REVIEW COMMENT RECORD (RCR)

1. Date 04/05/05	2. Review No.
3. Project No. 200-LW-1/LW-2	4. Page 1 of 1

5. Document Number(s)/Title(s)	6. Program/Project/Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
Validation Package for SDG H2815	Borehole Soil Sampling	RL Weiss	ERC - S&DM	Sigma 1 372-9631

17. Comment Submittal Approval:	10. Agreement with indicated comment disposition(s)	11. Closed
Organization Manager (Optional)	R. L. Weiss Reviewer/Point of Contact 04/05/2005 Date R. L. Weiss Author/Originator	Reviewer/Point of Contact 4-15-05 Date Author/Originator

12. Item	13. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Reviewer Concurrence Required	15. Disposition (Provide justification if NOT accepted.)	16. Status
1	Wet Chemistry, Page 24; The checklist should not identify "J" flagging for missed CRDL		Cancel	ok RLW 4-15-05
2	Semivolatile, Pages 3& 4; Phrase "except ethylene glycol" in CRDL discussion should include phenol (detect).		Cancel	ok RLW 4-15-05
3	Semivolatile, Page 11; "*" is not defined. If to identify missed CRDL, ethylene glycol is miss-marked.		remove	ok RLW 4-15-05
4	Inorganic, Pages 3, 4, 8, 10, 11, & 18; Hg should not be flagged., sample concentration > 4X spike amount.		Cancel	ok RLW 4-15-05
5	Inorganic, Page 1; Metals analysis method is ICP not ICP/MS		Cancel	ok RLW 4-15-05
6	Volatile, PCB, & Rad – No Comments			

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OCT 27 2005
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ORP-114
(02/02)

ORP - REVIEW COMMENT RECORD (RCR)

1. Date	2. Review No.
April 4, 2005	N/A
3. Project No. 200-LW-1 & 2	4. Page 1 of 1

5. Document Number(s)/Title(s)	6. Program/Project/Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
Data Package SDG H2815	GRP/200-LW-1 & 2, Characterization - soil	Bill Thackaberry	Env & Science Assurance (QA)	E6-35 372-0742

17. Comment Submittal Approval	10. Agreement with indicated comment disposition(s)	11. CLOSED
Organization Manager (optional)	4/14/05 Date; Reviewer/Point of Contact; Requester	4/14/05 Date; Reviewer/Point of Contact; Requester

12. Item	13a. Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/resolve the discrepancy/problem indicated.)	14. Reviewer Concurrence Required	15. Disposition (Provide justification if NOT accepted). Provide separate attachments if necessary.	16. Status
1	Radiochemistry, pg 3 & 4, A BHI sow is mentioned in the sections on detection levels and minor deficiencies. This task was to be performed to the requirements in a Fluor Hanford SOW.			C
2	Semivolatiles, pg 10 & 11, The header on the Qualified Data Summary pages show BECHTEL-HANFORD in the project line.			C
3	Wet Chemistry, pg 4, A BHI sow is mentioned in the sections on analytical detection levels and minor deficiencies. This task was to be performed to the requirements in a Fluor Hanford SOW.			C
	no comment on Inorganics, PCB & Volatiles			

F03-025

APR 2005
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Date: 24 March 2005
To: Fluor Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 200-LW-1/LW-2 Characterization - Soil
Subject: Semivolatile - Data Package No. H2815

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2815 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	Media	Validation	Analysis
B19HY6	10/26/04	Soil	C	See note 1

1 -Semivolatiles by 8270C, TPH-D (diesel and kerosene) and ethylene glycol by 8015B.

Data validation was conducted in accordance with the FHI validation statement of work and the 200-LW-1/200-LW-2 Chemical Laboratory Waste Group OUs RI/FS Work Plan (DOE/RL-2001-66, Draft A, Redline, May 2002). Appendices 1 through 5 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

- **Holding Times/Sample Preservation**

Analytical holding times were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: 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, 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 less than twice the limit, all analytical results were qualified as estimates and flagged "J".

- **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".

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike

Matrix spike/matrix spike duplicate and blank spike sample analyses are used to assess the analytical accuracy of the reported data. Matrix spike/matrix duplicate results are used to assess 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 and blank spike 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".

All surrogate results were acceptable.

- **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 +/-35%. 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.

All MS/MSD RPD results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required target quantitation limits (RTQL's) to ensure that laboratory detection levels meet the required criteria. All undetected results (except ethylene glycol) exceeded the anaylyte specific RTQL. Under the FHI statement of work, no qualification is required.

- **Completeness**

Data package No. H2815 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 less than twice the limit, all analytical results were qualified as estimates and flagged "J". Data flagged "J" is an estimate, but under the FHI validation SOW, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

All undetected results (except ethylene glycol) exceeded the anaylyte specific RTQL. Under the FHI statement of work, no qualification is required.

REFERENCES

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

DOE/RL-2001-66, Draft A, Redline, *200-LW-1/200-LW-2 Chemical Laboratory Waste Group OUs RI/FS Work Plan*, May 2002.

Appendix 1

Glossary of Data Reporting Qualifiers

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

U - Indicates the compound or analyte was analyzed for and not detected in the sample. The value reported is the 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).

Appendix 2

Summary of Data Qualification

SEMIVOLATILE DATA QUALIFICATION SUMMARY*

SDG: H2815	REVIEWER: TLI	DATE: 3/24/05	PAGE_1_OF_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All	J	All	Holding time

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

SEMIVOLATILE /8015B ANALYSIS, SOIL MATRIX, (UG/KG)

Project: FLUOR-HANFORD			
Laboratory: LLI			
Case:	SDG: H2815		
Sample Number		B19HY6	
Remarks			
Sample Date		10/26/04	
Extraction Date		11/20/04	
Analysis Date		11/22/04	
Semivolatile/8015B	RTQL	Result	Q
Phenol	330	24	J
bis(2-Chloroethyl)ether		360	UJ
2-Chlorophenol		360	UJ
1,3-Dichlorobenzene		360	UJ
1,4-Dichlorobenzene		360	UJ
1,2-Dichlorobenzene		360	UJ
2-methylphenol		360	UJ
2,2'-oxybis(1-chloropropane)		360	UJ
3 and/or 4-Methylphenol		360	UJ
N-Nitroso-di-n-propylamine		360	UJ
Hexachloroethane		360	UJ
Nitrobenzene		360	UJ
Isophorone		360	UJ
2-Nitrophenol		360	UJ
2,4-Dimethylphenol		360	UJ
bis(2-Chloroethoxy)methane		360	UJ
2,4-Dichlorophenol		360	UJ
1,2,4-Trichlorobenzene		360	UJ
Naphthalene		360	UJ
4-Chloroaniline		360	UJ
Hexachlorobutadiene		360	UJ
4-Chloro-3-methylphenol		23	J
2-Methylnaphthalene		360	UJ
Hexachlorocyclopentadiene		360	UJ
2,4,6-Trichlorophenol		360	UJ
2,4,5-Trichlorophenol		900	UJ
2-Chloronaphthalene		360	UJ
2-Nitroaniline		900	UJ
Dimethylphthalate		360	UJ
Acenaphthylene		360	UJ
2,6-Dinitrotoluene		360	UJ
3-Nitroaniline		900	UJ
Acenaphthene		360	UJ

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

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SEMIVOLATILE /8015B ANALYSIS, SOIL MATRIX, (UG/KG)

Project: FLUOR-HANFORD			
Laboratory: LLI			
Case:	SDG: H2815		
Sample Number		B19HY6	
Remarks			
Sample Date		10/26/04	
Extraction Date		11/20/04	
Analysis Date		11/22/04	
Semivolatile/8015B		Result	Q
2,4-Dinitrophenol		900	UJ
4-Nitrophenol		900	UJ
Dibenzofuran		360	UJ
2,4-Dinitrotoluene		360	UJ
Diethylphthalate		360	UJ
4-Chlorophenyl-phenyl ether		360	UJ
Fluorene		360	UJ
4-Nitroaniline		900	UJ
4,6-Dinitro-2-methylphenol		900	UJ
N-Nitrosodiphenylamine		360	UJ
4-Bromophenyl-phenyl ether		360	UJ
Hexachlorobenzene		360	UJ
Pentachlorophenol		900	UJ
Phenanthrene		360	UJ
Anthracene		360	UJ
Carbazole		360	UJ
Di-n-butylphthalate		360	UJ
Fluoranthene		360	UJ
Pyrene		21	J
Butylbenzylphthalate		360	UJ
3,3'-Dichlorobenzidine		360	UJ
Benzo(a)anthracene		360	UJ
Chrysene		360	UJ
bis(2-Ethylhexyl)phthalate		700	J
Di-n-octylphthalate		360	UJ
Benzo(b)fluoranthene		360	UJ
Benzo(k)fluoranthene		360	UJ
Benzo(a)pyrene		360	UJ
Indeno(1,2,3-cd)pyrene		360	UJ
Dibenz(a,h)anthracene		360	UJ
Benzo(g,h,i)perylene		360	UJ
Tributylphosphate	330	360	UJ
Diesel Range Organics	5	13.0	UJ
Kerosene	5	13.0	UJ
Ethylene glycol	5	5.00	UJ

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

Lionville Laboratory, Inc.

Semivolatiles by GC/MS, Special List

Report Date: 11/26/04 13:52

RFW Batch Number: 0411L115 Client: TNUHANFORD F03-025 H2815 Work Order: 11343606001 Page: 1a

	Cust ID:	B19HY6		B19HY6		B19HY6		SBLKAU		SBLKAU BS	
Sample Information	RFW#:	001		001 MS		001 MSD		04LE1409-MB1		04LE1409-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 Recovery	Nitrobenzene-d5	55	%	58	%	49	%	65	%	58	%
	2-Fluorobiphenyl	73	%	74	%	66	%	81	%	75	%
	p-Terphenyl-d14	96	%	94	%	80	%	114	%	91	%
	Phenol-d5	75	%	77	%	65	%	81	%	68	%
	2-Fluorophenol	70	%	75	%	59	%	80	%	64	%
	2,4,6-Tribromophenol	99	%	98	%	85	%	90	%	96	%
Phenol		24	KJ	70	%	62	%	330	U	60	%
bis(2-Chloroethyl)ether		360	U	360	U	360	U	330	U	330	U
2-Chlorophenol		360	U	73	%	62	%	330	U	60	%
1,3-Dichlorobenzene		360	U	360	U	360	U	330	U	330	U
1,4-Dichlorobenzene		360	U	60	%	49	%	330	U	51	%
1,2-Dichlorobenzene		360	U	360	U	360	U	330	U	330	U
2-Methylphenol		360	U	360	U	360	U	330	U	330	U
2,2'-oxybis(1-Chloropropane)		360	U	360	U	360	U	330	U	330	U
3/4-Methylphenol		360	U	360	U	360	U	27	J	330	U
N-Nitroso-Di-n-propylamine		360	U	52	%	43	%	330	U	46	%
Hexachloroethane		360	U	360	U	360	U	330	U	330	U
Nitrobenzene		360	U	360	U	360	U	330	U	330	U
Isophorone		360	U	360	U	360	U	330	U	330	U
2-Nitrophenol		360	U	360	U	360	U	330	U	330	U
2,4-Dimethylphenol		360	U	360	U	360	U	330	U	330	U
bis(2-Chloroethoxy)methane		360	U	360	U	360	U	330	U	330	U
2,4-Dichlorophenol		360	U	360	U	360	U	330	U	330	U
1,2,4-Trichlorobenzene		360	U	60	%	51	%	330	U	58	%
Naphthalene		360	U	360	U	360	U	330	U	330	U
4-Chloroaniline		360	U	360	U	360	U	330	U	330	U
Hexachlorobutadiene		360	U	360	U	360	U	330	U	330	U
4-Chloro-3-methylphenol		23	KJ	87	%	80	%	330	U	79	%
2-Methylnaphthalene		360	U	360	U	360	U	330	U	330	U
Hexachlorocyclopentadiene		360	U	360	U	360	U	330	U	330	U
2,4,6-Trichlorophenol		360	U	360	U	360	U	330	U	330	U
2,4,5-Trichlorophenol		900	U	900	U	900	U	840	U	840	U

*= Outside of EPA CLP QC limits.

3/20/05

000012

000001B

RFW Batch Number: 0411L115 Client: TNUHANFORD F03-025 H2815 Work Order: 11343606001 Page: 1b

Cust ID:	B19HY6		B19HY6		B19HY6		SBLKAU		SBLKAU BS	
RFW#:	001		001 MS		001 MSD		04LE1409-MB1		04LE1409-MB1	
2-Chloronaphthalene	360	U	360	U	360	U	330	U	330	U
2-Nitroaniline	900	U	900	U	900	U	840	U	840	U
Dimethylphthalate	360	U	360	U	360	U	330	U	330	U
Acenaphthylene	360	U	360	U	360	U	330	U	330	U
2,6-Dinitrotoluene	360	U	360	U	360	U	330	U	330	U
3-Nitroaniline	900	U	900	U	900	U	840	U	840	U
Acenaphthene	360	U	70	%	64	%	330	U	66	%
2,4-Dinitrophenol	900	U	900	U	900	U	840	U	840	U
4-Nitrophenol	900	U	83	%	74	%	840	U	68	%
Dibenzofuran	360	U	360	U	360	U	330	U	330	U
2,4-Dinitrotoluene	360	U	67	%	60	%	330	U	62	%
Diethylphthalate	360	U	360	U	360	U	330	U	330	U
4-Chlorophenyl-phenylether	360	U	360	U	360	U	330	U	330	U
Fluorene	360	U	360	U	360	U	330	U	330	U
4-Nitroaniline	900	U	900	U	900	U	840	U	840	U
4,6-Dinitro-2-methylphenol	900	U	900	U	900	U	840	U	840	U
N-Nitrosodiphenylamine (1)	360	U	360	U	360	U	330	U	330	U
4-Bromophenyl-phenylether	360	U	360	U	360	U	330	U	330	U
Hexachlorobenzene	360	U	360	U	360	U	330	U	330	U
Pentachlorophenol	900	U	56	%	58	%	840	U	29	%
Phenanthrene	360	U	360	U	360	U	330	U	330	U
Anthracene	360	U	360	U	360	U	330	U	330	U
Carbazole	360	U	360	U	360	U	330	U	330	U
Di-n-Butylphthalate	360	U	360	U	360	U	330	U	330	U
Fluoranthene	360	U	360	U	360	U	330	U	330	U
Pyrene	21	J	89	%	76	%	330	U	77	%
Butylbenzylphthalate	360	U	360	U	360	U	330	U	330	U
3,3'-Dichlorobenzidine	360	U	360	U	360	U	330	U	330	U
Benzo(a)anthracene	360	U	360	U	360	U	330	U	330	U
Chrysene	360	U	360	U	360	U	330	U	330	U
bis(2-Ethylhexyl)phthalate	700	B	79	JB	110	JB	38	J	190	JB
Di-n-Octyl phthalate	360	U	360	U	360	U	330	U	330	U
Benzo(b)fluoranthene	360	U	360	U	360	U	330	U	330	U
Benzo(k)fluoranthene	360	U	360	U	360	U	330	U	330	U
Benzo(a)pyrene	360	U	360	U	360	U	330	U	330	U
Indeno(1,2,3-cd)pyrene	360	U	360	U	360	U	330	U	330	U
Dibenzo(a,h)anthracene	360	U	360	U	360	U	330	U	330	U
Benzo(g,h,i)perylene	360	U	360	U	360	U	330	U	330	U
Tributylphosphate	360	U	360	U	360	U	330	U	330	U

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

VR 3/20/05

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000019

Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 01/21/05 10:06

RFW Batch Number: **0411L115** Client: **TNUHANFORD F03-025 H2815** Work Order: 11343606001 Page: 1

	Cust ID:	B19HY6	B19HY6	B19HY6	BLK	BLK BS
Sample Information	RFW#:	001	001 MS	001 MSD	04LE1410-MB1	04LE1410-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00
	Units:	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
	p-Terphenyl	115 %	109 %	116 %	99 %	111 %
Diesel Range Organics		13.0 U J	84 %	84 %	12.0 U	100 %
Kerosene		13.0 U J	NS	NS	12.0 U	NS

R 3/20/05

1/21/05

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

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Lionville Laboratory, Inc.

