquish samples from the 3728 Ref # 3C on 5/13/03				S=Soil SE=Sediment SO=Solid SI=Sledge W=Water O=Oil A=Air DS=Dryn Solids DL=Dryn Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From REF 3C 3728	Date/Time 5/30/03 1100	Received By/Stored In SJALES	Date/Time 5/30/03 1100					
Relinquished By/Removed From SJALES	Date/Time 5/30/03 1100	Received By/Stored In FED EX	Date/Time					
Relinquished By/Removed From Klocis	Date/Time 5.14.03 0935	Received By/Stored In N/M	Date/Time 5.14.03 0935					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					

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

<b>Bechtel Hanford Inc.</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>			B03-015-93	Page 1 of 1
Collector Doug Bowers	Company Contact Mike Stankovich	Telephone No. 372-9082	Project Coordinator KESSNER, JH		Price Code 8B	Data Turnaround 7 Days
Project Designation Remaining Sites Confirmation Sampling-Soil		Sampling Location 600-131 (600 area)	SAF No. B03-015	Air Quality <input type="checkbox"/>		
Ice Chest No. ERC 02 003	Field Logbook No. EL-1678-1518-2 B70 5-8-03	COA C17HXU600C	Method of Shipment Fed Ex			
Shipped To TMA (RECRA)		Offsite Property No. A030228	Bill of Lading/Air Bill No. SEE OSC			

<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b>  Samples did not originate in radiological controlled area. No total activity associated with sample/samples.	Preservation	None	Cool 4C	Cool 4C						
	Type of Container	aG	aG	aG						
	No. of Container(s)	1	1	1						
	Volume	60mL	120mL	60mL						

000024	<b>SAMPLE ANALYSIS</b>			See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)							
--------	------------------------	--	--	---------------------------------------	------------------------	-------------------	--	--	--	--	--	--	--

Sample No.	Matrix *	Sample Date	Sample Time										
J00NCO	SOIL	5-8-03	0955	X	X								

<b>CHAIN OF POSSESSION</b>			<b>Sign/Print Names</b>		<b>SPECIAL INSTRUCTIONS</b> Do not use this sample for QA/QC *				<b>Matrix *</b> S=Soil SE=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue W=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From Doug Bowers	Date/Time 5-8-03/1545	Received By/Stored In R. J. C.	Date/Time 5-8-03/1545	(1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)  Personnel not available to relinquish samples from the 3728 Ref # 36 on 5/13/03					
Relinquished By/Removed From REF 3C 3728	Date/Time 51303 1100	Received By/Stored In S. GALE	Date/Time 51303 1100						
Relinquished By/Removed From S. GALE	Date/Time 51303 1100	Received By/Stored In FED EX	Date/Time						
Relinquished By/Removed From D. J. C.	Date/Time 5-14-03 0935	Received By/Stored In D. J. C.	Date/Time 5/14/03 0935						
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time						
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time						

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

<b>Bechtel Hanford Inc.</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>				B03-015-95		Page 1 of 1	
Collector Doug Bowers		Company Contact Renee Neilson		Telephone No. 521-2090		Project Coordinator KESSNER, JH		Price Code 8B	
Project Designation Remaining Sites Confirmation Sampling-Soil		Sampling Location 628-1 White Bluffs burn pit		SAF No. B03-015		Air Quality <input type="checkbox"/>		Data Turnaround 7 Days	
Ice Chest No. <i>ERC 02 107</i>		Field Logbook No. EL-1578		COA C17HXU600C		Method of Shipment Fed Ex			
Shipped To TMA/RECRA		Offsite Property No. <i>A030228</i>				Bill of Lading/Air Bill No. <i>SEE OSPC</i>			

POSSIBLE SAMPLE HAZARDS/REMARKS  Special Handling and/or Storage  <i>0000225</i>	Preservation	None	Cool 4C							
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG
	No. of Container(s)	1	1	1	1	1	1	1	1	1
	Volume	60mL	250mL	120mL	120mL	60mL	60mL	120mL	120mL	

SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8012; Pesticides - 8081; Chloro-Herbicides - EPA8151	See item (2) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1	Sulfides - 9030	Total Cyanide - 9010
-----------------	---------------------------------------	---	---------------------------------------	------------------------	-------------------	---------------------	-----------------	----------------------

Sample No.	Matrix *	Sample Date	Sample Time							
J00ND7	SOIL	5-12-03	1430	X	X	X	X	X	X	X
J00ND8	SOIL	5-12-03	1500	X	X	X	X	X	X	X

<b>CHAIN OF POSSESSION</b>		<b>Sign/Print Names</b>		<b>SPECIAL INSTRUCTIONS</b>				<b>Matrix *</b> S=Soil SE=Sediment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Time WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From <i>Doug Bowers</i>	Date/Time <i>5-12-03/1645</i>	Received By/Stored In <i>R.F. 3A</i>	Date/Time <i>5-12-03/1645</i>	(1) ICP Metals - 6010TR (Client-List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)				
Relinquished By/Removed From <i>REF 3A</i>	Date/Time <i>5 13 03 1000</i>	Received By/Stored In <i>SIGALE</i>	Date/Time <i>5 13 03 1000</i>	(2) IC Anions - 300.0 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate) <i>0 10 5-7-03</i>				
Relinquished By/Removed From <i>SJOALE</i>	Date/Time <i>5 13 03 1000</i>	Received By/Stored In <i>FED EX</i>	Date/Time	Personnel not available to relinquish samples from the 3728 Ref # <i>3728</i> on <i>5 13 03</i>				
Relinquished By/Removed From <i>Heidi</i>	Date/Time <i>5-14-03 0935</i>	Received By/Stored In <i>Neilson</i>	Date/Time <i>5-14-03 0935</i>					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					

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

<b>Bechtel Hanford Inc.</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>			B03-015-96	Page 1 of 1
Collector Doug Bowers	Company Contact Renee Neilson	Telephone No. 521-2090	Project Coordinator KESSNER, JH		Price Code 8B	Data Turnaround 7 Days
Project Designation Remaining Sites Confirmation Sampling-Soil		Sampling Location 628-1 White Bluffs burn pit		SAF No. B03-015	Air Quality <input type="checkbox"/>	
Ice Chest No. ERC 02 107	Field Logbook No. EL-1578	COA C17HXU600C		Method of Shipment Fed Ex		
Shipped To TMA/RECRA		Offsite Property No. A030 228		Bill of Lading/Air Bill No. SEE OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Cool 4C	Cool 4C											
	Type of Container	aG	aG	aG											
	No. of Container(s)	1	1	1											
	Volume	60mL	120mL	60mL											
Special Handling and/or Storage															
SAMPLE ANALYSIS		See item (1) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)											
Sample No.	Matrix *	Sample Date	Sample Time												
J00NF1	SOIL	5-12-03	1205	X	X										

<b>CHAIN OF POSSESSION</b>		<b>Sign/Print Names</b>		<b>SPECIAL INSTRUCTIONS</b>			<b>Matrix *</b> S=Soil SE=Sediment SO=Solid SH=Sludge W=Water O=Oil A=Air DS=Dry Solids DL=Dry Liquids T=Thane WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From Doug Bowers	Date/Time 5-12-03/1645	Received By/Stored In Ref 3A	Date/Time 5-12-03/1645	Do not use this sample for QA/QC  (1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)  Personnel not available to relinquish samples from the 3728 Ref # 3A on 5-15-03			
Relinquished By/Removed From REF 3A	Date/Time 5/13/03 1000	Received By/Stored In SUGALE	Date/Time 5/13/03 1000				
Relinquished By/Removed From SUGALE	Date/Time 5/13/03 1000	Received By/Stored In FED EX	Date/Time				
Relinquished By/Removed From FED EX	Date/Time 5-14-03 0935	Received By/Stored In SUGALE	Date/Time 5-14-03 0935				
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time				
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time				

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

**Appendix 5**

**Data Validation Supporting Documentation**

**000027**

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	600-131	628-01		DATA PACKAGE:	H2213
VALIDATOR:	TLI	LAB:	LLI	DATE:	5/31/03
CASE:		SDG:		H2213	
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J00NB5 J00NB6 J00NB7 J00NB8 J00NB9					
J00NC0 J00ND7 J00NP8 J00NE1					
Soil					

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

2. INSTRUMENT TUNING AND CALIBRATION (Levels D and E)

GC/MS tuning/performance check acceptable? ..... Yes No **N/A**  
 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**

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

GC/MS ORGANIC 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: bis(2-ethylhexyl) phthalate - U all detected at QAL

cb ← CO-Diethylphthalate Di-n-butylphthalate bis(2-ethylhexyl) phthalate  
F1 - " " "