Nonhalogenated Volatiles by GC, Method 8015 Report Date: 01/21/05 09:18

RFW Batch Number: 0411L115 Client: TNUHANFORD F03-025 H2815 Work Order: 11343606001 Page: 1

	Cust ID:	B19HY6	B19HY6	B19HY6	BLK	BLK BS	BLK BSD
Sample Information	RFW#:	001	001 MS	001 MSD	04GCX042-MB1	04GCX042-MB1	04GCX042-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
1,4-Butanediol		85 %	91 %	90 %	95 %	94 %	93 %
		fl	fl	fl	fl	fl	fl
Ethylene Glycol		5.00 U J	85 %	89 %	5.00 U	87 %	102 %

3/20/05

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

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD F03-025
LVL #: 0411L115
SDG/SAF # H2815/F03-025

W.O. #: 11343-606-001-9999-00
Date Received: 11-10-2004

DIESEL RANGE ORGANICS

One (1) soil sample was collected on 10-26-2004.

The sample and its associated QC samples were extracted on 11-20-2004 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 12-03-2004. The analysis was based on method 8015B. The analysis met the intent of method WTPH-D.

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 a sample that met LvLI's sample acceptance policy.

2. The sample was received outside the extraction holding time. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

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

4. All surrogate recoveries were within acceptance criteria.

5. The blank spike recovery was within acceptance criteria.

6. The matrix spike recoveries were within acceptance criteria.

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

8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

9. 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

1/25/05
Date

som\r:\group\data\dro\tnu hanford\0411-115.doc

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 9 pages.

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 046C600

Initiator: M. McNally
Date: 1/21/05
Client: TNU Hanford

Batch: 0411L115
Samples: All
Method: SW846/MCAWW/CLP/

Parameter: 0D10, 0E015, 0G5GC
Matrix: Soil
Prep Batch: 04LE1410 / 046CX042 /

1. Reason for SDR

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

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

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

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

- Samples recieved out of hold

2. Known or Probable Causes(s)

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

Other Description:

Narrate

4. Project Manager Instructions...signature/date: [signature] 1/6/05
✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: [signature]
__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

Other Explanation:

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
✓	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
__	X QA (file): Alberts	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

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PRO

Lionville Laboratory, Inc.
DRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-025 H2815

DATE RECEIVED: 11/10/04 LVL LOT # :0411L115

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B19HY6	001	S	04LE1410	10/26/04	11/20/04	12/03/04
B19HY6	001 MS	S	04LE1410	10/26/04	11/20/04	12/03/04
B19HY6	001 MSD	S	04LE1410	10/26/04	11/20/04	12/03/04
LAB QC:						
BLK	MB1	S	04LE1410	N/A	11/20/04	12/03/04
BLK	MB1 BS	S	04LE1410	N/A	11/20/04	12/03/04

RECEIVED
FEB - 2 2005

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU HANFORD F03-025
LVL#: 0411L115
SDG/SAF#: H2815/F03-025

W.O.#: 11343-606-001-9999-00
Date Received: 11-10-2004

SEMIVOLATILE

One (1) soil sample was collected on 10-26-2004.

The sample and its associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 11-20-2004 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 11-22,23-2004.

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 a sample that met LvLI's sample acceptance policy.

2. The sample was received outside the extraction holding time. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

3. Non-target compounds were not detected in the sample.

4. All surrogate recoveries were within acceptance criteria.

5. All matrix spike recoveries were within acceptance criteria.

6. All blank spike recoveries were within acceptance criteria.

7. The method blank contained the common laboratory contaminant Bis (2-Ethylhexyl) phthalate at a level less than the CRQL.

8. Internal standard area and retention time criteria were met.

9. Manual integrations are performed according to SOP QA-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").

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

1/25/05
Date

som\gorup\data\bna\tnu-hanford\0411-115.doc

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 1 2 pages.

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Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 04M5175

Initiator: Robert Carden
Date: 11/26/04
Client: TNU Hanford F03025 H2815

Batch: 04 11C715
Samples: All
Method: SW846/MCAWW/CLP/

Parameter: 0625X
Matrix: Soil
Prep Batch: 04LE 1409

1. Reason for SDR

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

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

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

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

Samples extracted outside of hold time

2. Known or Probable Causes(s)

Samples received past hold (collect on 10/26/04, received 11/10/04)

3. Discussion and Proposed Action

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

Other Description:

Narrate + Report

4. Project Manager Instructions...signature/date: [signature] 12/3/04

✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: [signature] 1/25/05

Other Explanation:

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

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
1	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	2	X MS: Rychlak/Layman
__	X QA (file): Alberts	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

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SV

Lionville Laboratory, Inc.
BNA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-025 H2815

DATE RECEIVED: 11/10/04 LVL LOT # :0411L115

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B19HY6	001	S	04LE1409	10/26/04	11/20/04	11/22/04
B19HY6	001 MS	S	04LE1409	10/26/04	11/20/04	11/23/04
B19HY6	001 MSD	S	04LE1409	10/26/04	11/20/04	11/23/04

LAB QC:

SBLKAU	MB1	S	04LE1409	N/A	11/20/04	11/22/04
SBLKAU	MB1 BS	S	04LE1409	N/A	11/20/04	11/22/04

RECEIVED
FEB - 2 2005

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD F03-025
LVL #: 0411L115
SDG/SAF # H2815/F03-025

W.O. #: 11343-606-001-9999-00
Date Received: 11-10-2004

GC SCAN

One (1) soil sample was collected on 10-26-2004.

The sample and its associated QC samples were analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 11-23-2004. The preparation procedure was based on 8015B (Microextraction-5g into 5mL of water) and the samples were analyzed based on method 8015B for Ethylene Glycol.

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

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

2. The sample was received outside the extraction holding time. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

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

4. All surrogate recoveries were within acceptance criteria.

5. The blank spike recoveries were within acceptance criteria.

6. The matrix spike recoveries were within acceptance criteria.

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

8. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

Date

som\r:\group\data\gcsc\tnu-hanford\0411-115.doc

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 9 pages.

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Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 046C600

Initiator: M. McAnally
Date: 1/21/05
Client: TNU Hanford

Batch: 0411L115
Samples: All
Method: SW846/MCAWW/CLP/

Parameter: 0D10, 0E015, 065CC
Matrix: Soil
Prep Batch: 04191410 / 046CX042 /

1. Reason for SDR

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

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

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

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

- Samples recieved at of hold

2. Known or Probable Causes(s)

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

Other Description:

Narrate

4. Project Manager Instructions...signature/date: [signature] 1/21/05
✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: [signature] 1/21/05
__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

Other Explanation:

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
✓	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
__	X QA (file): Alberts	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

QA-105-A-0801

FG

Lionville Laboratory, Inc.
8015 ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-025 H2815

DATE RECEIVED: 11/10/04 LVL LOT # :0411L115

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B19HY6	001	S	04GCX042	10/26/04	11/15/04	11/23/04
B19HY6	001 MS	S	04GCX042	10/26/04	11/15/04	11/23/04
B19HY6	001 MSD	S	04GCX042	10/26/04	11/15/04	11/23/04
LAB QC:						
BLK	MB1	S	04GCX042	N/A	11/15/04	11/23/04
BLK	MB1 BS	S	04GCX042	N/A	11/15/04	11/23/04
BLK	MB1 BSD	S	04GCX042	N/A	11/15/04	11/23/04

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FEB - 2 2005

FLUOR Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-025-169	PAGE 1 OF 1

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 8N	DATA TURNAROUND
Pope/Pfister/Hughes/Wiberg	TRENT, STEVE	373-5689	TRENT, SJ	AIR QUALITY ☐	45 Days / 45 Days
SAMPLING LOCATION	**PROJECT DESIGNATION**		**SAF NO.**		
216-T-28; 22.5ft-25ft	200-LW-1/LW-2 Characterization - Soil		F03-025		

ICE CHEST NO.	FIELD LOGBOOK NO.	COA	METHOD OF SHIPMENT
GRP-04-011	HNF-N-356 1	119143ES10	Federal Express

SHIPPED TO	OFFSITE PROPERTY NO.	BILL OF LADING/AIR BILL NO.
~~Sberlite Services~~ MOS 9-04 Pacva	See Shipment # DJ019	See Shipment # DJ019

MATRIX*: A=Air, DL=Drum Liquids, DS=Drum Solids, L=Liquid, O=Oil, S=Soil, SE=Sediment, T=Tissue, V=Vegitation, W=Water, WI=Wipe, X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS: N/A

SPECIAL HANDLING AND/OR STORAGE: ~~N/A~~ MOS 9-04 Radioactive T.L.D: B91C7

PRESERVATION	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
TYPE OF CONTAINER	aGs*	aG	aG	Gs*	aG	aG	aG	aG
NO. OF CONTAINER(S)	3	1	1	3	1	1	1	1
VOLUME	40mL	120mL	120mL	40mL	120mL	250mL	500mL	500mL
SAMPLE ANALYSIS	VOA - 8260A (TCL);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	PCBs - 8082;	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	SEE ITEM (5) IN SPECIAL INSTRUCTIONS	SEE ITEM (6) IN SPECIAL INSTRUCTIONS

MJS 8-9-04

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME										
B19HY6	SOIL	10-26-04	0941	X	X	X	X	X	X	X			

920000

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
J Sloate	10-26-04 1230	Site Fridge	10-26-04 1230
Site Fridge	11-04-04 9:50	Greg Thomas	11/04/04 750
Greg Thomas	11/04/04 1135	MO-026 Frig #3	11/04/04 1135
MO-026 Frig #3	11/09/04 0810	Greg Thomas	11/09/04 0810
Greg Thomas	11/09/04 0820	Fed Ex	
Fed Ex		J Murry	11/10/04 0940

SPECIAL INSTRUCTIONS

FH acknowledges that the analytical holding time for Nitrate, Nitrite and Phosphate by EPA Method 300.0 will not be met. The lab is to analyze pH within 24 hours of sample receipt, and. report kerosene range organics from the WTPH-D analysis.

(1)Semi-VOA - 8270A (TCL) {Phenol} Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(2)TPH-Diesel Range - WTPH-D {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range} TPH-Gasoline Range - WTPH-G;
(3)Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Ethylene glycol}
(4)ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver} ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Copper, Nickel} Mercury - 7471 - (CV);
(5)IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate} Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045;
~~(6)Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154,~~ MJS 8-9-04

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

1200000

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 200-LW-1/LW-2			DATA PACKAGE: H2815		
VALIDATOR: TLI		LAB: LLI		DATE: 3/20/05	
			SDG: H2815		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270	8015B TPH-D ethylene glycol	SW-846 8270 (TCLP)
SAMPLES/MATRIX					
B19H46					
					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: mb bis(2-ethylhexyl)phthalate 3/20/05 J

No FB

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: NO PA

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:

6. SYSTEM PERFORMANCE (Levels D and E)

Internal standards analyzed? ..... Yes No N/A

Iinternal 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: HT - all less than 2x - J all

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: all but ethylene glycol over

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 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:

FD3-215

Date: 24 March 2005
To: Fluor Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 200-LW-1/LW-2 Characterization - Soil
Subject: Wet Chemistry - Data Package No. H2815

APR 2005
RECEIVED

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2815 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	Media	Validation	Analysis
B191B2	10/26/04	Soil	C	See note 1 & 3
B19HY6	10/26/04	Soil	C	See note 2 & 3

1 - Chromium VI by 7196A, nitrate/nitrite by 353.1, oil & grease by 9071A and total sulfide by (9030).
2 - Anions by 300.0, pH by 9045C, ammonia by 350.1 and cyanide by 9010A.
3 - Nitrate, nitrite and phosphate not validated or reported per FHI.

Data validation was conducted in accordance with the FHI validation statement of work and the 200-LW-1/200-LW-2 Chemical Laboratory Waste Group OUs RI/FS Work Plan (DOE/RL-2001-66, Draft A, Redline, May 2002). Appendices 1 through 6 provide the following information as indicated below:

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

DATA QUALITY PARAMETERS

- **Holding Times/Sample Preservation**

Analytical holding times are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 30 days for chromium VI; 28 days for ammonia, nitrate/nitrite, oil & grease, chloride, fluoride and sulfate; 14 days for cyanide; 7 days for sulfide; and immediate (24 hours) for pH.

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 were qualified as estimates and flagged "J".

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

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

Due to the holding time being exceeded by less than twice the limit, all ammonia results 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

No equipment blanks were submitted for analysis.

- **Accuracy**

Matrix Spike

Matrix spike (MS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike and LCS

recoveries must fall within the range of 75% to 125%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 74% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 125% or less than 75% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 125% and a sample result less than the IDL, no qualification is required.

All matrix spike recovery results were acceptable.

Laboratory Control Sample

The LCS is used to monitor the overall performance of all steps in the analysis. Recoveries must fall within the range of 80% to 120% for LCS analysis. Samples with a recovery of less than 50% are rejected and flagged "UR". Samples with a recovery of 50% to 79% and a sample recovery below the IDL are qualified "UJ". Samples with a recovery of greater than 120% or less than 80% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 120% and a sample result less than the IDL, no qualification is required.

All LCS 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 35%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required target quantitation limits (RTQLs) to ensure that laboratory detection levels meet the required criteria. The oil & grease and sulfide results in all samples were reported above the RTQL. Under the FHI statement of work, no qualification is required. All other results met the RTQL.

- **Completeness**

Data package No. H2815 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 were qualified as estimates and flagged "J". Due to the holding time being exceeded by less than twice the limit, all cyanide results were qualified as estimates and flagged "J". Due to the holding time being exceeded by less than twice the limit, all oil & grease results were qualified as estimates and flagged "J". Due to the holding time being exceeded by less than twice the limit, all ammonia results were qualified as estimates and flagged "J". Data flagged "J" is an estimate, but under the FHI validation SOW, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

The oil & grease and sulfide results in all samples were reported above the RTQL. Under the FHI statement of work, no qualification is required.

REFERENCES

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

DOE/RL-2001-66, Draft A, Redline, *200-LW-1/200-LW-2 Chemical Laboratory Waste Group OUs RI/FS Work Plan*, May 2002.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: H2815	REVIEWER: TLI	DATE: 3/24/05	PAGE 1 OF 1
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
pH Cyanide Sulfide Oil & Grease Ammonia	J	All	Holding time

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: FLUOR-HANFORD							
Laboratory: LLI							
Case	SDG: H2815						
Sample Number		B191B2		B19HY6			
Remarks							
Location							
Sample Date		10/26/04		10/26/04			
Wet Chemistry	RTQL	Result	Q	Result	Q	Result	Q
Chloride	2	NA		13.3			
Fluoride	5	NA		3.2			
Cyanide	0.5	NA		0.50	UJ		
Sulfate	5	NA		13.2			
Ammonia	0.5	NA		11.9	J		
pH**		NA		10	J		
Chromium VI	0.5	0.22	U	NA			
Nitrate/nitrite		6.1		NA			
Oil & Grease	200	721	UJ	NA			
Sulfide	5	47.5	UJ	NA			
** - Units are pH units							
NA - Not analyzed							

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 12/15/04

CLIENT: TNUHANFORD F03-025 H2815 LVL LOT #: 0411L115

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B19HY6	% Solids	92.5	%	0.01	1.0
		Chloride by IC	13.3	MG/KG	1.1	1.0
		Fluoride by IC	3.2	MG/KG	1.1	1.0
		~~Nitrite by IC~~	~~1.08 u~~	~~MG/KG~~	~~1.08~~	~~1.0~~
		~~Nitrate by IC~~	~~27.7~~	~~MG/KG~~	~~1.08~~	~~1.0~~
		Cyanide, Total	0.50 u J	MG/KG	0.50	1.0
		~~Phosphate by IC~~	~~59.1~~	~~MG/KG~~	~~2.2~~	~~2.0~~
		Sulfate by IC	13.2	MG/KG	1.1	1.0
		Ammonia, as N	11.9 J	MG/KG	11.7	1.0
		pH	10 J	SOIL PH	0.01	1.0
-002	B191B2	% Solids	92.8	%	0.10	1.0
		Chromium VI	0.22 u	MG/KG	0.22	1.0
		Nitrate Nitrite	6.1	MG/KG	0.22	1.0
		Oil & Grease Gravimetri	721 u J	MG/KG	721	1.0
		Sulfide	47.5 u J	MG/KG	47.5	1.0

3/20/05

3/20/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD F03-025 H2815
LVL#: 0411L115

W.O.#: 11343-606-001-9999-00
Date Received: 11-10-04

INORGANIC NARRATIVE

1. This narrative covers the analyses of 2 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 Total Cyanide and Sulfide that were received past hold.

4. The results presented in this report are derived from samples that met LvLI's sample acceptance policy with the exception of Total Cyanide and Sulfide as noted on the Sample Receipt Checklist.

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 Ammonia and Sulfide were within the 20% Relative Percent Difference (RPD) control limit.

7. The matrix spike recoveries for Chloride, Fluoride, Nitrite, Nitrate, Total Cyanide, Phosphate, Sulfate, Ammonia, Chromium VI, Nitrate Nitrite, Oil and Grease and Sulfide were within the 75-125% control limits.

8. The replicate analyses for Percent Solids, Chloride, Fluoride, Nitrite, Nitrate, Total Cyanide, Sulfate, pH, Nitrate Nitrite and Oil and Grease were within the 20% RPD control limit, however replicate analyses for Phosphate, Ammonia and Chromium VI were outside the control limit that may be attributed to sample inhomogeneity.

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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 17 pages.

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

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

12/16/04
Date

njp\11-115

FLUOR Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-025-169	PAGE 1 OF 1

COLLECTOR: Pope/Pfister/Hughes/Wiberg	COMPANY CONTACT: TRENT, STEVE	TELEPHONE NO.: 373-5689	PROJECT COORDINATOR: TRENT, SJ
SAMPLING LOCATION: 216-T-28; 22.5ft-25ft	PROJECT DESIGNATION: 200-LW-1/LW-2 Characterization - Soil		SAF NO.: F03-025
ICE CHEST NO.: GRP-04-011	FIELD LOGBOOK NO.: HNF-N-356 1	COA: 119143ES10	METHOD OF SHIPMENT: Federal Express
SHIPPED TO: ~~Eberline Services~~ MT 8-9-04 Reva	OFFSITE PROPERTY NO.: See Shipment # DJ019		BILL OF LADING/AIR BILL NO.: See Shipment # DJ019

PRICE CODE: 8N
AIR QUALITY: ☐
DATA TURNAROUND: 45 Days / 45 Days

MATRIX*: A=Air, DL=Drum Liquids, DS=Drum Solids, L=Liquid, O=Oil, S=Soil, SE=Sediment, T=Tissue, V=Vegitation, W=Water, WI=Wipe, X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS: N/A

SPECIAL HANDLING AND/OR STORAGE: ~~N/A~~ Radioactive Tile to: B19C7

PRESERVATION	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None					
TYPE OF CONTAINER	aGs*	aG	aG	Gs*	aG	aG	aG	aG					
NO. OF CONTAINER(S)	3	1	1	3	1	1	1	1					
VOLUME	40mL	120mL	120mL	40mL	120mL	250mL	500mL	500mL					
SAMPLE ANALYSIS	VOA - 8260A (TCL);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	PCBs - 8082;	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	SEE ITEM (5) IN SPECIAL INSTRUCTIONS	SEE ITEM (6) IN SPECIAL INSTRUCTIONS					

TMJ 8-9-04

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME										
B19HY6	SOIL	10-26-04	0941	X	X	X	X	X	X	X			

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BYT/STORED IN	DATE/TIME
J Pope / [signature] 10-26-04	1230	Site Fridge 10-26-04	1230
Site Fridge 11-04-04	9:50	Greg Thomas [signature] 11/04/04	950
Greg Thomas [signature] 11/04/04	1135	Mo-026 Frig #3 11/04/04	1135
Mo-026 Frig #3 11/09/04	0810	Greg Thomas [signature] 11/09/04	0810
Greg Thomas [signature] 11/09/04	0820	Fed Ex	
FedEx		J Perry 11/10/04	0940

SPECIAL INSTRUCTIONS

FH acknowledges that the analytical holding time for Nitrate, Nitrite and Phosphate by EPA Method 300.0 will not be met. The lab is to analyze pH within 24 hours of sample receipt, and. report kerosene range organics from the WTPH-D analysis.

(1)Semi-VOA - 8270A (TCL) {Phenol} Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(2)TPH-Diesel Range - WTPH-D {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range} TPH-Gasoline Range - WTPH-G;
(3)Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Ethylene glycol}
(4)ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver} ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Copper, Nickel} Mercury - 7471 - (CV);
(5)IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate} Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045;
~~(6)Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154,~~ TMJ 8-9-04

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

000015

FLUOR Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-025-069	PAGE 1 OF 1

COLLECTOR Pope/Pfister/Wiberg/Tyra	COMPANY CONTACT TRENT, STEVE	TELEPHONE NO. 373-5689	PROJECT COORDINATOR TRENT, SJ
SAMPLING LOCATION 216-T-28; 22.5ft-25ft	PROJECT DESIGNATION 200-LW-1/LW-2 Characterization - Soil		SAF NO. F03-025
ICE CHEST NO. GRP-04-011	FIELD LOGBOOK NO. HNF-N-356 1	COA 119143ES10	METHOD OF SHIPMENT Federal Express
SHIPPED TO ~~Eberline Services~~ Recra	OFFSITE PROPERTY NO. See Shipment # D1019		BILL OF LADING/AIR BILL NO. See Shipment # D1019

PRICE CODE 8N

AIR QUALITY ☐

DATA TURNAROUND 45 Days / 45 Days

MATRIX*
A=Air
DL=Drum
Liquids
DS=Drum
Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegitation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
N/A

SPECIAL HANDLING AND/OR STORAGE
~~N/A~~
Radioactive TIL TO: B191C1

PRESERVATION	Cool 4C	None
TYPE OF CONTAINER	aG	aG
NO. OF CONTAINER(S)	1	1
VOLUME	250mL	250mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS

TMJ 8-9-04

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B191B2	SOIL	10-26-04	0941	X	

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BYT/STORED IN	DATE/TIME
JSPope / [signature]	10-26-04 1230	Site Fridge	10-26-04 1230
Site Fridge	11/04/04 9450	Greg Thomas [signature]	11/04/04 9521
Greg Thomas [signature]	11/04/04 1135	MO-026 Frig #3	11/04/04 1135
MO-026 Frig #3	11/09/04 0810	Greg Thomas [signature]	11/09/04 0810
Greg Thomas [signature]	11/09/04 0820	Fed Ex	
FedEx		[signature]	11/10/04 0940

SPECIAL INSTRUCTIONS

(1)Chromium Hex - 7196; NO2/NO3 - 353.2; Sulfides - 9030; Oil & Grease - 413.1; ~~(2)Nickel 63; Gamma Spec - Radium (Radium-226, Radium-228) Technetium-99; Isotopic Thorium (Thorium-232) Tritium - H3; Carbon-14; Strontium-89,90 -- Total Sr;~~ TMJ 8-9-04

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

000016

000000099

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-025 H2815

DATE RECEIVED: 11/10/04 LVL LOT # :0411L115

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B19HY6						
% SOLIDS	001	S	04L%187	10/26/04	11/12/04	11/15/04
% SOLIDS	001 REP	S	04L%187	10/26/04	11/12/04	11/15/04
CHLORIDE BY IC	001	S	04LIC068	10/26/04	11/21/04	11/21/04
CHLORIDE BY IC	001 REP	S	04LIC068	10/26/04	11/21/04	11/21/04
CHLORIDE BY IC	001 MS	S	04LIC068	10/26/04	11/21/04	11/21/04
FLUORIDE BY IC	001	S	04LIC068	10/26/04	11/21/04	11/21/04
FLUORIDE BY IC	001 REP	S	04LIC068	10/26/04	11/21/04	11/21/04
FLUORIDE BY IC	001 MS	S	04LIC068	10/26/04	11/21/04	11/21/04
NITRITE BY IC	001	S	04LIC068	10/26/04	11/21/04	11/21/04
NITRITE BY IC	001 REP	S	04LIC068	10/26/04	11/21/04	11/21/04
NITRITE BY IC	001 MS	S	04LIC068	10/26/04	11/21/04	11/21/04
NITRATE BY IC	001	S	04LIC068	10/26/04	11/21/04	11/21/04
NITRATE BY IC	001 REP	S	04LIC068	10/26/04	11/21/04	11/21/04
NITRATE BY IC	001 MS	S	04LIC068	10/26/04	11/21/04	11/21/04
TOTAL CYANIDE	001	S	04LC078	10/26/04	11/12/04	11/12/04
TOTAL CYANIDE	001 REP	S	04LC078	10/26/04	11/12/04	11/12/04
TOTAL CYANIDE	001 MS	S	04LC078	10/26/04	11/12/04	11/12/04
PHOSPHATE BY IC	001	S	04LIC068	10/26/04	11/21/04	11/21/04
PHOSPHATE BY IC	001 REP	S	04LIC068	10/26/04	11/21/04	11/21/04
PHOSPHATE BY IC	001 MS	S	04LIC068	10/26/04	11/21/04	11/21/04
SULFATE BY IC	001	S	04LIC068	10/26/04	11/21/04	11/21/04
SULFATE BY IC	001 REP	S	04LIC068	10/26/04	11/21/04	11/21/04
SULFATE BY IC	001 MS	S	04LIC068	10/26/04	11/21/04	11/21/04
AMMONIA	001	S	04LAMA30	10/26/04	12/01/04	12/01/04
AMMONIA	001 REP	S	04LAMA30	10/26/04	12/01/04	12/01/04
AMMONIA	001 MS	S	04LAMA30	10/26/04	12/01/04	12/01/04
PH	001	S	04LPH101	10/26/04	11/16/04	11/16/04
PH	001 REP	S	04LPH101	10/26/04	11/16/04	11/16/04
B191B2						
% SOLIDS	002	S	04L%S186	10/26/04	11/11/04	11/11/04
% SOLIDS	002 REP	S	04L%S186	10/26/04	11/11/04	11/11/04
CHROMIUM VI	002	S	04LVI040	10/26/04	11/11/04	11/11/04
CHROMIUM VI	002 REP	S	04LVI040	10/26/04	11/11/04	11/11/04

RECEIVED
FEB - 2 2005

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-025 H2815

DATE RECEIVED: 11/10/04 LVL LOT # :0411L115

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM VI	002 MS	S	04LVI040	10/26/04	11/11/04	11/11/04
CHROMIUM VI	002 MSD	S	04LVI040	10/26/04	11/11/04	11/11/04
NITRATE NITRITE	002	S	04LN3064	10/26/04	11/12/04	11/13/04
NITRATE NITRITE	002 REP	S	04LN3064	10/26/04	11/12/04	11/13/04
NITRATE NITRITE	002 MS	S	04LN3064	10/26/04	11/12/04	11/13/04
OIL & GREASE BY GRAV	002	S	04LOG038	10/26/04	11/25/04	11/25/04
OIL AND GREASE BY GR	002 REP	S	04LOG038	10/26/04	11/25/04	11/25/04
OIL AND GREASE BY GR	002 MS	S	04LOG038	10/26/04	11/25/04	11/25/04
SULFIDE	002	S	04LSD066	10/26/04	11/11/04	11/11/04
SULFIDE	002 REP	S	04LSD066	10/26/04	11/11/04	11/11/04
SULFIDE	002 MS	S	04LSD066	10/26/04	11/11/04	11/11/04

LAB QC:

CHLORIDE BY IC	MB1	S	04LIC068	N/A	11/21/04	11/21/04
CHLORIDE BY IC	MB1 BS	S	04LIC068	N/A	11/21/04	11/21/04
FLUORIDE BY IC	MB1	S	04LIC068	N/A	11/21/04	11/21/04
FLUORIDE BY IC	MB1 BS	S	04LIC068	N/A	11/21/04	11/21/04
NITRITE BY IC	MB1	S	04LIC068	N/A	11/21/04	11/21/04
NITRITE BY IC	MB1 BS	S	04LIC068	N/A	11/21/04	11/21/04
NITRATE BY IC	MB1	S	04LIC068	N/A	11/21/04	11/21/04
NITRATE BY IC	MB1 BS	S	04LIC068	N/A	11/21/04	11/21/04
TOTAL CYANIDE	LCS L	S	04LC078	N/A	11/12/04	11/12/04
TOTAL CYANIDE	LCS L	S	04LC078	N/A	11/12/04	11/12/04
TOTAL CYANIDE	MB1	S	04LC078	N/A	11/12/04	11/12/04
PHOSPHATE BY IC	MB1	S	04LIC068	N/A	11/21/04	11/21/04
PHOSPHATE BY IC	MB1 BS	S	04LIC068	N/A	11/21/04	11/21/04
SULFATE BY IC	MB1	S	04LIC068	N/A	11/21/04	11/21/04
SULFATE BY IC	MB1 BS	S	04LIC068	N/A	11/21/04	11/21/04
AMMONIA	MB1	S	04LAMA30	N/A	12/01/04	12/01/04
AMMONIA	MB1 BS	S	04LAMA30	N/A	12/01/04	12/01/04
AMMONIA	MB1 BSD	S	04LAMA30	N/A	12/01/04	12/01/04
CHROMIUM VI	MB1	S	04LVI040	N/A	11/11/04	11/11/04
CHROMIUM VI	MB1 BS	S	04LVI040	N/A	11/11/04	11/11/04
CHROMIUM VI	MB1 BSD	S	04LVI040	N/A	11/11/04	11/11/04
NITRATE NITRITE	MB1	S	04LN3064	N/A	11/12/04	11/13/04
NITRATE NITRITE	MB1 BS	S	04LN3064	N/A	11/12/04	11/13/04
OIL & GREASE BY GRAV	MB1	S	04LOG038	N/A	11/25/04	11/25/04

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-025 H2815

DATE RECEIVED: 11/10/04 LVL LOT # :0411L115

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
OIL AND GREASE BY GR	MB1 BS	S	04LOG038	N/A	11/25/04	11/25/04
OIL AND GREASE BY GR	MB1 BSD	S	04LOG038	N/A	11/25/04	11/25/04
SULFIDE	MB1	S	04LSD066	N/A	11/11/04	11/11/04
SULFIDE	MB1 BS	S	04LSD066	N/A	11/11/04	11/11/04
SULFIDE	MB1 BSD	S	04LSD066	N/A	11/11/04	11/11/04

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 200-LW-1/200-LW-2			DATA PACKAGE: H2815		
VALIDATOR: TLI		LAB: LLF		DATE: 3/20/05	
			SDG: H2815		
ANALYSES PERFORMED					
Anions/IC	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	pH	NO_3/NO_2
Sulfate	TDS	TKN	Phosphate		
Sulfide				Cyanide	
SAMPLES/MATRIX					
B19HY6		B191B2			
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

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

Comments:

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: No FB

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

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

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

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

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

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

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

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

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

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

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

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

Comments: No PAS

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments:

6. HOLDING TIMES (all levels)

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

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

Comments: cyanide less than 2X - J
pH over 2X - J
sulfide less than 2X - J
oil + grease less than 2X - J
ammonia less than 2X - J

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

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

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

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

Comments: oil + grease + sulfide over

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/15/04

CLIENT: TNUHANFORD F03-025 H2815 LVL LOT #: 0411L115

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	04LIC068-MB1	Chloride by IC	1.0	u	MG/KG	1.0	1.0
		Fluoride by IC	1.0	u	MG/KG	1.0	1.0
		Nitrite by IC	1.00	u	MG/KG	1.00	1.0
		Nitrate by IC	1.00	u	MG/KG	1.00	1.0
		Phosphate by IC	1.0	u	MG/KG	1.0	1.0
		Sulfate by IC	1.0	u	MG/KG	1.0	1.0
BLANK1	04LC078-MB1	Cyanide, Total	0.50	u	MG/KG	0.50	1.0
BLANK10	04LAMA30-MB1	Ammonia, as N	12.5	u	MG/KG	12.5	1.0
BLANK10	04LVI040-MB1	Chromium VI	0.20	u	MG/KG	0.20	1.0
BLANK10	04LN3064-MB1	Nitrate Nitrite	0.20	u	MG/KG	0.20	1.0
BLANK10	04LOG038-MB1	Oil & Grease Gravimetri	667	u	MG/KG	667	1.0
BLANK10	04LSD066-MB1	Sulfide	40.0	u	MG/KG	40.0	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 12/15/04