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

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A  
 Surrogate/system monitoring compound 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? (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: DS - all but terphenyl diluted out - Fall

NO DAS

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

- MS/MSD samples analyzed? .....  Yes  No  N/A
- MS/MSD RPD values 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: pyrene 3890 Tall related

6. SYSTEM PERFORMANCE (Levels D and E)

- Internal standards analyzed? .....  Yes  No  N/A
- Internal standard areas acceptable? .....  Yes  No  N/A
- Internal standard retention times 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: \_\_\_\_\_

7. HOLDING TIMES (all levels)

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

Comments: \_\_\_\_\_

GC/MS ORGANIC 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
- Laboratory properly identified and coded all TIC? (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: 8 over in all  
all under one in BS, BS9 BS7

9. SAMPLE CLEANUP (Levels D and E)

- 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 unacceptable? ..... 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: 2 June 2003  
 To: Bechtel Hanford Inc. (technical representative)  
 From: TechLaw, Inc.  
 Project: Remaining Sites Confirmation Sampling - Soil - Waste  
 Sites 600-131 & 628-01  
 Subject: Wet Chemistry - Data Package No. H2213-LLI (SDG No. H2213)

**INTRODUCTION**

This memo presents the results of data validation on Data Package No. H2213-LLI 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	Sample Date	Media	Validation	Waste Site	Analysis
J00NB5	5/8/03	Soil	C	600-131	See note 4
J00NB6	5/12/03	Soil	C	600-131	See note 4
J00NB7	5/8/03	Soil	C	600-131	See note 2
J00NB8	5/8/03	Soil	C	600-131	See note 1
J00NB9	5/8/03	Soil	C	600-131	See note 2
J00NC0	5/8/03	Soil	C	600-131	See note 5
J00ND7	5/12/03	Soil	C	628-1	See notes 1,2,3
J00ND8	5/12/03	Soil	C	628-1	See note 1,2,3
J00NF1	5/12/03	Soil	C	628-1	See note 5

- 1 - Petroleum hydrocarbons by 9071
- 2 - Sulfide and cyanide by 9010B/9014
- 3 - Sulfate by 300.0
- 4 - pH by 9045C
- 5 - No validated analysis requested.

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). 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

000001

## 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 immediately for pH, within 7 days for sulfide, 14 days for cyanide and 28 days for sulfate and petroleum hydrocarbons.

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".

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

Due to the holding time being exceeded by less than twice the limit, all sulfide results in samples JOONB7 and JOONB9 were qualified as estimates and flagged "J".

All other 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**

The equipment blanks (JOONCO and JOONF1) contained no validated analytes.

000002

- **Accuracy**

Matrix Spike

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

All matrix spike recovery 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

One set of field duplicate samples (J00NB7/J00NB9) were submitted for analysis. Field duplicate results are compared using the same criteria as for laboratory duplicates. All other 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 results met the analyte specific RQL.

000003

- **Completeness**

Data package No. H2213-LLI 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 holding time being exceeded by greater than twice the limit, all pH results were qualified as estimates and flagged "J". Due to the holding time being exceeded by less than twice the limit, all sulfide results in samples JOONB7 and JOONB9 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**

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01249, Rev. 3, *Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort*, Bechtel Hanford Incorporated, March 2003.

000004

**Appendix 1**

**Glossary of Data Reporting Qualifiers**

**000005**

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).

000006

**Appendix 2**  
**Summary of Data Qualification**

**000007**

DATA QUALIFICATION SUMMARY

SDG: H2213	REVIEWER: TLI	DATE: 6/2/03	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
pH	J	All	Holding time
Sulfide	J	J00NB7 J00NB9	Holding time

000008

**Appendix 3**

**Qualified Data Summary and Annotated Laboratory Reports**

**000009**



Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 05/22/03

CLIENT: TNUHANFORD B03-015 H2213  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L401

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J00NCO	% Solids	100	%	0.01	1.0
-002	J00NB7	% Solids	98.2	%	0.01	1.0
		Cyanide, Total	0.48	u MG/KG	0.48	1.0
		Sulfide	33.2	u MG/KG	33.2	1.0
-003	J00NB8	% Solids	94.4	%	0.01	1.0
		Petroleum Hydrocarbons	44.8	MG/KG	3.5	1.0
-004	J00NB9	% Solids	98.0	%	0.01	1.0
		Cyanide, Total	0.46	u MG/KG	0.46	1.0
		Sulfide	33.9	u MG/KG	33.9	1.0
-005	J00NB5	% Solids	97.4	%	0.01	1.0
		pH	5.5	J SOIL PH	0.01	1.0
-006	J00NB6	% Solids	91.7	%	0.01	1.0
		pH	4.3	J SOIL PH	0.01	1.0
-007	J00NF1	% Solids	99.9	%	0.01	1.0
-008	J00ND7	% Solids	91.8	%	0.01	1.0
		Cyanide, Total	0.46	u MG/KG	0.46	1.0
		Sulfate by IC	2.9	MG/KG	1.4	1.0
		Petroleum Hydrocarbons	9.4	MG/KG	3.6	1.0
		Sulfide	36.1	u MG/KG	36.1	1.0
-009	J00ND8	% Solids	91.3	%	0.01	1.0
		Cyanide, Total	0.44	u MG/KG	0.44	1.0
		Sulfate by IC	3.3	MG/KG	1.4	1.0
		Petroleum Hydrocarbons	4.3	MG/KG	3.7	1.0
		Sulfide	42.7	u MG/KG	42.7	1.0

*pc*  
 5/31/03

000011

*ofc*

**Appendix 4**

**Laboratory Narrative and Chain-of-Custody Documentation**

**000012**



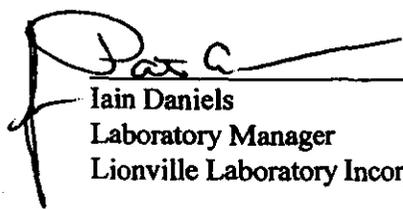
## Analytical Report

Client: TNU-HANFORD B03-015 H2213  
LVL#: 0305L401

W.O.#: 11343-606-001-9999-00  
Date Received: 05-14-03

### INORGANIC NARRATIVE

1. This narrative covers the analyses of 9 soil samples.
2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.
3. Sample holding times as required by the method and/or contract were met with the exception of Sulfide.
4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy.
5. The method blanks were within the method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits. The duplicate LCS for Sulfide was within the 20% Relative Percent Difference (RPD) control limit.
7. The matrix spike (MS) recoveries for Petroleum Hydrocarbons (PHC), Sulfate, Sulfide and Total Cyanide were within the 75-125% control limits. The MS duplicate for PHC was within the 20% RPD control limit.
8. The replicate analyses for Percent Solids, pH, Sulfate, Sulfide and Total Cyanide were within the 20% 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  
njp05-401

05-23-03  
Date

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 19 pages.

000013

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B03-015-91		Page 1 of 1			
Collector Doug Bowers		Company Contact Mike Stankovich		Telephone No. 372-9082		Project Coordinator KESSNER, JH		Price Code <b>8B</b>		Data Turnaround <b>7 Days</b>			
Project Designation Remaining Sites Confirmation Sampling-Soil		Sampling Location 600-131 (600 area)		SAF No. B03-015		Air Quality <input type="checkbox"/>							
Ice Chest No. <b>ERC 02 003</b>		Field Logbook No. EL-1578/5/8 2 6285-8-07		COA C17HXU600C		Method of Shipment Fed Ex							
Shipped To <u>TM/RECRA</u>		Offsite Property No. <b>A 030228</b>				Bill of Lading/Air Bill No. <b>SEE OSPC</b>							
<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b>  Samples did not originate in radiological controlled area. No total activity associated with sample/samples.			Preservation		None	Cool 4C	Cool 4C	None					
			Type of Container		aG	aG	aG	aG					
			No. of Container(s)		1	1	1	1					
			Volume		60mL	250mL	120mL	250mL					
<b>000014</b>  <b>SAMPLE ANALYSIS</b>			See item (1) in Special Instructions.		PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - EPA8151	Semi-VOA - 8270A (TCL)	pH (Soil) - 9045						
Sample No.	Matrix *	Sample Date	Sample Time										
J00NB5	SOIL	5-8-03	1100	X	X	X	X						
<del>J00NB6</del>	<del>SOIL</del>	<del>5-8-03</del>											
<b>CHAIN OF POSSESSION</b>				<b>Sign/Print Names</b>				<b>SPECIAL INSTRUCTIONS</b>					
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		(1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)  Personnel not available to relinquish samples from the 3728 Ref # <u>3C</u> on <u>5/13/03</u>					
Doug Bowers		5-8-03/1145		A.Y. JC		37285-8-03/1145							
REF 3C		3728 51303 1100		S.J. GALE		M. Adh 51303 1100							
S.J. GALE		M. Adh 51303 1100		FED EX									
Fed Ex		5/4/03 0935		J. J. Smith		5/4/03 0935							
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		<b>Matrix *</b> S=Soil SE=Sediment SO=Solid SL=Sludge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Times W=Wipe L=Liquid V=Vegetation X=Other					
<b>LABORATORY SECTION</b>		Received By		Title				Date/Time					
<b>FINAL SAMPLE DISPOSITION</b>		Disposal Method		Disposed By				Date/Time					

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B03-015-9!		Page 1 of 1				
Collector Doug Bowers		Company Contact Mike Stankovich		Telephone No. 372-9082		Project Coordinator KESSNER, JH		Price Code 8B Data Turnaround 7 Days				
Project Designation Remaining Sites Confirmation Sampling-Soil		Sampling Location 600-131 (600 area)		SAF No. B03-015		Air Quality <input type="checkbox"/>						
Ice Chest No. ERC 02 003		Field Logbook No. EL-1578		COA C17HXU600C		Method of Shipment Fed Ex						
Shipped To TMA/RECRA		Offsite Property No. A030228		Bill of Lading/Air Bill No. SJS OSPC								
POSSIBLE SAMPLE HAZARDS/REMARKS  Samples do not originate in radiological controlled area. No e total activity associated with sample/samples.				Preservation	None	Cool 4C	Cool 4C	None				
				Type of Container	aG	aG	aG	aG				
				No. of Container(s)	1	1	1	1				
				Volume	60mL	250mL	120mL	250mL				
000015  SAMPLE ANALYSIS				See item (1) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Hericides - EPA8151	Semi-VOA - 8270A (TCL)	pH (Soil) - 9045					
Sample No.	Matrix *	Sample Date	Sample Time									
J00NB5	SOIL	5-8-03	1100	X	X	X	X					
J00NB6	SOIL	5-12-03	1115	X	X	X	X					
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time		(1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)  Personnel not available to relinquish samples from the 3728 Ref # 34 on 5/14/03				
Doug Bowers/Doug Bowers		5-12-03/1645		R.F. JA 3728		5-12-03/1645						
REF 3A 3728		5/13/03 1100		SUGALED/Doh		5/13/03 1100						
SUGALED/Doh		5/13/03 1100		FED-EX								
SUGALED		5-14-03 0935		D. J. [Signature]		5-14-03 0935						
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		Matrix *				
LABORATORY SECTION		Received By		Title		Date/Time		S=Soil SE=Soil/moss SO=Soil SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Time WI=Wipe L=Liquid V=Vegetation X=Other				
FINAL SAMPLE DISPOSITION		Disposal Method		Disposed By		Date/Time						

<b>Bechtel Hanford Inc.</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>				B03-015-92	Page 1 of 1
Collector Doug Bowers	Company Contact Mike Stankovich	Telephone No. 372-9082		Project Coordinator KESSNER, JH		Price Code 8B	Data Turnaround 7 Days
Project Designation Remaining Sites Confirmation Sampling-Soil		Sampling Location 600-131 (600 area)		SAF No. B03-015		Air Quality <input type="checkbox"/>	
Ice Chest No. ERC 02 003	Field Logbook No. EL-1578 / 518-2070 / 1992	COA C17HXU600C		Method of Shipment Fed Ex			
Shipped To TMA/RECRA		Offsite Property No. A030228		Bill of Lading/Air Bill No. SEE OSPC			

<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b>  Samples did not originate in radiological controlled area. No total activity associated with sample/samples.	Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	4°C	4°C			
	Type of Container	aG	aG	aG	aG	aG	aG	aG			
	No. of Container(s)	1	1	1	1	1	1	1			
	Volume	60mL	250mL	120mL	60mL	60mL	125ml	125ml			

000016	<b>SAMPLE ANALYSIS</b>				See item (1) in Special Instructions.	PCBs - 8062; Pesticides - 8081; Chloro-Herbicides - EPA8151	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1	Sulfide 9030	Total Cyanide 9010
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Sample No.	Matrix *	Sample Date	Sample Time								
J00NB7	SOIL	5-8-03	1015	X	X	X			X	X	
J00NB8	SOIL	5-8-03	1400	X	X	X		X			
J00NB9	SOIL	5-8-03	1015	X	X	X			X	X	

<b>CHAIN OF POSSESSION</b>				<b>SPECIAL INSTRUCTIONS</b>				<b>Matrix *</b> S=Soil SB=Sediment SO=Solids Sl=Sediment W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue Wl=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From Doug Bowers Date/Time 5-8-03/1545	Received By/Stored In Ref 3C 3728 Date/Time 5-8-9/1545			(1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)  Personnel not available to relinquish samples from the 3728 Ref # 3C on 5/13/03				
Relinquished By/Removed From REF 3C 3728 Date/Time 5/13/03 1100	Received By/Stored In SJOALE Date/Time 5/13/03 1100							
Relinquished By/Removed From SJOALE Date/Time 5/13/03 1100	Received By/Stored In FED EX							
Relinquished By/Removed From Date/Time 5-14-03 0935	Received By/Stored In Date/Time 5-14-03 0935							
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time							
Relinquished By/Removed From Date/Time	Received By/Stored In Date/Time							

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

<b>Bechtel Hanford Inc.</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>			B03-015-93	Page 1 of 1
Collector Doug Bowers	Company Contact Mike Stankovich	Telephone No. 372-9082	Project Coordinator KESSNER, JH	Price Code 8B	Data Turnaround 7 Days	
Project Designation Remaining Sites Confirmation Sampling-Soil	Sampling Location 600-131 (600 area)	SAF No. B03-015	Air Quality <input type="checkbox"/>			
Ice Chest No. <b>ERC 02 003</b>	Field Logbook No. EL-1578-1518-2 B70 5-8-03	COA C17HXU600C	Method of Shipment Fed Ex			
Shipped To <b>TMA(RECRA)</b>	Offsite Property No. <b>A030228</b>	Bill of Lading/Air Bill No. <b>SEE OSPC</b>				

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Cool 4C	Cool 4C																																																																														
	Type of Container	aG	aG	aG																																																																														
	No. of Container(s)	1	1	1																																																																														
	Volume	60mL	120mL	60mL																																																																														
Samples did not originate in radiological controlled area. No total activity associated with sample/samples.	See item (1) in Special Instructions.	Semi-VOA - 8276A (TCL)	VOA - 8260A (TCL)																																																																															
	<table border="1"> <thead> <tr> <th>Sample No.</th> <th>Matrix *</th> <th>Sample Date</th> <th>Sample Time</th> <th></th> </tr> </thead> <tbody> <tr> <td>J00NC0</td> <td>SOIL</td> <td>5-8-03</td> <td>0955</td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> </tr> <tr> <td></td> </tr> <tr> <td></td> </tr> </tbody> </table>													Sample No.	Matrix *	Sample Date	Sample Time											J00NC0	SOIL	5-8-03	0955	X	X																																																	
Sample No.	Matrix *	Sample Date	Sample Time																																																																															
J00NC0	SOIL	5-8-03	0955	X	X																																																																													

<b>CHAIN OF POSSESSION</b>		<b>Sign/Print Names</b>		<b>SPECIAL INSTRUCTIONS</b>				<b>Matrix *</b> S=Soil SS=Soilment SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Time Wt=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From <i>Doug Bowers</i>	Date/Time 5-8-03/1545	Received By/Stored In <i>R. J. C.</i>	Date/Time 5-8-03/1545	Do not use this sample for QA/QC * (1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)  Personnel not available to relinquish samples from the 3728 Ref # <i>35</i> on <i>5/13/03</i>				
Relinquished By/Removed From <i>REF 3C 3728</i>	Date/Time 51303 1100	Received By/Stored In <i>S. GALE</i>	Date/Time 51303 1100					
Relinquished By/Removed From <i>S. GALE</i>	Date/Time 51303 1100	Received By/Stored In <i>FED EX</i>	Date/Time					
Relinquished By/Removed From <i>Med</i>	Date/Time 5-14-03 0935	Received By/Stored In <i>D. W. M.</i>	Date/Time 5/14/03 0935					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					

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

<b>Bechtel Hanford Inc.</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>				B03-015-95	Page 1 of 1
Collector Doug Bowers	Company Contact Renee Neilson	Telephone No. 521-2090	Project Coordinator KESSNER, JH		Price Code 8B	Data Turnaround 7 Days	
Project Designation Remaining Sites Confirmation Sampling-Soil		Sampling Location 628-1 White Bluffs burn pit		SAF No. B03-015	Air Quality <input type="checkbox"/>		
Ice Chest No. ERC 02 107	Field Logbook No. EL-1578	COA C17HXU600C	Method of Shipment Fed Ex				
Shipped To TMA/RECRE		Offsite Property No. A030228		Bill of Lading/Air Bill No. SEE OSPC			