CLIENT: TNUHANFORD F03-025 H2815 LVL LOT #: 0411L115
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B19HY6	Chloride by IC	57.8	13.3	43.0	103.4	2.0
		Fluoride by IC	47.2	3.2	43.0	102.2	2.0
		Nitrite by IC	43.7	1.08u	43.0	101.6	2.0
		Nitrate by IC	73.4	27.7	43.0	106.2	2.0
		Cyanide, Total	4.95	0.50u	5.26	94.0	1.0
		Phosphate by IC	283	59.1	215	104.3	10.0
		Sulfate by IC	57.7	13.2	43.0	103.4	2.0
		Ammonia, as N	584	11.9	535	107.0	1.0
-002	B191B2	Soluble Chromium VI	4.3	0.22u	4.3	97.1	1.0
		Insoluble Chromium VI	1340	0.22u	1200	111.3	100
		Nitrate Nitrite	17.0	6.1	10.8	101.2	2.0
		Oil & Grease Gravimetr	8980	721 u	9530	94.3	1.0
		Sulfide	568	9.5	658	84.8	1.0
BLANK10	04LIC068-MB1	Chloride by IC	20.4	1.0 u	20.0	102.1	1.0
		Fluoride by IC	20.7	1.0 u	20.0	103.5	1.0
		Nitrite by IC	18.7	1.00u	20.0	93.6	1.0
		Nitrate by IC	21.0	1.00u	20.0	105.1	1.0
		Phosphate by IC	19.8	1.0 u	20.0	99.2	1.0
		Sulfate by IC	20.4	1.0 u	20.0	102.0	1.0
BLANK10	04LAMA30-MB1	Ammonia, as N	505	12.5 u	500	101.0	1.0
		Ammonia, as N MSD	534	12.5 u	500	106.8	1.0
BLANK10	04LVI040-MB1	Soluble Chromium VI	3.9	0.20u	4.0	97.6	1.0
		Insoluble Chromium VI	1240	0.20u	1120	111.0	100
BLANK10	04LN3064-MB1	Nitrate Nitrite	5.3	0.20u	5.0	105.2	1.0
BLANK10	04LOG038-MB1	Oil & Grease Gravimetr	7430	667 u	8810	84.3	1.0
BLANK10	04LSD066-MB1	Sulfide	422	40.0 u	466	90.5	1.0
		Sulfide MSD	418	40.0 u	466	89.7	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 12/15/04

CLIENT: TNUHANFORD F03-025 H2815 LVL LOT #: 0411L115
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	04LAMA30-MB1	Ammonia, as N	101.0	106.8	5.5
BLANK10	04LSD066-MB1	Sulfide	90.5	89.7	0.96

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 12/15/04

CLIENT: TNUHANFORD F03-025 H2815 LVL LOT #: 0411L115

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B19HY6	% Solids	92.5	91.5	1.1	1.0
		Chloride by IC	13.3	13.6	2.2	1.0
		Fluoride by IC	3.2	2.8	13.0	1.0
		Nitrite by IC	1.08u	1.04u	NC	1.0
		Nitrate by IC	27.7	27.0	2.7	1.0
		Cyanide, Total	0.50u	0.52u	NC	1.0
		Phosphate by IC	59.1	47.6	21.6	2.0
		Sulfate by IC	13.2	12.5	5.7	1.0
		Ammonia, as N	11.9	8.6 u	44.5	1.0
		pH	10.0	10.0	0.0	1.0
-002REP	B191B2	% Solids	92.8	93.4	0.71	1.0
		Chromium VI	0.22u	0.24	77.5	1.0
		Nitrate Nitrite	6.1	6.1	0.54	1.0
		Oil & Grease Gravimetri	721 u	721 u	NC	1.0
		Sulfide	47.5 u	57.4 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 12/15/04

CLIENT: TNUHANFORD F03-025 H2815 LVL LOT #: 0411L115

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	04LC078-LCS1	Cyanide, Total LCS	2.14	2.0	MG/KG	107.2
LCSS2	04LC078-LCS2	Cyanide, Total LCS	10.2	10.0	MG/KG	102.3

Date: 24 March 2005
To: Fluor Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 200-LW-1/LW-2 Characterization - Soil
Subject: Radiochemistry - Data Package No. H2815

APR 2005
RECEIVED

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2815 prepared by Eberline Services (EB). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample	Media	Validation	Analysis
B19188	10/20/04	Soil	C	See note 2
B191B2	10/26/04	Soil	C	See note 1
B19HY6	10/26/04	Soil	C	See note 2 & 3

1 - Isotopic thorium (aspec), tritium, technetium-99, nickel-63, carbon-14, tritium, strontium-90.
2 - Gamma spectroscopy and alpha spectroscopy.
3 - Total uranium.

Data validation was conducted in accordance with the FHI validation statement of work and the 200-LW-1/200-LW-2 Chemical Laboratory Waste Group OUs RI/FS Work Plan (DOE/RL-2001-66, Draft A, Redline, May 2002). Appendices 1 through 6 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

- **Holding Times**

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

All holding times were acceptable.

- **Laboratory (Method) Blanks**

Laboratory Blanks

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

All laboratory blank results were acceptable. It should be noted that several analytes exceeded the RTQL in the laboratory blank.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Accuracy is evaluated by analyzing distilled water or field samples spiked with known amounts of radionuclides. The sample activity as determined by analysis is compared to the known activity to assess accuracy. The acceptable laboratory control sample (LCS) and matrix spike (MS) recovery range is either 65-135% or 70-130%, depending on the analyte. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, rejected, or not qualified, depending on the activity of the individual sample.

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

All other accuracy results were acceptable.

- **Precision**

Analytical precision is expressed by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Precision may also be assessed using unspiked duplicate sample analyses. If both sample and replicate activities are greater than five times the contract required detection

limit (CRDL) and the RPD is less than +/- 35 percent, the results are acceptable. If either activities are less then five times the CRDL, a control limit of less than or equal to two times the CRDL is used for soil samples and less than or equal to the CRDL for water samples. If either the original or replicate value is below the CRDL, the applicable control limits are less than or equal to the CRDL for water samples and less than or equal to two times the CRDL for soil samples. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All duplicate results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Detection Levels**

Reported analytical detection levels are compared against the required target quanitation limits (RTQLs) to ensure that laboratory detection levels meet the required criteria. Nine analytes exceeded the RTQL. Under the FHI statement of work, no qualification is required. All other reported laboratory detection levels met the analyte specific RTQL.

- **Completeness**

Data package SDG No. H2815 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

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

Nine analytes exceeded the RTQL. Under the FHI statement of work, no qualification is required.

REFERENCES

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

DOE/RL-2001-66, Draft A, Redline, *200-LW-1/200-LW-2 Chemical Laboratory Waste Group OUs RI/FS Work Plan*, May 2002.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

RADIOCHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: H2815	REVIEWER: TLI	DATE: 3/24/05	PAGE_1_OF_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Thorium-228 Thorium-232	J	All	No LCS analysis

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: FLUOR-HANFORD							
Laboratory: EB							
Case	SDG: H2815						
Sample Number		B19188		B19HY6		B191B2	
Remarks							
Sample Date		10/20/04		10/26/04		10/26/04	
Radiochemistry	RTQL	Result	Q	Result	Q	Result	Q
Tritium	400	NA		NA		15.0	
Carbon-14	50	NA		NA		1.64	U
Nickel-63	30	NA		NA		87.5	
Total Strontium	1	NA		NA		4010	
Technetium-99	15	NA		NA		1.10	
Thorium-228(aspec)		NA		NA		1.82	J
Thorium-230(aspec)		NA		NA		-0.206	U
Thorium-232(aspec)	1	NA		NA		0.309	UJ
Potassium-40		U	U	15.0		NA	
Cobalt-60	0.05	1180		1.52		NA	
Antimony-125		U	U	U	U	NA	
Cesium-134		456		U	U	NA	
Cesium 137	0.1	3100000		3470		NA	
Radium-226		U	U	U	U	NA	
Radium-228		U	U	U	U	NA	
Europium-152	0.1	U	U*	U	U*	NA	
Europium-154	0.1	U	U*	U	U*	NA	
Europium-155	0.1	U	U*	U	U*	NA	
Thorium-228		U	U	2.69		NA	
Thorium-232		U	U	U	U	NA	
Uranium-235(gea)		U	U	U	U	NA	
Uranium-238(gea)		U	U	U	U	NA	
Americium-241(gea)		U	U	U	U	NA	
Total Uranium (ug/g)		NA		125		NA	
Uranium-233/234(aspec)	1	41.6		59.4		NA	
Uranium-235(aspec)	1	0	U*	3.44		NA	
Uranium-238(aspec)	1	14.7	U*	35.1		NA	
Neptunium-237	1	2.56	U*	-0.064	U	NA	
Plutonium-238	1	84.5		0.632	U	NA	
Plutonium-239/240	1	1110		13.0		NA	
Americium-241	1	802		9.15		NA	
NA = Not analyzed							

* - RTQL exceeded

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

000070

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2815

7147-001 B19188

DATA SHEET

SDG	7147	Client/Case no	Hanford	SDG H2815	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R411093-01	Client sample id	B19188		
Dept sample id	7147-001	Location/Matrix	216-T-28; 17.5ft-20ft	SOLID	
Received	11/10/04	Collected/Weight	10/20/04 10:40	5.32 g	
% solids	94.4	Custody/SAF No	F03-025-056	F03-025	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 233/234	U-233/234	41.6	20	19	1.0		U
Uranium 235	15117-96-1	0	5.9	23	1.0	U	U
Uranium 238	U-238	14.7	9.8	19	1.0	U	U
Neptunium 237	13994-20-2	2.56	5.1	12	1.0	U	NP
Plutonium 238	13981-16-3	84.5	24	13	1.0		PU
Plutonium 239/240	PU-239/240	1110	110	13	1.0		PU
Americium 241	14596-10-2	802	110	22	1.0		AM
Potassium 40	13966-00-2	U		8500		U	GAM
Cobalt 60	10198-40-0	1180	230	230	0.050		GAM
Antimony 125	14234-35-6	U		3700		U	GAM
Cesium 134	13967-70-9	456	270	330			GAM
Cesium 137	10045-97-3	3100000	5000	1200	0.10		GAM
Radium 226	13982-63-3	U		1500		U	GAM
Radium 228	15262-20-1	U		2000		U	GAM
Europium 152	14683-23-9	U		3100	0.10	U	GAM
Europium 154	15585-10-1	U		800	0.10	U	GAM
Europium 155	14391-16-3	U		1800	0.10	U	GAM
Thorium 228	14274-82-9	U		1400		U	GAM
Thorium 232	TH-232	U		2000		U	GAM
Uranium 235	15117-96-1	U		2600		U	GAM
Uranium 238	U-238	U		46000		U	GAM
Americium 241	14596-10-2	U		2800		U	GAM

200-LW-1/LW-2 Characterization-Soil

3/20/05

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/28/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2815

7147-002 **B19HY6**

DATA SHEET

SDG	7147	Client/Case no	Hanford	SDG_H2815	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R411093-02	Client sample id	B19HY6		
Dept sample id	7147-002	Location/Matrix	216-T-28; 22.5ft-25ft	SOLID	
Received	11/10/04	Collected/Weight	10/26/04 09:41	465.8 g	
% solids	92.2	Custody/SAF No	F03-025-169	F03-025	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Total Uranium (ug/g)	7440-61-1	125	16	0.84	1.0		U_T
Uranium 233/234	U-233/234	59.4	7.4	1.7	1.0		U
Uranium 235	15117-96-1	3.44	1.7	1.6	1.0		U
Uranium 238	U-238	35.1	5.4	1.7	1.0		U
Neptunium 237	13994-20-2	-0.064	0.13	0.49	1.0	U	NP
Plutonium 238	13981-16-3	0.632	0.63	0.81	1.0	U	PU
Plutonium 239/240	PU-239/240	13.0	2.4	0.80	1.0		PU
Americium 241	14596-10-2	9.15	2.9	1.8	1.0		AM
Potassium 40	13966-00-2	15.0	2.6	1.9			GAM
Cobalt 60	10198-40-0	1.52	0.32	0.28	0.050		GAM
Antimony 125	14234-35-6	U		5.2		U	GAM
Cesium 134	13967-70-9	U		0.43		U	GAM
Cesium 137	10045-97-3	3470	6.0	1.4	0.10		GAM
Radium 226	13982-63-3	U		1.9		U	GAM
Radium 228	15262-20-1	U		1.8		U	GAM
Europium 152	14683-23-9	U		4.5	0.10	U	GAM
Europium 154	15585-10-1	U		1.6	0.10	U	GAM
Europium 155	14391-16-3	U		2.7	0.10	U	GAM
Thorium 228	14274-82-9	2.69	1.4	2.0			GAM
Thorium 232	TH-232	U		1.8		U	GAM
Uranium 235	15117-96-1	U		3.8		U	GAM
Uranium 238	U-238	U		72		U	GAM
Americium 241	14596-10-2	U		8.7		U	GAM

200-LW-1/LW-2 Characterization-Soil

3/20/05

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/28/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2815

7147-003 **B191B2**

DATA SHEET

SDG	7147	Client/Case no	Hanford	SDG H2815	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R411093-03	Client sample id	B191B2		
Dept sample id	7147-003	Location/Matrix	216-T-28; 22.5ft-25ft	SOLID	
Received	11/10/04	Collected/Weight	10/26/04 09:41	237.8 g	
% solids	93.2	Custody/SAF No	F03-025-069	F03-025	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	15.0	0.60	0.36	400		H
Carbon 14	14762-75-5	1.64	1.7	2.8	50	U	C
Nickel 63	13981-37-8	87.5	21	30	30		NI_L
Total Strontium	SR-RAD	4010	65	8.4	1.0		SR
Technetium 99	14133-76-7	1.10	0.24	0.36	15		TC
Thorium 228	14274-82-9	1.82	0.55	0.38		J	TH
Thorium 230	14269-63-7	-0.206	0.55	1.1	1.0	U J	TH
Thorium 232	TH-232	0.309	0.28	0.33	1.0	U J	TH

200-LW-1/LW-2 Characterization-Soil

3/20/05

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/28/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H2815 was composed of three solid (soil) samples designated under SAF No. F03-025 with a Project Designation of: 200-LW-1/LW-2 Characterization – Soil.

The samples were received as stated on the Chain-of-Custody documents. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist.

2.0 ANALYSIS NOTES

2.1 Tritium Analyses

No problems were encountered during the course of the analyses.

2.2 Carbon-14 Analyses

The LCS recovery was 126%, greater than the protocol limit of 120%. No other problems were encountered during the course of the analyses.

2.3 Nickel-63 Analyses

No problems were encountered during the course of the analyses.

2.4 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.5 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.6 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.7 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.8 Isotopic Thorium Analyses

No problems were encountered during the course of the analyses.

2.9 Neptunium-237 Analyses

The MDA for sample B19188 was greater than the RDL; Np-237 activity greater than the MDA was not detected in the sample. No other problems were encountered during the course of the analyses.

2.10 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.11 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.12 Gamma Spectroscopy

No problems were encountered during the course of the analyses.

Case Narrative Certification Statement

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

Melissa Mannion
Melissa C. Mannion
Senior Program Manager

1/28/5
Date

Fluor Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F03-025-056 | PAGE 1 OF 2

COLLECTOR: Pope/Pfister/Wiberg/Tyra	COMPANY CONTACT: TRENT, STEVE	TELEPHONE NO.: 373-5689	PROJECT COORDINATOR: TRENT, SJ
SAMPLING LOCATION: 216-T-28; 17.5ft-20ft	PROJECT DESIGNATION: 200-LW-1/LW-2 Characterization - Soil		SAF NO.: F03-025
ICE CHEST NO.: 12/0301003	FIELD LOGBOOK NO.: HNF-N-356-1	COA: 119143E510	METHOD OF SHIPMENT: ~~Government Vehicle~~ AT 11/09/04 Fed Ex
SHIPPED TO: AT 11/09/04 Waste Sampling & Characterization Eberline	OFFSITE PROPERTY NO.: ~~N/A~~ AT 11/09/04 See Shipment # DJ018		BILL OF LADING/AIR BILL NO.: ~~N/A~~ AT 11/09/04 See Shipment # DJ018

PRICE CODE: 8N | AIR QUALITY: ☐ | DATA TURNAROUND: 45 Days / 45 Days

MATRIX*: A=Air, DL=Drum, Liquids, DS=Drum, Solids, L=Liquid, O=Oil, S=Soil, SE=Sediment, T=Tissue, V=Vegitation, W=Water, WI=Wipe, X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS: N/A

SPECIAL HANDLING AND/OR STORAGE: ~~N/A~~ Radioactive Tie To B19166

PRESERVATION	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None			
TYPE OF CONTAINER	Gs*	aG	aG	Gs*	P	aG	aG			
NO. OF CONTAINER(S)	3	AT 11/04/04	1	3 AT 11/04/04	1	AT 11/04/04	1			
VOLUME	40mL	120mL	120mL	40mL	500mL	250mL	120mL			
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	PCBs - 8082;	SEE ITEM (3) IN SPECIAL INSTRUCTIONS (4)	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	SEE ITEM (5) IN SPECIAL INSTRUCTIONS	SEE ITEM (6) IN SPECIAL INSTRUCTIONS			

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME										
B19188	SOIL	10-20-04	1040	X	X	X	X	X	X	X			

CHAIN OF POSSESSION | SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
J S Pope/Pfister 10-20-04	1230	SITE RMA FRIDGE 10-20-04	1230
Site RMA Fridge 11/04/04	0950	Greg Thomas Greg Thomas 11/04/04	0950
Greg Thomas Greg Thomas 11/04/04	1135	MO-026 Frig #3 11/04/04	1135
MO-026 Frig #3 11/09/04	0840	Greg Thomas Greg Thomas 11/09/04	0840
Greg Thomas Greg Thomas 11/09/04	0850	Fed Ex	
Fed Ex 11/10/04		[signature] 11/10/04	9:30

SPECIAL INSTRUCTIONS

SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

(4) 1 - 12g sample per Steve Trent.