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C		
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG	aG		
	No. of Container(s)	1	1	1	1	1	1	1	1	1		
	Volume	60mL	250mL	120mL	120mL	60mL	60mL	120mL	120mL			
Special Handling and/or Storage												
SAMPLE ANALYSIS		See item (1) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - EPA8151	See item (2) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1	Sulfides - 9030	Total Cyanide - 9010			
Sample No.	Matrix *	Sample Date	Sample Time									
J00ND7	SOIL	5-12-03	1430	X	X	X	X	X	X	X		
J00ND8	SOIL	5-12-03	1500	X	X	X	X	X	X	X		

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS		Matrix *
Relinquished By/Removed From Doug Bowers	Date/Time 5-12-03/1645	Received By/Stored In RAF 3A 3728	Date/Time 5-12-03/1645	(1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV) (2) IC Anions - 300.0 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate) 0405-7-03  Personnel not available to relinquish samples from the 3728 Ref # 3728 on 5-13-03		S=Soil SE=Settlement SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Time W=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From REF SA 3728	Date/Time 5-13-03 1000	Received By/Stored In SIGALE/Dr	Date/Time 5-13-03 1000			
Relinquished By/Removed From SJOAL/Dr	Date/Time 5-13-03 1000	Received By/Stored In FED EX	Date/Time			
Relinquished By/Removed From Diana	Date/Time 5-14-03 0935	Received By/Stored In Diana	Date/Time 5-14-03 0935			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time			

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

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B03-015-96		Page 1 of 1		
Collector Doug Bowers		Company Contact Renee Neilson		Telephone No. 521-2090		Project Coordinator KESSNER, JH		Price Code 8B Data Turnaround 7 Days		
Project Designation Remaining Sites Confirmation Sampling-Soil		Sampling Location 628-1 White Bluffs burn pit		SAF No. B03-015		Air Quality <input type="checkbox"/>				
Ice Chest No. <i>ERC 02 107</i>		Field Logbook No. EL-1578		COA C17HXU600C		Method of Shipment Fed Ex				
Shipped To <u>TMA/RECRA</u>		Offsite Property No. <i>A030 228</i>		Bill of Lading/Air Bill No. <i>SEE OSPL</i>						
POSSIBLE SAMPLE HAZARDS/REMARKS				Preservation	None	Cool 4C	Cool 4C			
Special Handling and/or Storage				Type of Container	aG	aG	aG			
				No. of Container(s)	1	1	1			
				Volume	60mL	120mL	60mL			
SAMPLE ANALYSIS				See item (1) in Special Instructions.	Semi-VOA - #270A (TCL)	VOA - #260A (TCL)				
000019	Sample No.	Matrix *	Sample Date	Sample Time						
	J00NF1	SOIL	5-12-03	1205	X	X				
CHAIN OF POSSESSION					SPECIAL INSTRUCTIONS				Matrix *	
Relinquished By/Removed From <i>Doug Bowers</i>		Date/Time <i>5-12-03/1645</i>		Received By/Stored In <i>Ref 3A 3728</i>		Date/Time <i>5-12-03/1645</i>		Do not use this sample for QA/QC (1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)  Personnel not available to relinquish samples from the 3728 Ref # <i>3A</i> on <i>5/13/03</i>		S=Soil SE=Sediment SO=Solid SI=Sudge W = Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From <i>REF 3A 3728</i>		Date/Time <i>5/30/03 1000</i>		Received By/Stored In <i>SJGALC/DEL</i>		Date/Time <i>5/30/03 1000</i>				
Relinquished By/Removed From <i>SJGALC/DEL</i>		Date/Time <i>5/30/03 1000</i>		Received By/Stored In <i>FED EX</i>		Date/Time				
Relinquished By/Removed From <i>Med E</i>		Date/Time <i>5-14-03 0935</i>		Received By/Stored In <i>JL/Drinch</i>		Date/Time <i>5-14-03 0935</i>				
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time				
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time				
LABORATORY SECTION	Received By	Title				Date/Time				
FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By				Date/Time				

**Appendix 5**

**Data Validation Supporting Documentation**

**000020**

**GENERAL CHEMISTRY DATA VALIDATION CHECKLISTS**

VALIDATION LEVEL:	A	B	<b>C</b>	D	E
PROJECT:	600-131 628-01		DATA PACKAGE: H2213		
VALIDATOR:	TLI	LAB: LLI	DATE: 5/31/03		
CASE:	SDG: H2213				
ANALYSES PERFORMED					
Anions/IC	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	pH	NO <sub>3</sub> /NO <sub>2</sub>
<b>Sulfate</b>	TDS	TKN	Phosphate	<b>TPH</b>	<b>Cyanide</b>
<b>sulfide</b>					
SAMPLES/MATRIX					
J00NB5 J00NB6 J00NB7 J00NB8 J00NB9					
J00NC0 J00ND7 J00ND8 J00NF1					
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 DATA VALIDATION CHECKLISTS**

**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: FB - 90 solids only  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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

Spike samples analyzed?.....  Yes No N/A  
Spike recoveries acceptable?.....  Yes No N/A  
Spike 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: NO PAS  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



**GENERAL CHEMISTRY DATA VALIDATION CHECKLISTS**

**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: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Appendix 6**

**Additional Documentation Requested by Client**

**000025**

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 05/22/03

CLIENT: TNUHANFORD B03-015 H2213  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L401

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	03LC045-MB1	Cyanide, Total	0.50	u MG/KG	0.50	1.0
BLANK10	03LSD020-MB1	Sulfide	40.0	u MG/KG	40.0	1.0
BLANK10	03LHC025-MB1	Petroleum Hydrocarbons	3.3	u MG/KG	3.3	1.0
BLANK10	03LIC031-MB1	Sulfate by IC	1.2	u MG/KG	1.2	1.0
BLANK1	03LCA45-MB1	Cyanide, Total	0.50	u MG/KG	0.50	1.0

000026

*06*

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 05/22/03

CLIENT: TNUHANFORD B03-015 H2213  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L401

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-003	J00NB6	Petroleum Hydrocarbons	173	44.8	148	86.9	1.0
		Petroleum Hydrocarbons	173	44.8	148	86.8	1.0
-008	J00ND7	Sulfate by IC	29.8	2.9	27.0	100	1.0
		Sulfide	634	18.1	673	91.5	1.0
-009	J00ND8	Cyanide, Total	4.59	0.44u	4.79	95.7	1.0
BLANK10	03LSD020-MB1	Sulfide	625	40.0 u	621	100.6	1.0
		Sulfide MSD	617	40.0 u	621	99.4	1.0
LCS10	03LMC025-LC1	Petroleum Hydrocarbons	128	3.3 u	140	91.2	1.0
BLANK10	03LIC031-MB1	Sulfate by IC	24.2	1.2 u	25.0	96.6	1.0

000027

*0/8*

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 05/22/03

CLIENT: TNUHANFORD B03-015 H2213  
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L401

SAMPLE	SITE ID	ANALYTE	SPIKE#1		SPIKE#2	
			%RECOV	%RECOV	%RECOV	%DIFF
-003	J00NB8	Petroleum Hydrocarbons	86.9	86.8	0.21	
BLANK10	03LSD020-MB1	Sulfide	100.6	99.4	1.3	

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Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 05/22/03

CLIENT: TNUHANFORD B03-015 H2213  
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0305L401

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION
			RESULT	REPLICATE	RPD	FACTOR (REP)
-001REP	J00NC0	‡ Solids	100	100	0.010	1.0
-005REP	J00NB5	pH	5.5	5.4	2.0	1.0
-008REP	J00ND7	Sulfate by IC	2.9	2.9	1.1	1.0
		Sulfide	36.1 u	42.4 u	NC	1.0
-009REP	J00ND8	Cyanide, Total	0.44u	0.52u	NC	1.0

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Date: 2 June 2003  
 To: Bechtel Hanford Inc. (technical representative)  
 From: TechLaw, Inc.  
 Project: Remaining Sites Confirmation Sampling - Soil -  
 Waste Sites 600-131 & 628-01  
 Subject: PCB/Pesticides/Herbicides - Data Package No. H2213-LLI (SDG No.  
 H2213)

## INTRODUCTION

This memo presents the results of data validation on Summary Data Package No. H2213-LLI prepared by Lionville Laboratory Incorporated (LLI). A list of the samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Waste Site	Analysis
J00NB5	5/8/03	Soil	C	600-131	See note 1
J00NB6	5/12/03	Soil	C	600-131	See note 1
J00NB7	5/8/03	Soil	C	600-131	See note 1,2,3
J00NB8	5/8/03	Soil	C	600-131	See note 1,2,3
J00NB9	5/8/03	Soil	C	600-131	See note 1,2,3
J00ND7	5/12/03	Soil	C	628-1	See note 1,2,3
J00ND8	5/12/03	Soil	C	628-1	See note 1,2,3

- 1 - PCBs by 8082.
- 2 - Pesticides by 8081A
- 3 - Herbicides by 8151A

Data validation was conducted in accordance with the Bechtel Hanford Incorporated (BHI) validation statement of work and the Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort, (BHI-01249, Rev. 3, March 2003). 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

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## **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 target compound results were acceptable.

### Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

### Matrix Spike

Matrix spike analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike analyses are performed in duplicate and must be within control limits of 70% to 130%. If spike recoveries are outside control

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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/matrix spike duplicate results below QC limits, all herbicide results except Dinoseb were qualified as estimates and flagged "J".

All other matrix spike results were acceptable.

### Surrogate Recovery

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

Due to the surrogate being diluted out, all pesticide results in samples J00NB7 and J00NB9 were qualified as estimates and flagged "J".

All other surrogate results were acceptable.

- **Precision**

### Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 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 an RPD outside QC limits (37%), all dalapon results were qualified as estimates and flagged "J".

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

#### Field Duplicate Samples

One set of field duplicates (J00NB7/J00NB9) were submitted for analysis. Field duplicate results are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the Remaining Waste Sites RQLs to ensure that laboratory detection levels meet the required criteria. Methoxychlor and toxaphene results in all samples and all pesticide results in samples J00NB7 and J00NB9 exceeded the analyte specific RQL. Under the BHI statement of work, no qualification is required.

- **Completeness**

Data Package No. H2213-LLI 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/matrix spike duplicate results below QC limits, all herbicide results except Dinoseb were qualified as estimates and flagged "J". Due to an RPD outside QC limits (37%), all dalapon results were qualified as estimates and flagged "J". Due to the surrogate being diluted out, all pesticide results in samples J00NB7 and J00NB9 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.

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Methoxychlor and toxaphene results in all samples and all pesticide results in samples J00NB7 and J00NB9 exceeded the analyte specific RQL. Under the BHI statement of work, no qualification is required.

## **REFERENCES**

BHI, MRB-SBB-A23665, *Validation Statement of Work*, Bechtel Hanford Incorporated, September 5, 1997.

BHI-01249, Rev. 3, *Data Quality Objectives Summary Report for 100/300 Area Remaining Sites Analytical Sampling Effort*, Bechtel Hanford Incorporated, March 2003.

**Appendix 1**  
**Glossary of Data Reporting Qualifiers**

**000006**

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).

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**Appendix 2**  
**Summary of Data Qualification**

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DATA QUALIFICATION SUMMARY

SDG: H2213	REVIEWER: TLI	DATE: 6/2/03	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All pesticide analytes	J	J00NB7 J00NB9	Surrogate diluted out
Dalapon	J	All	RPD
All herbicides except Dinoseb	J	All	MS/MSD recovery

000009

**Appendix 3**

**Qualified Data Summary and Annotated Laboratory Reports**

**000010**

Project: BECHTEL-HANFORD  
 Laboratory: Lionville Laboratory Inc.  
 Case: SDG: H2213

Sample Number	J00NB5	J00NB6	J00NB7	J00NB8	J00NB9	JOOND7	JOONDB										
Remarks					Duplicate												
Location	600-131	600-131	600-131	600-131	600-131	628-1	628-1										
Sample Date	5/8/03	5/12/03	5/8/03	5/8/03	5/8/03	5/12/03	5/12/03										
Extraction Date	5/15/03	5/15/03	5/15/03	5/15/03	5/15/03	5/15/03	5/15/03										
Analysis Date	5/19/03	5/19/03	5/19/03	5/19/03	5/19/03	5/19/03	5/19/03										
PCB	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aroclor-1016	20	15 U		16 U		15 U		16 U		15 U		16 U		16 U			
Aroclor-1221	20	15 U		16 U		15 U		16 U		15 U		16 U		16 U			
Aroclor-1232	20	15 U		16 U		15 U		16 U		15 U		16 U		16 U			
Aroclor-1242	20	15 U		16 U		15 U		16 U		15 U		16 U		16 U			
Aroclor-1248	20	15 U		16 U		15 U		16 U		15 U		16 U		16 U			
Aroclor-1254	20	15 U		16 U		15 U		16 U		15 U		16 U		16 U			
Aroclor-1260	20	15 U		16 U		15 U		16 U		15 U		16 U		16 U			

Sample Number	J00NB5	J00NB6	J00NB7	J00NB8	J00NB9	JOOND7	JOONDB										
Remarks					Duplicate												
Location	600-131	600-131	600-131	600-131	600-131	628-1	628-1										
Sample Date	5/8/03	5/12/03	5/8/03	5/8/03	5/8/03	5/12/03	5/12/03										
Extraction Date	5/15/03	5/15/03	5/15/03	5/15/03	5/15/03	5/15/03	5/15/03										
Analysis Date	5/19/03	5/19/03	5/19/03	5/19/03	5/19/03	5/19/03	5/19/03										
Pesticide	RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Alpha-BHC	5	NA		NA		8.5 UJ		1.8 U		8.5 UJ		1.8 U		1.8 U			
Beta-BHC	5	NA		NA		8.5 UJ		1.8 U		8.5 UJ		1.8 U		1.8 U			
Delta-BHC	5	NA		NA		8.5 UJ		1.8 U		8.5 UJ		1.8 U		1.8 U			
Gamma-BHC (Lindane)	5	NA		NA		8.5 UJ		1.8 U		8.5 UJ		1.8 U		1.8 U			
Heptachlor	5	NA		NA		8.5 UJ		1.8 U		8.5 UJ		1.8 U		1.8 U			
Aldrin	5	NA		NA		8.5 UJ		1.8 U		8.5 UJ		1.8 U		1.8 U			
Heptachlor Epoxide	5	NA		NA		8.5 UJ		1.8 U		8.5 UJ		1.8 U		1.8 U			
Endosulfan I	5	NA		NA		8.5 UJ		1.8 U		8.5 UJ		1.8 U		1.8 U			
Dieldrin	5	NA		NA		17 UJ		3.5 U		17 UJ		3.6 U		3.7 U			
4,4'-DDE	5	NA		NA		17 UJ		3.5 U		17 UJ		3.6 U		3.7 U			
Endrin	5	NA		NA		17 UJ		3.5 U		17 UJ		3.6 U		3.7 U			
Endosulfan II	5	NA		NA		17 UJ		3.5 U		17 UJ		3.6 U		3.7 U			
4,4'-DDD	5	NA		NA		17 UJ		3.5 U		17 UJ		3.6 U		3.7 U			
Endosulfan Sulfate	5	NA		NA		17 UJ		3.5 U		17 UJ		3.6 U		3.7 U			
4,4'-DDT	5	NA		NA		17 UJ		3.5 U		17 UJ		3.6 U		3.7 U			
Methoxychlor	5	NA		NA		85 UJ		18 U		85 UJ		18 U		18 U			
Endrin Ketone	5	NA		NA		17 UJ		3.5 U		17 UJ		3.6 U		3.7 U			
Endrin Aldehyde	5	NA		NA		17 UJ		3.5 U		17 UJ		3.6 U		3.7 U			
alpha-Chlordane	5	NA		NA		8.5 UJ		1.8 U		8.5 UJ		1.8 U		1.8 U			
gamma-Chlordane	5	NA		NA		8.5 UJ		1.8 U		8.5 UJ		1.8 U		1.8 U			
Toxaphene	5	NA		NA		850 UJ		180 U		850 UJ		180 U		180 U			

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Laboratory applied non-detect qualifiers "U" have been included in this table to minimize miss-interpretation of results. All other qualifiers shown were applied during validation. NA - Not analyzed

Project: BECHTEL-HANFORD																			
Laboratory: Lionville Laboratory Inc.																			
Case:		SDG: H2213																	
Sample Number		J00NB5			J00NB6			J00NB7		J00NB8		J00NB9		J00ND7		J00ND8			
Remarks		Duplicate																	
Location		600-131			600-131			600-131		600-131		600-131		628-1		628-1			
Sample Date		5/8/03			5/12/03			5/8/03		5/8/03		5/8/03		5/12/03		5/12/03			
Extraction Date		5/16/03			5/16/03			5/16/03		5/16/03		5/16/03		5/16/03		5/16/03			
Analysis Date		5/21/03			5/21/03			5/21/03		5/21/03		5/21/03		5/21/03		5/21/03		Result Q	
Herbicides		RQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	
Dalapon			NA		NA		340	UJ	350	UJ	340	UJ	910	UJ	370	UJ			
Dicamba			NA		NA		140	UJ	140	UJ	140	UJ	360	UJ	150	UJ			
Dichloroprop			NA		NA		340	UJ	350	UJ	340	UJ	910	UJ	370	UJ			
2,4-D			NA		NA		68	UJ	71	UJ	68	UJ	180	UJ	73	UJ			
2,4,5-TP (silvex)			NA		NA		34	UJ	35	UJ	34	UJ	91	UJ	37	UJ			
2,4,5-T			NA		NA		34	UJ	35	UJ	34	UJ	91	UJ	37	UJ			
2,4-DB			NA		NA		340	UJ	350	UJ	340	UJ	910	UJ	370	UJ			
Dinoseb			NA		NA		34	U	35	U	34	U	91	U	37	U			

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Lionville Laboratory, Inc.