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

A-6003-618(03/03)

000017

00000049

Fluor Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F03-025-056	PAGE 2 OF 2
COLLECTOR Pope/Pfister/Wiberg/Tyra	COMPANY CONTACT TRENT, STEVE	TELEPHONE NO. 373-5689	PROJECT COORDINATOR TRENT, SJ	PRICE CODE ~~2A~~ BH AT 11/04/04	DATA TURNAROUND
SAMPLING LOCATION 216-T-28; 17.5ft-20ft	PROJECT DESIGNATION 200-LW-1/LW-2 Characterization - Soil		SAF NO. F03-025	AIR QUALITY ☐	~~24 Hours~~ 45 days
ICE CHEST NO. 12/03c10036 ~~12/03c10036~~ OT 11/09/04	FIELD LOGBOOK NO. HNF-N-356-1	COA 119143ES10	METHOD OF SHIPMENT 2/9/04 Government Vehicle Fed Ex		
SHIPPED TO AT 11/09/04 Waste Sampling & Characterization Ebertine	OFFSITE PROPERTY NO. AT 11/9/04 See Shipment # DJ018		BILL OF LADING/AIR BILL NO. AT 11/09/04 See Shipment # DJ018		

SPECIAL INSTRUCTIONS

The laboratory is to analyze pH within 24 hours of sample receipt. The laboratory is to report kerosene range organics from the WTPH-D analysis.

(1)VOA - 8260A (TCL); VOA - 8260A (Add-On) (1-Butanol) *
(2)Semi-VOA - 8270A (TCL) (Phenol) Semi-VOA - 8270A (Add-On) (Tributyl phosphate) TPH-Diesel Range - WTPH-D (Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range) TPH-Gasoline Range - WTPH-G; *
(3)Alcohols, Glycols, & Ketones - 8015 (Ethylene glycol) *
(4)Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155) Gamma Spec - Add-on (Antimony-125, Cesium-134) Isotopic Plutonium; Isotopic Uranium; Neptunium-237; Americium-241;
(5)ICP/MS - 200.8 (TAL) (Antimony, Barium, Cadmium, Chromium, Copper, Nickel, Silver) ICP/MS - 200.8 (Add-on) (Arsenic, Beryllium, Lead, Mercury, Selenium, Uranium) ICP Metals - 6010A (Addon) (Bismuth) *
(6)IC Anions - 300.0 (Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphorous in phosphate, Sulfate) Cations (IC) - 300.7 (Nitrogen in ammonium) Cyanide (Total) - 335.2; pH (Soil) - 9045; *

* AT 11/04/04

000018

00000050

A-6003-618(03/03)

FLUOR Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F03-025-169	PAGE 1 OF 1
COLLECTOR: Pope/Pfister/Hughes/Wiberg	COMPANY CONTACT: TRENT, STEVE	TELEPHONE NO.: 373-5689	PROJECT COORDINATOR: TRENT, SJ	PRICE CODE: 8N; AIR QUALITY: ☐; DATA TURNAROUND: 45 Days / 45 Days
SAMPLING LOCATION: 216-T-28; 22.5ft-25ft	PROJECT DESIGNATION: 200-LW-1/LW-2 Characterization - Soil		SAF NO.: F03-025	
ICE CHEST NO.: 12/03010036	FIELD LOGBOOK NO.: HNF-N-356 1	COA: 119143E510	METHOD OF SHIPMENT: Federal Express	
SHIPPED TO: Eberline Services	OFFSITE PROPERTY NO.: See Shipment # DJ018		BILL OF LADING/AIR BILL NO.: See Shipment # DJ018	

MATRIX*: A=Air; DL=Drum Liquids; DS=Drum Solids; L=Liquid; O=Oil; S=Soil; SE=Sediment; T=Tissue; V=Vegitation; W=Water; WI=Wipe; X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS: N/A

SPECIAL HANDLING AND/OR STORAGE: N/A Radioactive TC to: B19HC7

PRESERVATION	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None		
TYPE OF CONTAINER	aGs*	aG	aG	Gs*	aG	aG	aG	aG		
NO. OF CONTAINER(S)	3	1	1	3	1	1	1	1		
VOLUME	40mL	120mL	120mL	40mL	120mL	250mL	500mL	500mL		
SAMPLE ANALYSIS	VOA - 8260A (TCL);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	PCBs - 8082;	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	SEE ITEM (5) IN SPECIAL INSTRUCTIONS	SEE ITEM (6) IN SPECIAL INSTRUCTIONS		

TMT 9-04

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME										
B19HY6	SOIL	10-26-04	0941								X		

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
J S Pope [signature]	10-26-04 1230	Site Fridge	10-26-04 1230
Site Fridge	11/04/04 9:50	Greg Thomas [signature]	11/04/04 9:50
Greg Thomas [signature]	11/04/04 1135	MO-026 Frig #3	11/04/04 1135
MO-026 Frig #3	11/09/04 0840	Greg Thomas [signature]	11/09/04 0840
Greg Thomas [signature]	11/09/04 0850	Fed Ex	
Fed Ex	11/10/04	[signature]	11/10/04 9:30

SPECIAL INSTRUCTIONS

(1)Semi-VOA - 8270A (TCL) {Phenol} Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(2)TPH-Diesel Range - WTPH-D {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range} TPH-Gasoline Range - WTPH-G;
(3)Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Ethylene glycol}
(4)ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver} ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Copper, Nickel} Mercury - 7471 - (CV);
(5)IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate} Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045;
(6)Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155} Gamma Spec - Add-on {Antimony-125, Cesium-134} Isotopic Plutonium; Isotopic Uranium; Americium-241; Neptunium-237; Total Uranium;

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

000019

000000051

FLUOR Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F03-025-069	PAGE 1 OF 1
COLLECTOR: Pope/Pfister/Wiberg/Tyra	COMPANY CONTACT: TRENT, STEVE	TELEPHONE NO.: 373-5689	PROJECT COORDINATOR: TRENT, SJ	PRICE CODE: 8N; AIR QUALITY: ☐; DATA TURNAROUND: 45 Days / 45 Days
SAMPLING LOCATION: 216-T-28; 22.5ft-25ft	PROJECT DESIGNATION: 200-LW-1/LW-2 Characterization - Soil		SAF NO.: F03-025	
ICE CHEST NO.: 12/03010036	FIELD LOGBOOK NO.: HNF-N-356 1	COA: 119143ES10	METHOD OF SHIPMENT: Federal Express	
SHIPPED TO: Eberline Services	OFFSITE PROPERTY NO.: See Shipment # DJ018		BILL OF LADING/AIR BILL NO.: See Shipment # DJ018	

MATRIX*: A=Air, DL=Drum Liquids, DS=Drum Solids, L=Liquid, O=Oil, S=Soil, SE=Sediment, T=Tissue, V=Vegitation, W=Water, WI=Wipe, X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS: N/A

SPECIAL HANDLING AND/OR STORAGE: ~~N/A~~ Radioactive TILTO: B191C7

PRESERVATION				Cool 4C	None							
TYPE OF CONTAINER				aG	aG							
NO. OF CONTAINER(S)				1	1							
VOLUME				250mL	250mL							
SAMPLE ANALYSIS				SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS							
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME									
B191B2	SOIL	10-26-04	0941		X							

TMT 8-9-04

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
JSPAR / JSPAR	10-26-04 1230	Site Fridge	10-26-04 1230
Site Fridge	11/04/04 950	Greg Thomas / Greg Thomas	11/04/04 950
Greg Thomas / Greg Thomas	11/04/04 1135	MO-026 Frig #3	11/09/04 1135
MO-026 Frig #3	11/09/04 0840	Greg Thomas / Greg Thomas	11/09/04 0840
Greg Thomas / Greg Thomas	11/09/04 0850	Fed Ex	
Fed Ex	11/10/04	[signature]	11/10/04 9:30

SPECIAL INSTRUCTIONS

TMT 8-9-04

(1)~~Chromium Hex - 7196; NO2/NO3 - 353.2; Sulfides - 9030; Oil & Grease - 413.1~~; (2)Nickel-63; Gamma Spec - ~~Radium (Radium-226, Radium-228)~~ Technetium-99; Isotopic Thorium (Thorium-232) Tritium - H3; Carbon-14; Strontium-89,90 – Total Sr;

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

000020

000000052

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 200-LW-1/LW-2			DATA PACKAGE: #2815		
VALIDATOR: TLT		LAB: EB		DATE: 7/20/05	
			SDG: #2815		
ANALYSES PERFORMED					
Gross Alpha/Beta	Strontium-90	Technetium-99	Alpha Spectroscopy	Gamma Spectroscopy	
Total Uranium	Radium-22	Tritium	Ni-63		C-14
SAMPLES/MATRIX					
B19188	B19HY8	B19D2			
					Soil

1. Completeness ..... ☐ N/A

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

Comments: _____

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

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

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

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

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

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

Comments: _____

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

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

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

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

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

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

Comments: _____

_____

_____

_____

_____

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

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

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

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

Comments: _____

_____

_____

_____

_____

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

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

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

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

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

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

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

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

Comments: NO FB

several over RTQL

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

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

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

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

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

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

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

Comments: no th228 or th232 LCS - J all

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

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

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

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

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

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

Comments: _____

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

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

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

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

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

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

Comments: _____

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

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

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

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

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

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

Comments: Used tracer rec for all but 3H per FHI instructions

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

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

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

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

Comments: _____

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

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

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

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

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

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

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

Comments: _____

12. Holding Times (All levels)

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

Comments: _____

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

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

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

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

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

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

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

Comments: 9 over

Appendix 6

Additional Documentation Requested by Client

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2815

7147-005 **Method Blank**

METHOD BLANK

SDG	7147	Client/Case no	Hanford	SDG H2815	
Contact	Melissa C. Mannion	Contract	No. 630		
Lab sample id	R411093-05	Client sample id	Method Blank		
Dept sample id	7147-005	Material/Matrix		SOLID	
		SAF No	F03-025		

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Tritium	10028-17-8	-0.102	0.21	0.36	400	U	H
Carbon 14	14762-75-5	1.27	2.3	3.8	50	U	C
Nickel 63	13981-37-8	-2.83	17	30	30	U	NI_L
Total Strontium	SR-RAD	1.16	2.9	5.7	1.0	U	SR
Technetium 99	14133-76-7	0.002	0.34	0.42	15	U	TC
Thorium 228	14274-82-9	-0.095	0.19	0.73		U	TH
Thorium 230	14269-63-7	-0.285	0.57	1.3	1.0	U	TH
Thorium 232	TH-232	-0.095	0.19	0.73	1.0	U	TH
Total Uranium (ug/g)	7440-61-1	0.006	0.004	0.008	1.0	U	U_T
Uranium 233/234	U-233/234	0	4.9	19	1.0	U	U
Uranium 235	15117-96-1	0	5.9	22	1.0	U	U
Uranium 238	U-238	0	4.9	19	1.0	U	U
Neptunium 237	13994-20-2	1.56	3.1	6.0	1.0	U	NP
Plutonium 238	13981-16-3	-3.04	6.1	23	1.0	U	PU
Plutonium 239/240	PU-239/240	6.08	6.1	23	1.0	U	PU
Americium 241	14596-10-2	8.88	18	34	1.0	U	AM
Potassium 40	13966-00-2	U		8.7		U	GAM
Cobalt 60	10198-40-0	U		0.92	0.050	U	GAM
Antimony 125	14234-35-6	U		1.8		U	GAM
Cesium 134	13967-70-9	U		1.1		U	GAM
Cesium 137	10045-97-3	U		0.89	0.10	U	GAM
Radium 226	13982-63-3	U		1.5		U	GAM
Radium 228	15262-20-1	U		3.2		U	GAM
Europium 152	14683-23-9	U		2.0	0.10	U	GAM
Europium 154	15585-10-1	U		2.8	0.10	U	GAM
Europium 155	14391-16-3	U		0.99	0.10	U	GAM
Thorium 228	14274-82-9	U		0.83		U	GAM
Thorium 232	TH-232	U		3.2		U	GAM
Uranium 235	15117-96-1	U		1.8		U	GAM

200-LW-1/LW-2 Characterization-Soil

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/28/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2815

7147-005 **Method Blank**

BLANK, cont.

SDG	7147	Client/Case no	Hanford SDG H2815
Contact	Melissa C. Mannion	Contract	No. 630
Lab sample id	R411093-05	Client sample id	Method Blank
Dept sample id	7147-005	Material/Matrix	SOLID
		SAF No	F03-025

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST
Uranium 238	U-238	U		100		U	GAM
Americium 241	14596-10-2	U		0.56		U	GAM

200-LW-1/LW-2 Characterization-Soil

QC-BLANK 50020

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DS
Version	3.06
Report date	01/28/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2815

7147-004

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7147

Contact Melissa C. Mannion

Client/Case no Hanford SDG H2815

Contract No. 630

Lab sample id R411093-04

Dept sample id 7147-004

Client sample id Lab Control Sample

Material/Matrix SOLID

SAF No F03-025

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	11.3	0.53	0.36	400		H	11.9	0.48	95	83-117	80-120
Carbon 14	2690	54	9.4	50		C	2130	85	126	80-120	80-120
Nickel 63	2290	60	31	30		NI_L	2260	90	101	83-117	80-120
Total Strontium	230	12	5.2	1.0		SR	202	8.1	114	80-120	80-120
Technetium 99	113	2.8	0.54	15		TC	109	4.4	104	83-117	80-120
Thorium 230	212	9.9	1.0	1.0		TH	210	8.4	101	88-112	80-120
Total Uranium (ug/g)	34.6	4.2	0.084	1.0	X	U_T	33.0	1.3	105	76-124	80-120
Uranium 233/234	2260	220	100	1.0		U	2320	93	97	83-117	80-120
Uranium 235	1800	190	23	1.0		U	1890	76	95	82-118	80-120
Uranium 238	2520	240	97	1.0		U	2520	100	100	83-117	80-120
Neptunium 237	2580	120	4.3	1.0		NP	2480	99	104	88-112	80-120
Plutonium 238	2980	100	5.1	1.0		PU	3300	130	90	90-110	80-120
Plutonium 239/240	3270	110	4.2	1.0		PU	3000	120	109	88-112	80-120
Americium 241	2470	270	31	1.0		AM	2550	100	97	82-118	80-120
Cobalt 60	74.6	1.7	0.68	0.050		GAM	77.3	3.1	97	77-123	80-120
Cesium 137	74.7	1.4	0.86	0.10		GAM	74.7	3.0	100	77-123	80-120

200-LW-1/LW-2 Characterization-Soil

QC-LCS 50019

Lab id EBRLNE
Protocol Hanford
Version Ver 1.0
Form DVD-LCS
Version 3.06
Report date 01/28/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2815

7147-006 B19HY6

DUPLICATE

SDG	7147			Client/Case no	Hanford SDG H2815
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R411093-06	Lab sample id	R411093-02	Client sample id	B19HY6
Dept sample id	7147-006	Dept sample id	7147-002	Location/Matrix	216-T-28; 22.5ft-25ft SOLID
		Received	11/10/04	Collected/Weight	10/26/04 09:41 465.8 g
% solids	92.2	% solids	92.2	Custody/SAF No	F03-025-169 F03-025