PCBs by GC

Report Date: 05/21/03 13:37

RFW Batch Number: 0305L401

Client: TNUHANFORD B03-015 H2213 Work Order: 11343606001 Page: 1

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Sample Information	Cust ID:	J00NB7	J00NB8	J00NB8	J00NB8	J00NB9	J00NB5
	RFW#:	002	003	003 MS	003 MSD	004	005
	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	80 %	90 %	I %	110 %	80 %	130 * %
	Tetrachloro-m-xylene	85 %	95 %	65 %	105 %	85 %	100 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		15 U	16 U	88 %	112 %	15 U	15 U
Aroclor-1221		15 U	16 U	16 U	16 U	15 U	15 U
Aroclor-1232		15 U	16 U	16 U	16 U	15 U	15 U
Aroclor-1242		15 U	16 U	16 U	16 U	15 U	15 U
Aroclor-1248		15 U	16 U	16 U	16 U	15 U	15 U
Aroclor-1254		15 U	16 U	16 U	16 U	15 U	15 U
Aroclor-1260		15 U	16 U	118 %	122 %	15 U	15 U

000013

Sample Information	Cust ID:	J00NB6	J00ND7	J00ND8	PBLKUC	PBLKUC BS
	RFW#:	006	008	009	03LE0581-MB1	03LE0581-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate:	Decachlorobiphenyl	95 %	110 %	105 %	85 %	90 %
	Tetrachloro-m-xylene	95 %	110 %	100 %	100 %	100 %
		fl	fl	fl	fl	fl
Aroclor-1016		16 U	16 U	16 U	15 U	104 %
Aroclor-1221		16 U	16 U	16 U	15 U	15 U
Aroclor-1232		16 U	16 U	16 U	15 U	15 U
Aroclor-1242		16 U	16 U	16 U	15 U	15 U
Aroclor-1248		16 U	16 U	16 U	15 U	15 U
Aroclor-1254		16 U	16 U	16 U	15 U	15 U
Aroclor-1260		16 U	16 U	16 U	15 U	90 %

Handwritten signature and date: 5/31/03

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

Handwritten initials: JG/ST/ab

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

Report Date: 05/21/03 13:52

RFW Batch Number: 0305L401

Client: TNUHANFORD B03-015 H2213 Work Order: 11343606001 Page: 1

Cust ID:	J00NB7	J00NB7	J00NB7	J00NB8	J00NB9	J00ND7
Sample Information	RFW#: 002	002 MS	002 MSD	003	004	008
	Matrix: SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.: 5.00	5.00	5.00	1.00	5.00	1.00
	Units: UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene	D %	D %	D %	95 %	D %	115 %
Decachlorobiphenyl	D %	D %	D %	125 * %	D %	150 * %
-----fl-----fl-----fl-----fl-----fl-----fl-----fl						
Alpha-BHC	8.5 U	8.5 U	8.5 U	1.8 U	8.5 U	1.8 U
Beta-BHC	8.5 U	8.5 U	8.5 U	1.8 U	8.5 U	1.8 U
Delta-BHC	8.5 U	8.5 U	8.5 U	1.8 U	8.5 U	1.8 U
gamma-BHC (Lindane)	8.5 U	64 %	76 %	1.8 U	8.5 U	1.8 U
Heptachlor	8.5 U	78 %	90 %	1.8 U	8.5 U	1.8 U
Aldrin	8.5 U	70 %	78 %	1.8 U	8.5 U	1.8 U
Heptachlor epoxide	8.5 U	8.5 U	8.5 U	1.8 U	8.5 U	1.8 U
Endosulfan I	8.5 U	8.5 U	8.5 U	1.8 U	8.5 U	1.8 U
Dieldrin	17 U	67 %	79 %	3.5 U	17 U	3.6 U
4,4'-DDE	17 U	17 U	17 U	3.5 U	17 U	3.6 U
Endrin	17 U	83 %	94 %	3.5 U	17 U	3.6 U
Endosulfan II	17 U	17 U	17 U	3.5 U	17 U	3.6 U
4,4'-DDD	17 U	17 U	17 U	3.5 U	17 U	3.6 U
Endosulfan sulfate	17 U	17 U	17 U	3.5 U	17 U	3.6 U
4,4'-DDT	17 U	78 %	97 %	3.5 U	17 U	3.6 U
Methoxychlor	85 U	85 U	85 U	18 U	85 U	18 U
Endrin ketone	17 U	17 U	17 U	3.5 U	17 U	3.6 U
Endrin aldehyde	17 U	17 U	17 U	3.5 U	17 U	3.6 U
alpha-Chlordane	8.5 U	8.5 U	8.5 U	1.8 U	8.5 U	1.8 U
gamma-Chlordane	8.5 U	8.5 U	8.5 U	1.8 U	8.5 U	1.8 U
Toxaphene	850 U	850 U	850 U	180 U	850 U	180 U

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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

*Handwritten signature and date: 5/21/03*

*Handwritten signature*

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

Report Date: 05/21/03 13:52

RFW Batch Number: 0305L401

Client: TNUHANFORD B03-015 H2213 Work Order: 11343606001 Page: 2

Sample Information	Cust ID:	J00ND8	PBLKUC	PBLKUC BS
RFW#:	009	03LE0581-MB1	03LE0581-MB1	
Matrix:	SOIL	SOIL	SOIL	
D.F.:	1.00	1.00	1.00	
Units:	UG/KG	UG/KG	UG/KG	

Surrogate:	Tetrachloro-m-xylene	110 %	105 %	100 %
	Decachlorobiphenyl	145 * %	135 * %	135 * %

	fl	fl	fl	fl	fl
Alpha-BHC	1.8 U	1.7 U	1.7 U		
Beta-BHC	1.8 U	1.7 U	1.7 U		
Delta-BHC	1.8 U	1.7 U	1.7 U		
gamma-BHC (Lindane)	1.8 U	1.7 U	98 %		
Heptachlor	1.8 U	1.7 U	102 %		
Aldrin	1.8 U	1.7 U	92 %		
Heptachlor epoxide	1.8 U	1.7 U	1.7 U		
Endosulfan I	1.8 U	1.7 U	1.7 U		
Dieldrin	3.7 U	3.3 U	108 %		
4,4'-DDE	3.7 U	3.3 U	3.3 U		
Endrin	3.7 U	3.3 U	128 %		
Endosulfan II	3.7 U	3.3 U	3.3 U		
4,4'-DDD	3.7 U	3.3 U	3.3 U		
Endosulfan sulfate	3.7 U	3.3 U	3.3 U		
4,4'-DDT	3.7 U	3.3 U	122 %		
Methoxychlor	18 U	17 U	17 U		
Endrin ketone	3.7 U	3.3 U	3.3 U		
Endrin aldehyde	3.7 U	3.3 U	3.3 U		
alpha-Chlordane	1.8 U	1.7 U	1.7 U		
gamma-Chlordane	1.8 U	1.7 U	1.7 U		
Toxaphene	180 U	170 U	170 U		

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*Handwritten signature and date: 5/19/03*

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

*Handwritten signature: J. Gustafson*

Lionville Laboratory, Inc.