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ PROT TOT LIMIT
Total Uranium (ug/g)	119	15	0.84	1.0		U_T	125	16	0.84		5	33
Uranium 233/234	60.3	7.4	1.3	1.0		U	59.4	7.4	1.7		2	28
Uranium 235	2.24	1.2	1.6	1.0		U	3.44	1.7	1.6		42	110
Uranium 238	35.3	5.5	1.3	1.0		U	35.1	5.4	1.7		1	35
Neptunium 237	0.181	0.24	0.46	1.0	U	NP	-0.064	0.13	0.49	U	-	
Plutonium 238	1.19	1.2	1.5	1.0	U	PU	0.632	0.63	0.81	U	-	
Plutonium 239/240	13.0	3.3	1.5	1.0		PU	13.0	2.4	0.80		0	48
Americium 241	7.11	3.0	1.9	1.0		AM	9.15	2.9	1.8		25	78
Potassium 40	12.5	2.9	2.4			GAM	15.0	2.6	1.9		18	53
Cobalt 60	1.47	0.30	0.29	0.050		GAM	1.52	0.32	0.28		3	54
Antimony 125	U		5.8		U	GAM	U		5.2	U	-	
Cesium 134	U		0.38		U	GAM	U		0.43	U	-	
Cesium 137	3340	6.0	1.9	0.10		GAM	3470	6.0	1.4		4	32
Radium 226	U		2.4		U	GAM	U		1.9	U	-	
Radium 228	U		1.2		U	GAM	U		1.8	U	-	
Europium 152	U		4.5	0.10	U	GAM	U		4.5	U	-	
Europium 154	U		1.2	0.10	U	GAM	U		1.6	U	-	
Europium 155	U		2.8	0.10	U	GAM	U		2.7	U	-	
Thorium 228	2.81	1.4	2.0			GAM	2.69	1.4	2.0		4	113
Thorium 232	U		1.2		U	GAM	U		1.8	U	-	
Uranium 235	U		4.0		U	GAM	U		3.8	U	-	
Uranium 238	U		38		U	GAM	U		72	U	-	
Americium 241	U		7.4		U	GAM	U		8.7	U	-	

200-LW-1/LW-2 Characterization-Soil

QC-DUP#2 50021

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/28/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2815

7147-007 B191B2

DUPLICATE

SDG	7147			Client/Case no	Hanford SDG H2815
Contact	Melissa C. Mannion			Contract	No. 630
	DUPLICATE		ORIGINAL		
Lab sample id	R411093-07	Lab sample id	R411093-03	Client sample id	B191B2
Dept sample id	7147-007	Dept sample id	7147-003	Location/Matrix	216-T-28; 22.5ft-25ft SOLID
		Received	11/10/04	Collected/Weight	10/26/04 09:41 237.8 g
% solids	93.2	% solids	93.2	Custody/SAF No	F03-025-069 F03-025

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI-FIERS	RPD %	3σ TOT	PROT LIMIT
Tritium	16.3	0.63	0.37	400		H	15.0	0.60	0.36		8	23	
Carbon 14	1.10	1.7	2.8	50	U	C	1.64	1.7	2.8	U	-		
Nickel 63	125	24	33	30		NI_L	87.5	21	30		35	50	
Total Strontium	3950	65	8.4	1.0		SR	4010	65	8.4		2	22	
Technetium 99	1.08	0.35	0.36	15		TC	1.10	0.24	0.36		2	62	
Thorium 228	1.69	0.80	0.76			TH	1.82	0.55	0.38		7	84	
Thorium 230	-0.099	0.60	1.2	1.0	U	TH	-0.206	0.55	1.1	U	-		
Thorium 232	0.597	0.60	0.76	1.0	U	TH	0.309	0.28	0.33	U	-		

200-LW-1/LW-2 Characterization-Soil

QC-DUP#3 50022

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-DUP
Version	3.06
Report date	01/28/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H2815

7147-008

B191B2

MATRIX SPIKE

SDG	7147			Client/Case no	Hanford SDG H2815
Contact	Melissa C. Mannion			Contract	No. 630
	MATRIX SPIKE		ORIGINAL		
Lab sample id	R411093-08	Lab sample id	R411093-03	Client sample id	B191B2
Dept sample id	7147-008	Dept sample id	7147-003	Location/Matrix	216-T-28; 22.5ft-25ft SOLID
		Received	11/10/04	Collected/Weight	10/26/04 09:41 237.8 g
% solids	93.2	% solids	93.2	Custody/SAF No	F03-025-069 F03-025

ANALYTE	SPIKE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI-FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	ORIGINAL pCi/g	2σ ERR (COUNT)	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	72.8	1.3	0.37	400	X	H	59.6	2.4	15.0	0.60	97	80-120	60-140

200-LW-1/LW-2 Characterization-Soil

QC-MS#3 50023

Lab id	EBRLNE
Protocol	Hanford
Version	Ver 1.0
Form	DVD-MS
Version	3.06
Report date	01/28/05

Date: 24 March 2005
To: Fluor Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 200-LW-1/LW-2 Characterization - Soil
Subject: PCB - Data Package No. H2815

APR 2005
RECEIVED

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2815 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	Media	Validation	Analysis
B19HY6	10/26/04	Soil	C	PCBs by 8082

Data validation was conducted in accordance with the FHI validation statement of work and the 200-LW-1/200-LW-2 Chemical Laboratory Waste Group OUs RI/FS Work Plan (DOE/RL-2001-66, Draft A, Redline, May 2002). Appendices 1 through 5 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

- **Holding Times/Sample Preservation**

Sample data were assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be extracted within 14 days of the date of sample collection and analyzed within 40 days from the date of extraction.

If holding times are exceeded by less than 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".

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

- **Method Blank**

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation or analysis. At least one method blank analysis must be conducted for every 20 samples. Method blanks should not contain target compounds at a concentration greater than minimum detectable activity (MDA). 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 MDA, the result is qualified as undetected and elevated to the MDA.

All method blank target compound results were acceptable.

Field Blanks

No equipment blanks were submitted for analysis.

- **Accuracy**

Matrix Spike/Blank Spike

Matrix spike and blank spike analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations and is done in duplicate. Matrix spike and blank spike analyses must be within control limits of 50% to 150%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

Due to interference in the aroclor-1260 matrix spike, all PCB results except for aroclor-1016 were qualified as estimates and flagged "J".

All other MS/BS results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the

unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-detected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Non-detected compounds with surrogate recoveries above the upper control limit require no qualification.

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 35%. 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 interference in the aroclor-1260 matrix spike, all PCB results except for aroclor-1016 were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

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

- **Completeness**

Data Package No. H2815 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 less than twice the limit, all PCB results were qualified as estimates and flagged "J". Due to interference in the aroclor-1260 matrix spike, all PCB results except for aroclor-1016 were qualified as estimates and flagged "J". Data flagged "J" is an estimate, but under the FHI validation SOW, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

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

DOE/RL-2001-66, Draft A, Redline, *200-LW-1/200-LW-2 Chemical Laboratory Waste Group OUs RI/FS Work Plan*, May 2002.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validators in compliance with the procedures herein are as follows:

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

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

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

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

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

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

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

Appendix 2

Summary of Data Qualification

PCB DATA QUALIFICATION SUMMARY*

SDG: H2815	REVIEWER: TLI	DATE: 3/24/05	PAGE_1_OF_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All	J	All	Holding time
All except aroclor-1016	J	All	MS Interference

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

PCB ANALYSIS, SOIL MATRIX, (UG/KG)

Project: FLUOR-HANFORD					
Laboratory: LLI					
Case:	**SDG: H2815**				
Sample Number		B19HY6			
Remarks					
Sample Date		10/26/04			
Analysis Date		11/18/04			
PCB	**RDL**	**Result**	**Q**	**Result**	**Q**
Aroclor-1016	**16.5**	14	UJ		
Aroclor-1221	**16.5**	14	UJ		
Aroclor-1232	**16.5**	14	UJ		
Aroclor-1242	**16.5**	14	UJ		
Aroclor-1248	**16.5**	14	UJ		
Aroclor-1254	**16.5**	240	J		
Aroclor-1260	**16.5**	14	UJ		

000010

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

Lionville Laboratory, Inc.

PCBs by GC

Report Date: 12/14/04 13:51

RFW Batch Number: 0411L115 Client: TNUHANFORD F03-025 H2815 Work Order: 11343606001 Page: 1

	Cust ID:	B19HY6	B19HY6	B19HY6	PBLKAE	PBLKAE BS
Sample Information	RFW#:	001	001 MS	001 MSD	04LE1364-MB1	04LE1364-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:	Tetrachloro-m-xylene	109 %	110 %	113 %	106 %	95 %
	Decachlorobiphenyl	111 %	116 %	128 * %	112 %	103 %
Aroclor-1016		14 U	128 %	136 %	13 U	94 %
Aroclor-1221		14 U	14 U	14 U	13 U	13 U
Aroclor-1232		14 U	14 U	14 U	13 U	13 U
Aroclor-1242		14 U	14 U	14 U	13 U	13 U
Aroclor-1248		14 U	14 U	14 U	13 U	13 U
Aroclor-1254		240	I	I	13 U	13 U
Aroclor-1260		14 U	I %	I %	13 U	88 %

Re
3/20/05

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

2/27/05

000011

00000028

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU HANFORD F03-025
LVL#: 0411L115
SDG/SAF#: H2815/F03-025

W.O.#: 11343-606-001-9999-00
Date Received: 11-10-2004

PCB

One (1) soil sample was collected on 10-26-2004.

The sample and its associated QC samples were extracted on 11-11-2004 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 11-18-2004. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

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

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

2. The sample was received outside the extraction holding time. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

3. The sample and its associated QC samples received Copper-Sulfur and Sulfuric Acid cleanups according to Lionville Laboratory SOPs based on SW846 methods 3660A and 3665A respectively.

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

5. One (1) of ten (10) surrogate recoveries was outside acceptance criteria. However, the surrogate recovery criteria were met (i.e., no more than one outlier per sample).

6. The blank spike recoveries were within acceptance criteria.

7. All obtainable matrix spike recoveries were within acceptance criteria. The unobtainable matrix spike recoveries for Aroclor-1260 were due to the matrix interferences.

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

1/24/05
Date

00000025

som\r:\group\data\pest\tnu hanford\0411-115.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 9 pages.

000013

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 046672

Initiator: DR
Date: 12/27/04
Client: TNU

Batch: 0411415
Samples: All
Method: SW846/MCAWW/CLP/

Parameter: CPCB
Matrix: Soil
Prep Batch: 0416364

1. Reason for SDR

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

b. General Discrepancy

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

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

c. Problem (Include all relevant specific results; attach data if necessary) Sample collected 10/26/04 Received at LVLI on 11/10/04 – 1 Day out of Extraction Hold Time. Will narrate

2. Known or Probable Causes(s)

3. Discussion and Proposed Action Other Description:

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

4. Project Manager Instructions...signature/date: _____ 12/27/04

✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: _____ 12/27/04 Other Explanation:

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

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
2	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
1	X Project Mgr: Stone/Johnson/Haslett	2	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
__	X QA (file): Alberts	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____ 00000026

FLUOR Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-025-169	PAGE 1 OF 1

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 8N	DATA TURNAROUND
Pope/Pfister/Hughes/Wiberg	TRENT, STEVE	373-5689	TRENT, SJ	AIR QUALITY ☐	45 Days / 45 Days
SAMPLING LOCATION	**PROJECT DESIGNATION**		**SAF NO.**		
216-T-28; 22.5ft-25ft	200-LW-1/LW-2 Characterization - Soil		F03-025		

ICE CHEST NO.	FIELD LOGBOOK NO.	COA	METHOD OF SHIPMENT
GRP-04-011	HNF-N-356 1	119143ES10	Federal Express

SHIPPED TO	OFFSITE PROPERTY NO.	BILL OF LADING/AIR BILL NO.
~~Sperlino Services~~ MOTA Presra	See Shipment # DJ019	See Shipment # DJ019

MATRIX*: A=Air, DL=Drum Liquids, DS=Drum Solids, L=Liquid, O=Oil, S=Soil, SE=Sediment, T=Tissue, V=Vegitation, W=Water, WI=Wipe, X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS: N/A

SPECIAL HANDLING AND/OR STORAGE: N/A; Radioactive T.L TO: B91C7

PRESERVATION	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None
TYPE OF CONTAINER	aGs*	aG	aG	Gs*	aG	aG	aG	aG
NO. OF CONTAINER(S)	3	1	1	3	1	1	1	1
VOLUME	40mL	120mL	120mL	40mL	120mL	250mL	500mL	500mL
SAMPLE ANALYSIS	VOA - 8260A (TCL);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	PCBs - 8082;	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	SEE ITEM (5) IN SPECIAL INSTRUCTIONS	SEE ITEM (6) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME										
B19HY6	SOIL	10-26-04	0941	X	X	X	X	X	X	X			

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

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
J Sloane	10-26-04 1230	Site Fridge 10-26-04	1230
Site Fridge	11-04-04 9:50	Greg Thomas	11/04/04 950
Greg Thomas	11/04/04 1135	MO-026 Frig #3 11/04/04	1135
MO-026 Frig #3	11/09/04 0810	Greg Thomas	11/09/04 0810
Greg Thomas	11/09/04 0820	Fed Ex	
FedEx		JRuny 11/10/04	0940

SPECIAL INSTRUCTIONS

FH acknowledges that the analytical holding time for Nitrate, Nitrite and Phosphate by EPA Method 300.0 will not be met. The lab is to analyze pH within 24 hours of sample receipt, and. report kerosene range organics from the WTPH-D analysis.

(1)Semi-VOA - 8270A (TCL) {Phenol} Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(2)TPH-Diesel Range - WTPH-D {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range} TPH-Gasoline Range - WTPH-G;
(3)Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Ethylene glycol}
(4)ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver} ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Copper, Nickel} Mercury - 7471 - (CV);
(5)IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate} Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045;
~~(6)Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154,~~ MJX 9-04

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

000015

000000030

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 200-LW-1/LW-2			DATA PACKAGE: H2815		
VALIDATOR: TLI		LAB: LLI		DATE: 3/20/05	
			SDG: H2815		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
B19HY6					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

Comments:

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: NO FB

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

Surrogates analyzed? ..... Yes No N/A

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Comments: MS 1260 interference - J all but 1016

NO PAS

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: 1260 – interference – J all but 1016

6. SYSTEM PERFORMANCE (Levels D and E)

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

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

Comments:

7. HOLDING TIMES (all levels)

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

Sample holding times acceptable? ..... ~~Yes~~ (No) N/A

Comments:

HT – exceeded by less than 2X – J all

PCB DATA VALIDATION CHECKLIST

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

Compound identification acceptable? (Levels D, E) ..... Yes No N/A

Compound quantitation acceptable? (Levels D, E) ..... Yes No N/A

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

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

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

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

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

Comments: _____

9. SAMPLE CLEANUP (Levels D and E)

Fluoricil ® (or other absorbent) cleanup performed? ..... Yes No N/A

Lot check performed? ..... Yes No N/A

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

GPC cleanup performed? ..... Yes No N/A

GPC check performed? ..... Yes No N/A

GPC check recoveries acceptable? ..... Yes No N/A

GPC calibration performed? ..... Yes No N/A

GPC calibration check performed? ..... Yes No N/A

GPC calibration check retention times acceptable? ..... Yes No N/A

Check/calibration materials traceable? ..... Yes No N/A

Check/calibration materials Expired? ..... Yes No N/A

Analytical batch QC given similar cleanup? ..... Yes No N/A

Transcription/Calculation Errors? ..... Yes No N/A

Comments: _____

Date: 24 March 2005
To: Fluor Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 200-LW-1/LW-2 Characterization - Soil
Subject: Inorganics - Data Package No. H2815

APR 2005
RECEIVED

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2815 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	Media	Validation	Analysis
B19HY6	10/26/04	Soil	C	See note 1

1 - ICP by 6010B and mercury by 7471A.

Data validation was conducted in accordance with the FHI validation statement of work and the 200-LW-1/200-LW-2 Chemical Laboratory Waste Group OUs RI/FS Work Plan (DOE/RL-2001-66, Draft A, Redline, May 2002). Appendices 1 through 6 provide the following information as indicated below:

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

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 6 months for ICP metals and 28 days for mercury.

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

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

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

All preparation blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike & Matrix Spike Duplicate

Matrix spike (MS), matrix spike duplicate (MSD) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 75% to 125%. 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 74% and a sample result less than the IDL are qualified "UJ". Samples with a spike recovery of greater than 125% or less than 74% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a spike recovery greater than 125% and a sample result less than the IDL, no qualification is required.