Herbicides, Special List

Report Date: 05/21/03 13:40

RFW Batch Number: 0305L401

Client: TNUHANFORD B03-015 H2213 Work Order: 11343606001 Page: 1

	Cust ID:	J00NB7	J00NB7	J00NB7	J00NB8	J00NB9	J00ND7
Sample Information	RFW#:	002	002 MS	002 MSD	003	004	008
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	2.00	2.00	2.00	2.00	2.00	5.00
	Units:	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Surrogate:	DCAA	66 %	61 %	105 %	77 %	40 %	52 %
		fl	fl	fl	fl	fl	fl
Dalapon		340 U J	53 %	38 * %	350 U J	340 U J	910 U J
Dicamba		140 U	8 * %	9 * %	140 U	140 U	360 U
Dichloroprop		340 U	30 * %	21 * %	350 U	340 U	910 U
2,4-D		68 U	37 * %	37 * %	71 U	68 U	180 U
2,4,5-TP (Silvex)		34 U	34 * %	25 * %	35 U	34 U	91 U
2,4,5-T		34 U	30 * %	26 * %	35 U	34 U	91 U
2,4-DB		340 U	29 * %	28 * %	350 U	340 U	910 U
Dinoseb		34 U	42 %	34 %	35 U	34 U	91 U

000016

	Cust ID:	J00ND8	PBLKUE	PBLKUE BS
Sample Information	RFW#:	009	03LE0589-MB1	03LE0589-MB1
	Matrix:	SOIL	SOIL	SOIL
	D.F.:	2.00	1.00	1.00
	Units:	ug/kg	ug/kg	ug/kg
Surrogate:	DCAA	38 %	121 %	116 %
		fl	fl	fl
Dalapon		370 U J	170 U	93 %
Dicamba		150 U	67 U	50 %
Dichloroprop		370 U	170 U	103 %
2,4-D		73 U	33 U	90 %
2,4,5-TP (Silvex)		37 U	17 U	103 %
2,4,5-T		37 U	17 U	103 %
2,4-DB		370 U	170 U	106 %
Dinoseb		37 U	17 U	94 %

*Handwritten notes:*  
 PL  
 5/31/03  
 [Signature]

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

**Appendix 4**

**Laboratory Narrative and Chain-of-Custody Documentation**

**000017**



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Analytical Report

Client: TNU HANFORD B03-015  
LVL#: 0305L401  
SDG/SAF#: H2213/B03-015

W.O.#: 11343-606-001-9999-00  
Date Received: 05-14-03

**HERBICIDE**

The set of samples consisted of five (5) soil samples collected on 05-08,12-03.

The samples and their associated QC samples were extracted on 05-16-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 05-21-03. The extraction and analysis procedure was based on method 8151A.

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 LVL'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. All surrogate recoveries were within acceptance criteria.
5. All blank spike recoveries were within acceptance criteria.
6. Thirteen (13) of sixteen (16) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. All samples required instrument dilutions due to matrix interferences. Reporting limits have been adjusted to reflect the necessary dilutions.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

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 16 pages.

**000018**

10. 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

5/22/03  
Date

pef7somr:\group\data\herb\lmu\04L-401.doc



000019

*BL*



**Analytical Report**

Client: TNU-HANFORD B03-015  
LVL #: 0305L401  
SDG/SAF #: H2213/B03-015

W.O. #: 11343-606-001-9999-00  
Date Received: 05-14-03

**PCB**

The set of samples consisted of seven (7) soil samples collected on 05-08,12-03.

The samples and their associated QC samples were extracted on 05-15-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 05-19,20-03. The extraction procedure was based on method 3540 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 LVL's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. All samples and their associated QC samples received Sulfuric Acid and Sulfur cleanups.
4. The method blank was below the reporting limits for all target compounds.
5. One (1) of twenty-one (21) obtainable surrogate recoveries was outside QC limits; however, the surrogate recovery acceptance criteria were met (i.e., no more than one outlier per sample).
6. All blank spike recoveries were within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
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 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

5/20/03  
Date

pefr:\group\data\pest\tnu hanford\05L-401.pcb

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 13 pages.

000020



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**Analytical Report**

**Client:** TNU-HANFORD B03-015  
**LVL #:** 0305L401  
**SDG/SAF #:** H2213/B03-015

**W.O. #:** 11343-606-001-9999-00  
**Date Received:** 05-14-03

**PESTICIDE**

The set of samples consisted of five (5) soil samples collected on 05-08,12-03.

The samples and their associated QC samples were extracted on 05-15-03 and analyzed according to Lionville Laboratory OPs based on SW846, 3rd Edition procedures on 05-20,21-03. The extraction procedure was based on method 3540 and the extracts were analyzed based on method 8081A.

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

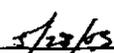
1. All results presented in this report are derived from samples that met LvLI's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. All samples and their associated QC samples received Florisil and Sulfur cleanups.
4. The method blank was below the reporting limits for all target compounds.
5. Five (5) of ten (10) obtainable surrogate recoveries were outside QC limits; however, the surrogate recovery acceptance criteria were met (i.e., no more than one outlier per sample).
6. All blank spike recoveries were within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. Most samples required instrument dilutions due to the high concentrations of non-target analytes. Reporting limits have been adjusted to reflect the necessary dilutions.
9. All initial calibrations associated with this data set were within acceptance criteria.
10. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

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 15 pages.

**000021**

11. 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

  
Date

pefr:\group\data\pest\tnu hanford\05L-401.pes



000022



Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				B03-015-91		Page 1 of 1															
Collector Doug Bowers		Company Contact Mike Stankovich		Telephone No. 372-9082		Project Coordinator KESSNER, JH		Price Code 8B Data Turnaround 7 Days															
Project Designation Remaining Sites Confirmation Sampling-Soil		Sampling Location 600-131 (600 area)			SAF No. B03-015		Air Quality <input type="checkbox"/>																
Ice Chest No. ERC 02 003		Field Logbook No. EL-578/510 2 0285-8-07		COA C17HXU600C		Method of Shipment Fed Ex																	
Shipped To TM/RECRA		Offsite Property No. A030228			Bill of Lading/Air Bill No. SEE OSC																		
POSSIBLE SAMPLE HAZARDS/REMARKS					Preservation	None	Cool 4C	Cool 4C	None														
Samples did not originate in radiological controlled area. No total activity associated with sample/samples.					Type of Container	aG	aG	aG	aG														
					No. of Container(s)	1	1	1	1														
					Volume	60mL	250mL	120mL	250mL														
SAMPLE ANALYSIS					See item (1) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Hydrocarbons - 808151	Semi-VOA - 8270A (TCL)	pH (Soil) - 9045															
000023																							
Sample No.	Matrix *	Sample Date	Sample Time																				
J00NB5	SOIL	5-8-03	1100	X	X	X	X																
J00NB6	SOIL	5-8-03																					
CHAIN OF POSSESSION					SPECIAL INSTRUCTIONS					Matrix *													
Relinquished By/Removed From Doug Bowers Bowers 5-8-03/1545		Date/Time		Received By/Stored In N.Y.C. 37285-8-03/1545		Date/Time		(1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)  Personnel not available to relinquish samples from the 3728 Ref # SC on 5/13/03					S=Soil SE=Settlement SO=Solid SL=Sludge W=Water O=Oil A=Air DS=Dry Solids DL=Dry Liquids T=Tissue WI=Wipe L=Liquid V=Vegetation X=Other										
Relinquished By/Removed From REF 3 C 3728		Date/Time 5/13/03 1100		Received By/Stored In SIGALE M. Del		Date/Time 5/13/03 1100																	
Relinquished By/Removed From SIGALE M. Del		Date/Time 5/13/03 1100		Received By/Stored In FED EX		Date/Time																	
Relinquished By/Removed From Fed Ex		Date/Time 5/14/03 0935		Received By/Stored In N.Y. District		Date/Time 5/14/03 0935																	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time																	
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time																	
LABORATORY SECTION		Received By			Title			Date/Time															
FINAL SAMPLE DISPOSITION		Disposal Method			Disposed By			Date/Time															

<b>Bechtel Hanford Inc.</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>			B03-015-9!	Page 1 of 1
Collector Doug Bowers	Company Contact Mike Stankovich	Telephone No. 372-9082	Project Coordinator KESSNER, JH		Price Code 8B	Data Turnaround 7 Days
Project Designation Remaining Sites Confirmation Sampling-Soil		Sampling Location 600-131 (600 area)	SAF No. B03-015		Air Quality <input type="checkbox"/>	
Ice Chest No. ERC 02 003	Field Logbook No. EL-1578	COA C17HXU600C	Method of Shipment Fed Ex			
Shipped To TMA/RECRA		Offsite Property No. A030228	Bill of Lading/Air Bill No. SEE ASPC			

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Cool 4C	Cool 4C	None								
	Type of Container	aG	aG	aG	aG								
	No. of Container(s)	1	1	1	1								
	Volume	60mL	250mL	120mL	250mL								
Samples did not originate in radiological controlled area. No total activity associated with sample/samples.	See item (1) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Hericides - EPA8151	Semi-VOA - 8270A (TCL)	pH (Soil) - 9045									
	0000224												
Sample No.	Matrix *	Sample Date	Sample Time										
J00NB5	SOIL	5-8-03	1100	X	X	X	X						
J00NB6	SOIL	5-12-03	1115	X	X	X	X						

<b>CHAIN OF POSSESSION</b>		<b>Sign/Print Names</b>		<b>SPECIAL INSTRUCTIONS</b>				<b>Matrix *</b>
Relinquished By/Removed From Doug Bowers	Date/Time 5-12-03/1645	Received By/Stored In R.F. 3A 3728	Date/Time 5-12-03/1645	(1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)  Personnel not available to relinquish samples from the 3728 Ref # 3A on 5-14-03				S=Soil
Relinquished By/Removed From REF 3A 3728	Date/Time 5-13-03 1100	Received By/Stored In JUGALE S/Del	Date/Time 5-13-03 1100					SE=Sediment
Relinquished By/Removed From JUGALE S/Del	Date/Time 5-13-03 1100	Received By/Stored In FED EX	Date/Time					SL=Sludge
Relinquished By/Removed From Mike B	Date/Time 5-14-03 0935	Received By/Stored In JUGALE S/Del	Date/Time 5-14-03 0935					W=Water
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					O=Oil
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time					A=Air
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	DS=Drum Solids				
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	DL=Drum Liquids				
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	T=Tissue				
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	WL=Wipe				
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	L=Liquid				
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	V=Vegetation				
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time	X=Other				

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

Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST					B03-015-92		Page 1 of 1			
Collector Doug Bowers		Company Contact Mike Stankovich		Telephone No. 372-9082		Project Coordinator KESSNER, JH		Price Code <b>8B</b>		Data Turnaround		
Project Designation Remaining Sites Confirmation Sampling-Soil		Sample Location 600-131 (600 area)		SAF No. B03-015		Air Quality <input type="checkbox"/>		7 Days				
Ice Chest No. <b>ERC 02 003</b>		Field Logbook No. 7-8-03 EL-1528/1518-2070/1518-2		COA C17HXU600C		Method of Shipment Fed Ex						
Shipped To TMA/RECRA		Offsite Property No. <b>A030228</b>		Bill of Lading/Air Bill No. <b>EEB 08PC</b>								
POSSIBLE SAMPLE HAZARDS/REMARKS  Samples do not originate in radiological controlled area. No total activity associated with sample/samples.				Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	4°C	7°C	
				Type of Container	aG	aG	aG	aG	aG	aG	aG	aG
				No. of Container(s)	1	1	1	1	1	1	1	1
				Volume	60mL	250mL	120mL	60mL	60mL	125ml	125ml	
SAMPLE ANALYSIS				See item (1) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - EPA8151	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1	Sulfides 9030	Total 9010		
				Sample No.	Matrix *	Sample Date	Sample Time					
000025	J00NB7	SOIL	5-8-03	1015	X	X	X		X	X		
	J00NB8	SOIL	5-8-03	1400	X	X	X	X				
	J00NB9	SOIL	5-8-03	1015	X	X	X		X	X		
CHAIN OF POSSESSION				Sign/Print Names				SPECIAL INSTRUCTIONS				Matrix *
Relinquished By/Removed From Doug Bowers		Date/Time 5-8-03/1545		Received By/Stored In Ref 3C 3728		Date/Time 5-8-03/1545		(1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV)  Personnel not available to relinquish samples from the 3728 Ref # 3C on 5/13/03				S=Soil SB=Sediment SO=Soil SI=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue W=Wipe L=Liquid V=Vegetation X=Other
Relinquished By/Removed From SJOALE		Date/Time 5/3/03 1100		Received By/Stored In SJOALE		Date/Time 5/3/03 1100						
Relinquished By/Removed From SJOALE		Date/Time 5/3/03 1100		Received By/Stored In FED EX		Date/Time						
Relinquished By/Removed From SJOALE		Date/Time 5-14-03 0935		Received By/Stored In SJOALE		Date/Time 5-14-03 0935						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time						
Relinquished By/Removed From		Date/Time		Received By/Stored In		Date/Time						
LABORATORY SECTION	Received By			Title			Date/Time					
FINAL SAMPLE DISPOSITION	Disposal Method			Disposed By			Date/Time					

<b>Bechtel Hanford Inc.</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>				B03-015-95		Page 1 of 1	
Collector Doug Bowers		Company Contact Renee Neilson		Telephone No. 521-2090		Project Coordinator KESSNER, JH		Price Code 8B Data Turnaround 7 Days	
Project Designation Remaining Sites Confirmation Sampling-Soil		Sampling Location 628-1 White Bluffs burn pit		SAF No. B03-015		Air Quality <input type="checkbox"/>			
Ice Chest No. <i>ERC 02 107</i>		Field Logbook No. EL-1578		COA C17HXU600C		Method of Shipment Fed Ex			
Shipped To TMA/RECRA		Offsite Property No. <i>A030228</i>		Bill of Lading/Air Bill No. <i>SEE ASPC</i>					

POSSIBLE SAMPLE HAZARDS/REMARKS	Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C		
	Type of Container	aG	aG	aG	aG	aG	aG	aG	aG		
	No. of Container(s)	1	1	1	1	1	1	1	1		
	Volume	60mL	250mL	120mL	120mL	60mL	60mL	120mL	120mL		
Special Handling and/or Storage											
SAMPLE ANALYSIS		See item (1) in Special Instructions.	PCBs - 8082; Pesticides - 8081; Chloro-Herbicides - EPA8151	See item (2) in Special Instructions.	Semi-VOA - 8270A (TCL)	VOA - 8260A (TCL)	TPH (Total) - 418.1	Solubles - 9030	Total Cyanide - 9010		
Sample No.	Matrix *	Sample Date	Sample Time								
J00ND7	SOIL	5-12-03	1430	X	X	X	X	X	X	X	
J00ND8	SOIL	5-12-03	1500	X	X	X	X	X	X	X	

CHAIN OF POSSESSION		Sign/Print Names		SPECIAL INSTRUCTIONS		Matrix *
Relinquished By/Removed From <i>Doug Bowers</i>	Date/Time <i>5-12-03/1645</i>	Received By/Stored In <i>RNF 3A 3728</i>	Date/Time <i>5-12-03/1645</i>	(1) ICP Metals - 6010TR (Client List) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Mercury - 7471 - (CV) (2) IC Anions - 300.0 (Bromide, Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate) <i>070 5-7-03</i>  Personnel not available to relinquish samples from the 3728 Ref # <i>3A</i> on <i>5-13-03</i>		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
Relinquished By/Removed From <i>REF 3A 3728</i>	Date/Time <i>5-13-03 1000</i>	Received By/Stored In <i>SIGALC/Dick</i>	Date/Time <i>5-13-03 1000</i>			
Relinquished By/Removed From <i>3728/Dick</i>	Date/Time <i>5-13-03 1000</i>	Received By/Stored In <i>FED EX</i>	Date/Time			
Relinquished By/Removed From <i>Deora</i>	Date/Time <i>5-14-03 0935</i>	Received By/Stored In <i>DL/Neilson</i>	Date/Time <i>5-14-03 0935</i>			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time			
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time			

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

12

**Appendix 5**  
**Data Validation Supporting Documentation**

**000027**

**PESTICIDE/PCB DATA VALIDATION CHECKLIST**

VALIDATION LEVEL:	A	B	<b>C</b>	D	E
PROJECT:	600-131	628-01	DATA PACKAGE: H 2213		
VALIDATOR:	TL1	LAB:	LLF	DATE: 5/31/03	
CASE:			SDG:	H2213	
<b>ANALYSES PERFORMED</b>					
<b>SW-846 8081</b>	SW-846 8081 (TCLP)	<b>SW-846 8082</b>	SW-846 8081 (TCLP)	<b>8151A</b>	
<b>SAMPLES/MATRIX</b>					
T00NB5 T00NB6 T00NB7 T00NB8 T00ND7 T00ND5					
T00NB9					

**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: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

PESTICIDE/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: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

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? ..... NO ~~Yes~~ ~~N/A~~ per SU  
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: pest surr. diluted at 1:10 B7, B9 - J NO PAS  
Herb all but dinitro J due to low MS/MSD  
Datapoint 37% herb

**PESTICIDE/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: Dalaper 3790 - I all

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**6. SYSTEM PERFORMANCE (Levels D and E)**

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

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

Comments: \_\_\_\_\_

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**7. HOLDING TIMES (all levels)**

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

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

Comments: \_\_\_\_\_

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**PESTICIDE/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: methoxychlor + toxaphene over  
pest in B7 + B9

**9. SAMPLE CLEANUP (Levels D and E)**

- Fluorocil ® (or other absorbant) 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: \_\_\_\_\_