Due to a matrix spike recovery outside QC limits (141%), all chromium results were qualified as estimates and flagged "J".

Due to a matrix spike recovery outside QC limits (57%), all antimony results were qualified as estimates and flagged "J".

All other MS/MSD results were acceptable.

Laboratory Control Sample

The LCS is used to monitor the overall performance of all steps in the analysis. Recoveries must fall within the range of 80% to 120% for LCS analysis. Samples with a recovery of less than 50% are rejected and flagged "UR". Samples with a recovery of 50% to 79% and a sample recovery below the IDL are qualified "UJ". Samples with a recovery of greater than 120% or less than 80% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 120% and a sample result less than the IDL, no qualification is required.

All LCS results were acceptable.

- **Precision**

Laboratory Duplicate Samples

Analytical precision is expressed by the relative percent differences (RPD) between the recoveries of matrix spike and matrix spike duplicate (MSD) analyses performed on a sample in the analytical batch. Precision may alternatively be assessed using unspiked duplicate analyses performed on a sample in the analytical batch. If both sample and replicate activities (concentrations) are greater than five times the CRDL and the RPD is less than +/- 35%, no qualification is required. If either activity (concentration) is less than five times the CRDL, the RPD control limit is less than or equal to two times the CRDL. If the RPD is outside the applicable control limit, associated results are qualified as estimated detects or estimated non-detects.

All laboratory duplicate results were acceptable.

Field Duplicate

No field duplicate results were submitted for analysis.

- **Analytical Detection Limits**

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

- **Completeness**

Data package No. H2815 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 a matrix spike recovery outside QC limits (141%), all chromium results were qualified as estimates and flagged "J". Due to a matrix spike recovery outside QC limits (57%), all antimony results were qualified as estimates and flagged "J". Data flagged "J" is an estimate, but under the FHI validation SOW, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

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

DOE/RL-2001-66, Draft A, Redline, *200-LW-1/200-LW-2 Chemical Laboratory Waste Group OUs RI/FS Work Plan*, May 2002.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

SDG: H2815	REVIEWER: TLI	DATE: 3/24/05	PAGE_1_OF_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Chromium Antimony	J	All	MS recovery

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

Project: FLUOR HANFORD			
Laboratory: LLI			
Case	SDG: H2815		
Sample Number		BB19HY6	
Remarks			
Sample Date		10/26/04	
Inorganics		Result	Q
Silver	0.5	2.1	
Arsenic	1	2.0	
Barium	20	85.6	
Beryllium	0.5	0.28	
Bismuth		0.41	
Cadmium	0.5	0.19	
Chromium	1	10.0	J
Copper	2.5	13.8	
Mercury	0.2	6.8	
Nickel	4	10.3	
Lead	1	5.1	
Antimony	1	0.26	UJ
Selenium	10	0.34	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 01/05/05

CLIENT: TNUHANFORD F03-025 H2815 LVL LOT #: 0411L115

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B19HY6	Silver, Total	2.1	MG/KG	0.09	1.0
		Arsenic, Total	2.0	MG/KG	0.24	1.0
		Barium, Total	85.6	MG/KG	0.04	1.0
		Beryllium, Total	0.28	MG/KG	0.009	1.0
		Bismuth, Total	0.41	MG/KG	0.33	1.0
		Cadmium, Total	0.19	MG/KG	0.03	1.0
		Chromium, Total	10.0 J	MG/KG	0.07	1.0
		Copper, Total	13.8	MG/KG	0.13	1.0
		Mercury, Total	6.8	MG/KG	0.16	10.0
		Nickel, Total	10.3	MG/KG	0.11	1.0
		Lead, Total	5.1	MG/KG	0.20	1.0
		Antimony, Total	0.26 u J	MG/KG	0.26	1.0
		Selenium, Total	0.34 u	MG/KG	0.34	1.0

3/20/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD F03-025
LVL#: 0411L115
SDG/SAF#: H2815/F03-025

W.O.#: 11343-606-001-9999-00
Date Received: 11-10-04

METALS CASE NARRATIVE

1. This narrative covers the analysis of 1 soil sample.

2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary. The sample was rerun for Mercury with a 10-fold dilution due to high concentration.

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

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

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

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

7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), 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 15 pages.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
B19HY6	Chromium	200	102.5
	Antimony	100	105.9

12. The duplicate analyses for 3 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

1/7/05
Date

jjw/m11-115

FLUOR Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-025-169	PAGE 1 OF 1

COLLECTOR: Pope/Pfister/Hughes/Wiberg	COMPANY CONTACT: TRENT, STEVE	TELEPHONE NO.: 373-5689	PROJECT COORDINATOR: TRENT, SJ
SAMPLING LOCATION: 216-T-28; 22.5ft-25ft	PROJECT DESIGNATION: 200-LW-1/LW-2 Characterization - Soil		SAF NO.: F03-025
ICE CHEST NO.: GRP-04-011	FIELD LOGBOOK NO.: HNF-N-356 1	COA: 119143ES10	METHOD OF SHIPMENT: Federal Express
SHIPPED TO: ~~Battelle Services~~ MTX A-04 Pesra	OFFSITE PROPERTY NO.: See Shipment # DJ019		BILL OF LADING/AIR BILL NO.: See Shipment # DJ019

PRICE CODE: 8N
AIR QUALITY: ☐
DATA TURNAROUND: 45 Days / 45 Days

MATRIX*: A=Air, DL=Drum Liquids, DS=Drum Solids, L=Liquid, O=Oil, S=Soil, SE=Sediment, T=Tissue, V=Vegitation, W=Water, WI=Wipe, X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS: N/A

SPECIAL HANDLING AND/OR STORAGE: ~~N/A~~ MTX A-04 Radiocaine TIL TO: B91C7

PRESERVATION	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None				
TYPE OF CONTAINER	aGs*	aG	aG	Gs*	aG	aG	aG	aG				
NO. OF CONTAINER(S)	3	1	1	3	1	1	1	1				
VOLUME	40mL	120mL	120mL	40mL	120mL	250mL	500mL	500mL				
SAMPLE ANALYSIS	VOA - 8260A (TCL);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	PCBs - 8082;	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	SEE ITEM (5) IN SPECIAL INSTRUCTIONS	SEE ITEM (6) IN SPECIAL INSTRUCTIONS				

TMT 8-9-04

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME										
B19HY6	SOIL	10-26-04	0941	X	X	X	X	X	X	X			

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
J Stone	10-26-04 1230	Site Fridge	10-26-04 1230
Site Fridge	11-04-04 9:50	Greg Thomas	11/04/04 950
Greg Thomas	11/04/04 1135	Mo-026 Frig #3	11/04/04 1135
Mo-026 Frig #3	11/09/04 0810	Greg Thomas	11/09/04 0810
Greg Thomas	11/09/04 0820	Fed Ex	
FedEx		JRuny	11/10/04 0940

SPECIAL INSTRUCTIONS

FH acknowledges that the analytical holding time for Nitrate, Nitrite and Phosphate by EPA Method 300.0 will not be met. The lab is to analyze pH within 24 hours of sample receipt, and. report kerosene range organics from the WTPH-D analysis.

(1)Semi-VOA - 8270A (TCL) {Phenol} Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(2)TPH-Diesel Range - WTPH-D {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range} TPH-Gasoline Range - WTPH-G;
(3)Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Ethylene glycol}
(4)ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver} ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Copper, Nickel} Mercury - 7471 - (CV);
(5)IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate} Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045;
~~(6)Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154,~~ MTX A-04

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

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 200-LW-1/LW-2			DATA PACKAGE: H2815		
VALIDATOR: TLI		LAB: LLI		DATE: 3/20/05	
			SDG: H2815		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
B19HY6					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: _____

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

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

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

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

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

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

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

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

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

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: NO FB

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

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

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

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

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

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

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

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

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

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

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

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

Comments: Chromium - 141% - J all

~~Mercury - 28% - J all~~ 4/11/9

Antimony - 57% - J all

NO PAS

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: _____

6. ICP QUALITY CONTROL (Levels D and E)

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

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

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

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

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

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

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

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

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

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

Comments: _____

8. HOLDING TIMES (all levels)

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

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

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

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

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

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

Comments:

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/05/05

CLIENT: TNUHANFORD F03-025 H2815 LVL LOT #: 0411L115

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	04L0701-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Arsenic, Total	0.26 u	MG/KG	0.26	1.0
		Barium, Total	0.04 u	MG/KG	0.04	1.0
		Beryllium, Total	0.01 u	MG/KG	0.01	1.0
		Bismuth, Total	0.36 u	MG/KG	0.36	1.0
		Cadmium, Total	0.03 u	MG/KG	0.03	1.0
		Chromium, Total	0.1	MG/KG	0.08	1.0
		Copper, Total	0.14 u	MG/KG	0.14	1.0
		Nickel, Total	0.12 u	MG/KG	0.12	1.0
		Lead, Total	0.22 u	MG/KG	0.22	1.0
		Antimony, Total	0.28 u	MG/KG	0.28	1.0
		Selenium, Total	0.37 u	MG/KG	0.37	1.0
BLANK1	04C0251-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 01/05/05

CLIENT: TNUHANFORD F03-025 H2815 LVL LOT #: 0411L115

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	B19HY6	Silver, Total	6.9	2.1	5.3	90.6	1.0
		Arsenic, Total	194	2.0	210	91.2	1.0
		Barium, Total	284	85.6	210	94.3	1.0
		Beryllium, Total	5.2	0.28	5.3	92.9	1.0
		Bismuth, Total	491	0.41	525	93.4	1.0
		Cadmium, Total	5.0	0.19	5.3	90.7	1.0
		Chromium, Total	39.7	10.0	21.0	141.4	1.0
		Copper, Total	41.4	13.8	26.3	104.9	1.0
		Mercury, Total	6.9	6.8	0.16	28.3*	10.0
		Nickel, Total	65.5	10.3	52.5	105.1	1.0
		Lead, Total	54.3	5.1	52.5	93.7	1.0
		Antimony, Total	29.9	0.26u	52.5	57.0	1.0
		Selenium, Total	186	0.34u	210	88.8	1.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 01/05/05

CLIENT: TNUHANFORD F03-025 H2815 LVL LOT #: 0411L115

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	B19HY6	Silver, Total	2.1	2.2	4.7	1.0
		Arsenic, Total	2.0	2.4	18.2	1.0
		Barium, Total	85.6	97.6	13.1	1.0
		Beryllium, Total	0.28	0.31	10.3	1.0
		Bismuth, Total	0.41	0.34u	~~NC~~ 200	1.0
		Cadmium, Total	0.19	0.16	16.5 MM 1/5/05	1.0
		Chromium, Total	10.0	14.0	33.3	1.0
		Copper, Total	13.8	15.4	11.0	1.0
		Mercury, Total	6.8	6.3	8.5	10.0
		Nickel, Total	10.3	12.8	21.6	1.0
		Lead, Total	5.1	5.3	3.8	1.0
		Antimony, Total	0.26u	0.26u	NC	1.0
		Selenium, Total	0.34u	0.35u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/05/05

CLIENT: TNUHANFORD F03-025 H2815 LVL LOT #: 0411L115

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	04L0701-LC1	Silver, LCS	47.9	50.0	MG/KG	95.8
		Arsenic, LCS	914	1000	MG/KG	91.4
		Barium, LCS	487	500	MG/KG	97.5
		Beryllium, LCS	23.8	25.0	MG/KG	95.2
		Bismuth, LCS	478	500	MG/KG	95.6
		Cadmium, LCS	23.8	25.0	MG/KG	95.2
		Chromium, LCS	48.7	50.0	MG/KG	97.4
		Copper, LCS	122	125	MG/KG	97.8
		Nickel, LCS	193	200	MG/KG	96.5
		Lead, LCS	241	250	MG/KG	96.3
		Antimony, LCS	284	300	MG/KG	94.5
		Selenium, LCS	878	1000	MG/KG	87.8
LCS1	04C0251-LC1	Mercury, LCS	6.6	6.2	MG/KG	106.0

Date: 24 March 2005
To: Fluor Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 200-LW-1/LW-2 Characterization - Soil
Subject: Volatiles - Data Package No. H2815

APR 2005
RECEIVED

INTRODUCTION

This memo presents the results of data validation on Data Package No. H2815 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	Media	Validation	Analysis
B19HY6	10/26/04	Soil	C	See note 1

1 - Volatile by 8260A, 1-butanol and TPH-G by 8015B.

Data validation was conducted in accordance with the FHI validation statement of work and the 200-LW-1/200-LW-2 Chemical Laboratory Waste Group OUs RI/FS Work Plan (DOE/RL-2001-66, Draft A, Redline, May 2002). Appendices 1 through 5 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

- **Holding Times/Sample Preservation**

Analytical holding times 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 analyzed within 14 days of the date of sample collection.

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 less than twice the limit, all analytes were qualified as estimates and flagged "J".

- **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 of a given matrix. 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 project quantitation limit (MDL) and is less than five times (or less than ten times for laboratory contaminants) the highest associated blank result, the sample result value is raised to the MDL, qualified as undetected and flagged "U".

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike

Matrix spike/matrix spike duplicate and blank spike analyses are used to assess the analytical accuracy of the reported data. The matrix spike/matrix spike duplicate are used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in duplicate using the target compounds for which percent recoveries must be within 50-150%. 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 accuracy and blank spike results were acceptable.

Surrogate Recovery

The analysis of surrogate compounds provides a measure of system performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory program. When a surrogate compound recovery is out of the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Undetected compounds with surrogate recoveries less than the lower control limit are qualified as having an estimated detection limit and flagged "UJ". Samples with surrogate recoveries less than ten percent are qualified as estimates and flagged "J" for detects, and rejected and flagged "UR" for nondetects. Undetected compounds with surrogate recoveries greater than the upper control limit require no qualification. Surrogates are not required for formaldehyde analysis.

All surrogate recovery 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 by the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. Sample results must be within RPD limits of +/- 35%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated sample results are qualified as estimates and flagged "J" for detects and "UJ" for non-detects. If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

All MS/MSD RPD results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Detection Limits**

Reported analytical detection levels are compared against the required target quantitation limits (RTQLs) to ensure that laboratory detection levels meet the required criteria. All analytes (except 1-butanol) exceeded the RTQL. Under the FHI statement of work, no qualification is required.

- **Completeness**

Data package No. H2815 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 less than twice the limit, all analytes were qualified as estimates and flagged "J". Data flagged "J" is an estimate, but under the FHI validation SOW, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

All analytes (except 1-butanol) exceeded the RTQL. Under the FHI statement of work, no qualification is required.

REFERENCES

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

DOE/RL-2001-66, Draft A, Redline, *200-LW-1/200-LW-2 Chemical Laboratory Waste Group OUs RI/FS Work Plan*, May 2002.

Appendix 1

Glossary of Data Reporting Qualifiers

Qualifiers which may be applied by data validator 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 sample quantitation limit corrected for dilution and moisture content by the laboratory.

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

J - Indicates the compound or analyte was analyzed for and detected. Due to a minor QC deficiency identified during the data validation, the associated quantitation limit is an estimate.

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

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

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

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

Appendix 2

Summary of Data Qualification

VOLATILE DATA QUALIFICATION SUMMARY*

SDG: H2815	REVIEWER: TLI	DATE: 3/24/05	PAGE_1_OF_1_
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All	J	All	Holding time

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

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

VOLATILE ORGANIC/8015B ANALYSIS, SOIL MATRIX, (UG/KG)

Project: FLUOR-HANFORD					
Laboratory: LLI					
Case:	SDG: H2815				
Sample Number		B19HY6			
Sample Date		10/26/05			
VOA/8015b	RTQL	Result	Q	Result	Q
Chloromethane		11	UJ		
Bromomethane		11	UJ		
Vinyl Chloride		11	UJ		
Chloroethane		11	UJ		
Methylene Chloride	5	25	J		
Acetone		8	J		
Carbon Disulfide		6	UJ		
1,1-Dichloroethene	5	6	UJ		
1,1-Dichloroethane	10	6	UJ		
1,2-Dichloroethene (total)		6	UJ		
Chloroform	5	6	UJ		
1,2-Dichloroethane		6	UJ		
2-Butanone	10	11	UJ		
1,1,1-Trichloroethane	5	6	UJ		
Carbon Tetrachloride	5	6	UJ		
Vinyl Acetate		6	UJ		
Bromodichloromethane		6	UJ		
1,2-Dichloropropane		6	UJ		
cis-1,3-Dichloropropene		6	UJ		
Trichloroethene		6	UJ		
Dibromochloromethane		6	UJ		
1,1,2-Trichloroethane		6	UJ		
Benzene	5	6	UJ		
trans-1,3-Dichloropropene		6	UJ		
Bromoform		6	UJ		
4-Methyl-2-pentanone		11	UJ		
2-Hexanone		11	UJ		
Tetrachloroethene		6	UJ		
1,1,2,2-Tetrachloroethane		6	UJ		
Toluene	5	6	UJ		
Chlorobenzene	5	6	UJ		
Ethylbenzene	5	6	UJ		
Styrene		6	UJ		
Xylenes (total)	5	6	UJ		
Gasoline Range Organics	5	33	UJ		
1-Butanol*	5	5.0	UJ		
* - Units are mg/kg					

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

000010

Lionville Laboratory, Inc.
Volatiles by GC/MS, HSL List

Report Date: 12/09/04 09:38

RFW Batch Number: 0411L115 Client: TNUHANFORD F03-025 H2815 Work Order: 11343606001 Page: 1a

	Cust ID:	B19HY6		B19HY6		B19HY6		VBLKDM		VBLKDM BS	
Sample Information	RFW#:	001		001 MS		001 MSD		04LVX318-MB1		04LVX318-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.06		0.980		0.893		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Toluene-d8	104	%	99	%	101	%	98	%	98	%
	Bromofluorobenzene	100	%	97	%	101	%	98	%	104	%
	1,2-Dichloroethane-d4	100	%	104	%	106	%	93	%	101	%
			fl		fl		fl		fl		fl
Chloromethane		11	U	11	U	10	U	10	U	10	U
Bromomethane		11	U	11	U	10	U	10	U	10	U
Vinyl Chloride		11	U	11	U	10	U	10	U	10	U
Chloroethane		11	U	11	U	10	U	10	U	10	U
Methylene Chloride		25	B	21	B	21	B	2	J	3	JB
Acetone		8		24		19		10	U	10	U
Carbon Disulfide		6	U	6	U	5	U	5	U	5	U
1,1-Dichloroethene		6	U	105	%	107	%	5	U	89	%
1,1-Dichloroethane		6	U	6	U	5	U	5	U	5	U
1,2-Dichloroethene (total)		6	U	6	U	5	U	5	U	5	U
Chloroform		6	U	6	U	5	U	5	U	5	U
1,2-Dichloroethane		6	U	6	U	5	U	5	U	5	U
2-Butanone		11	U	11	U	10	U	10	U	10	U
1,1,1-Trichloroethane		6	U	6	U	5	U	5	U	5	U
Carbon Tetrachloride		6	U	6	U	5	U	5	U	5	U
Bromodichloromethane		6	U	6	U	5	U	5	U	5	U
1,2-Dichloropropane		6	U	6	U	5	U	5	U	5	U
cis-1,3-Dichloropropene		6	U	6	U	5	U	5	U	5	U
Trichloroethene		6	U	108	%	108	%	5	U	97	%
Dibromochloromethane		6	U	6	U	5	U	5	U	5	U
1,1,2-Trichloroethane		6	U	6	U	5	U	5	U	5	U
Benzene		6	U	113	%	114	%	5	U	99	%
Trans-1,3-Dichloropropene		6	U	6	U	5	U	5	U	5	U
Bromoform		6	U	6	U	5	U	5	U	5	U
4-Methyl-2-pentanone		11	U	11	U	10	U	10	U	10	U
2-Hexanone		11	U	11	U	10	U	10	U	10	U
Tetrachloroethene		6	U	6	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane		6	U	6	U	5	U	5	U	5	U
Toluene		6	U	104	%	106	%	5	U	92	%

*= Outside of EPA CLP QC limits.

3/20/05

000011

RFW Batch Number: 0411L115 Client: TNUHANFORD F03-025 H2815 Work Order: 11343606001 Page: 1b

Cust ID:	B19HY6	B19HY6	B19HY6	VBLKDM	VBLKDM BS
RFW#:	001	001 MS	001 MSD	04LVX318-MB1	04LVX318-MB1
Chlorobenzene	6 U J	105 %	110 %	5 U	98 %
Ethylbenzene	6 U	6 U	5 U	5 U	5 U
Styrene	6 U	6 U	5 U	5 U	5 U
Xylene (total)	6 U	6 U	5 U	5 U	5 U

*= Outside of EPA CLP QC limits.

3/20/05

000012

Lionville Laboratory, Inc.
GAS RANGE ORGANICS

Report Date: 12/09/04 13:56

RFW Batch Number: 0411L115 Client: TNUHANFORD F03-025 H2815 Work Order: 11343606001 Page: 1

	Cust ID:	B19HY6	B19HY6	B19HY6	TBLKRR	TBLKRR BS
Sample Information	RFW#:	001	001 MS	001 MSD	04LVJB17-MB1	04LVJB17-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
	Fluorobenzene	99 %	83 %	84 %	104 %	106 %
Gasoline Range Organics (GRO)		33 U J	89 %	98 %	30 U	110 %

3/20/05

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

000013

00000046

Lionville Laboratory, Inc.

GC SCAN

Report Date: 01/21/05 09:43

RFW Batch Number: 0411L115 Client: TNUHANFORD F03-025 H2815 Work Order: 11343606001 Page: 1

	Cust ID:	B19HY6	B19HY6	B19HY6	BLK	BLK BS	BLK BSD
Sample Information	RFW#:	001	001 MS	001 MSD	04GCX042-MB1	04GCX042-MB1	04GCX042-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
	3-Pentanol	52 %	95 %	89 %	80 %	84 %	50 %
1-Butanol		5.0 U J	99 %	90 %	5.0 U	96 %	55 %

5/20/05

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

000014

00000037

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU HANFORD F03-025
LVL#: 0411L115
SDG/SAF#: H2815/F03-025

W.O.#: 11343-606-001-9999-00
Date Received: 11-10-2004

GC/MS VOLATILE

One (1) soil sample was collected on 10-26-2004.

The sample and its associated QC samples were analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8260B for TCL volatile target compounds on 11-15-2004.

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

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

2. The sample was received outside the holding time; however, sample was analyzed within 7-days from sample receipt.

3. Non-target compounds were not detected in sample.

4. All surrogate recoveries were within acceptance criteria.

5. All matrix spike recoveries were within acceptance criteria.

6. All blank spike recoveries were within acceptance criteria.

7. The method blank contained the common laboratory contaminant Methylene Chloride at a level less than the CRQL.

8. Internal standard area and retention time criteria were met.

9. Manual integrations are performed according to SOP QA-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").

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

4/27/05
Date

som\group\data\voa\tnu-hanford\0411-115.doc

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 1 1 pages.

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

Lionville Laboratory, Inc.
VOA ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-025 H2815

DATE RECEIVED: 11/10/04 LVL LOT # :0411L115

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B19HY6	001	S	04LVX318	10/26/04	N/A	11/15/04
B19HY6	001 MS	S	04LVX318	10/26/04	N/A	11/15/04
B19HY6	001 MSD	S	04LVX318	10/26/04	N/A	11/15/04
LAB QC:						
VBLKDM	MB1	S	04LVX318	N/A	N/A	11/15/04
VBLKDM	MB1 BS	S	04LVX318	N/A	N/A	11/15/04

RECEIVED
FEB - 2 2005

88888881

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU HANFORD F03-025
LVL#: 0411L115
SDG/SAF#: H2815/F03-025

W.O.#: 11343-606-001-9999-00
Date Received: 11-10-2004

GRO

One (1) soil sample was collected on 10-26-2004.

The sample and its associated QC samples were analyzed according to Lionville Laboratory SOPs based on SW-846 method 8015B for Gasoline Range Organics (GRO) on 11-17-2004. The analysis met the intent of method WTPH-G.

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

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

2. The sample was received outside the holding time. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

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

4. All surrogate recoveries were within acceptance criteria.

5. The blank spike recovery was within acceptance criteria.

6. The matrix spike recoveries were within acceptance criteria.

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

8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

9. 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

11/27/04
Date

som\r\group\data\gro\tnu-hanford\0411-115.doc

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 9 pages.

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR#: 046C600

Initiator: John Lach
Date: 11/12/04
Client: TW

Batch: 0411L115
Samples: All
Method: SW846/MCAWW/CLP/

Parameter: DRO, GRO, GCscan, PCB
Matrix: Soil
Prep Batch:

1. Reason for SDR

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

b. General Discrepancy

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

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

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

Samples received 1 Day past reccomended hold time

2. Known or Probable Causes(s)

3. Discussion and Proposed Action

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

Other Description:

None.

11/12/04

4. Project Manager Instructions...signature/date:

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

5. Final Action...signature/date: 11/12/04

Other Explanation:

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

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
__	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
__	X QA (file): Alberts	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other:

QA-105-A-0801

Lionville Laboratory, Inc.
GRO ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-025 H2815

DATE RECEIVED: 11/10/04 LVL LOT # :0411L115

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B19HY6	001	S	04LVJB17	10/26/04	N/A	11/17/04
B19HY6	001 MS	S	04LVJB17	10/26/04	N/A	11/17/04
B19HY6	001 MSD	S	04LVJB17	10/26/04	N/A	11/17/04

LAB QC:

TBLKRR	MB1	S	04LVJB17	N/A	N/A	11/17/04
TBLKRR	MB1 BS	S	04LVJB17	N/A	N/A	11/17/04

12/17/04

RECEIVED
FEB - 2 2005

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD F03-025
LVL #: 0411L115
SDG/SAF # H2815/F03-025

W.O. #: 11343-606-001-9999-00
Date Received: 11-10-2004

GC SCAN BY FID

One (1) soil sample was collected on 10-26-2004.

The sample and its associated QC samples were prepared on 11-15-2004 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures based on method 8015B for 1-Butanol on 11-23-2004.

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

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

2. The sample was received outside the extraction holding time. A copy of the Sample Discrepancy Report (SDR) has been enclosed.

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

4. All surrogate recoveries were within acceptance criteria.

5. The blank spike recoveries were within acceptance criteria.

6. The matrix spike recoveries were within acceptance criteria.

7. All initial calibrations were within acceptance criteria.

8. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

9. 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

1/20/05
Date

som:\group\data\gcsc\0411-115.doc

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 046C600

Initiator: M. McAnally
Date: 1/21/05
Client: Tnu Hanford

Batch: 0411L115
Samples: All
Method: SW846/MCAWW/CLP/

Parameter: 0D10, 0E015, 065CC
Matrix: Soil
Prep Batch: 04/81410/046CX042/

1. Reason for SDR

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

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

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

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

- Samples recieved out of hold

2. Known or Probable Causes(s)

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

Other Description:

Narrate

4. Project Manager Instructions...signature/date: [signature] 1/21/05
✓ Concur with Proposed Action
__ Disagree with Proposed Action; See Instruction
__ Include in Case Narrative
__ Client Contacted:
Date/Person _____
__ Add
__ Cancel

5. Final Action...signature/date: [signature] 1/21/05
__ Verified re-[log][leach][extract][digest][analysis] (circle)
__ Included in Case Narrative
__ Hard Copy COC Revised
__ Electronic COC Revised
__ EDD Corrections Completed

Other Explanation:

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
✓	X Project Mgr: Stone/Johnson/Haslett	__	__ GC/LC: Kiger
__	X Technical Mgr: Wesson/Daniels	__	__ MS: Rychlak/Layman
__	X QA (file): Alberts	__	__ Log-in: Melnic
__	__ Data Management: Feldman	__	__ Admin: Soos
__	__ Sample Prep: Beegle/Kiger	__	__ Other: _____

Lionville Laboratory, Inc.
GCSC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD F03-025 H2815

DATE RECEIVED: 11/10/04 LVL LOT # :0411L115

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B19HY6	001	S	04GCX042	10/26/04	11/15/04	11/23/04
B19HY6	001 MS	S	04GCX042	10/26/04	11/15/04	11/23/04
B19HY6	001 MSD	S	04GCX042	10/26/04	11/15/04	11/23/04
LAB QC:						
BLK	MB1	S	04GCX042	N/A	11/15/04	11/23/04
BLK	MB1 BS	S	04GCX042	N/A	11/15/04	11/23/04
BLK	MB1 BSD	S	04GCX042	N/A	11/15/04	11/23/04

RECEIVED
FEB - 2 2005

FLUOR Hanford Inc.	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F03-025-169	PAGE 1 OF 1

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 8N	DATA TURNAROUND
Pope/Pfister/Hughes/Wiberg	TRENT, STEVE	373-5689	TRENT, SJ	AIR QUALITY ☐	45 Days / 45 Days
SAMPLING LOCATION: 216-T-28; 22.5ft-25ft	PROJECT DESIGNATION: 200-LW-1/LW-2 Characterization - Soil		SAF NO.: F03-025		
ICE CHEST NO.: GRP-04-011	FIELD LOGBOOK NO.: HNF-N-356 1	COA: 119143ES10	METHOD OF SHIPMENT: Federal Express		
SHIPPED TO: ~~Battelle Services~~ Pacsa	OFFSITE PROPERTY NO.: See Shipment # DJ019		BILL OF LADING/AIR BILL NO.: See Shipment # DJ019		

MATRIX*: A=Air, DL=Drum Liquids, DS=Drum Solids, L=Liquid, O=Oil, S=Soil, SE=Sediment, T=Tissue, V=Vegitation, W=Water, WI=Wipe, X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS: N/A

SPECIAL HANDLING AND/OR STORAGE: N/A; Radiocolone T.L.D. TO: B91C7

PRESERVATION	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	None	None		
TYPE OF CONTAINER	aGs*	aG	aG	Gs*	aG	aG	aG	aG		
NO. OF CONTAINER(S)	3	1	1	3	1	1	1	1		
VOLUME	40mL	120mL	120mL	40mL	120mL	250mL	500mL	500mL		
SAMPLE ANALYSIS	VOA - 8260A (TCL);	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	PCBs - 8082;	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	SEE ITEM (5) IN SPECIAL INSTRUCTIONS	SEE ITEM (6) IN SPECIAL INSTRUCTIONS		

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME									
B19HY6	SOIL	10-26-04	0941	X	X	X	X	X	X	X		

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
J Spore	10-26-04 1270	Site Fridge	10-26-04 1236
Site Fridge	11-04-04 9:50	Greg Thomas	11/04/04 750
Greg Thomas	11/04/04 1135	MO-026 Frig #3	11/04/04 1135
MO-026 Frig #3	11/09/04 0810	Greg Thomas	11/09/04 0810
Greg Thomas	11/09/04 0820	Fed Ex	
FedEx		JKurry	11/10/04 0940

SPECIAL INSTRUCTIONS

FH acknowledges that the analytical holding time for Nitrate, Nitrite and Phosphate by EPA Method 300.0 will not be met. The lab is to analyze pH within 24 hours of sample receipt, and. report kerosene range organics from the WTPH-D analysis.

(1)Semi-VOA - 8270A (TCL) {Phenol} Semi-VOA -- 8270A (Add-On) {Tributyl phosphate}
(2)TPH-Diesel Range - WTPH-D {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range} TPH-Gasoline Range - WTPH-G;
(3)Alcohols, Glycols, & Ketones - 8015 {1-Butanol, Ethylene glycol}
(4)ICP Metals - 6010A (Supertrace) {Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver} ICP Metals - 6010A (Supertrace Add-On) {Antimony, Beryllium, Bismuth, Copper, Nickel} Mercury - 7471 - (CV);
(5)IC Anions - 300.0 {Chloride, Fluoride, Nitrate, Nitrite, Phosphate, Sulfate} Ammonia - 350.3; Total Cyanide - 9010; pH (Soil) - 9045;
~~(6)Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154,~~

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

00000085

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 200-LW-1/CW-2			DATA PACKAGE: H2815		
VALIDATOR: TLI		LAB: LLI		DATE: 3/20/05	
			SDG: H2815		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270	8015 GRO 1-Butanol	SW-846 8270 (TCLP)
SAMPLES/MATRIX					
B19H46					
					50.1

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 3/20/04

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: ~~methylene chloride~~ 3/20/04

NO FB

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: NO PA

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: _____

6. SYSTEM PERFORMANCE (Levels D and E)

Internal standards analyzed? ..... Yes No N/A

Iinternal 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: HT- all less than 2x — J

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: all over but 1-butanol

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 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: