

Date: 24 May 2005
 To: Fluor Hanford Inc. (technical representative)
 From: TechLaw, Inc.
 Project: 200-MW-1 Characterization Sampling and Analysis - Soil
 Subject: Radiochemistry - Data Package No. H3027



INTRODUCTION

This memo presents the results of data validation on Data Package No. H3027 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
B19PT4	2/3/05	Soil	C	See note 1
B19PP8	2/3/05	Soil	C	See note 2
B19PP9	2/3/05	Soil	C	See note 2
B19PR0	2/3/05	Soil	C	See note 2
B19PR1	2/3/05	Soil	C	See note 2
B19PR2	2/3/05	Soil	C	See note 2
B19PR3	2/4/05	Soil	C	See note 2
B19PR4	2/7/05	Soil	C	See note 2
B19PR5	2/7/05	Soil	C	See note 2

- 1 - Strontium-90, total uranium, gamma spectroscopy and alpha spectroscopy.
- 2 - Technetium-99, tritium and iodine-129.

Data validation was conducted in accordance with the FHI validation statement of work and the 200-MW-1 Miscellaneous Waste Group OU RI/FS Workplan, DOE/RL-2001-65 (Rev. 0), April 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.

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.

All accuracy results were acceptable.

000002

- **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 than 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

One set of field duplicate samples (B19PP8/B19PP9) were submitted for analysis. Field duplicate samples are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **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. Two 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. H3027 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.

000003

MINOR DEFICIENCIES

Two 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-2001-65, Rev. 0, *200-MW-1 Miscellaneous Waste Group OUs RI/FS Work Plan*, April 2002.

Appendix 1

Glossary of Data Reporting Qualifiers

000005

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

000007

RADIOCHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: H3027	REVIEWER: TLI	DATE: 5/24/05	PAGE <u>1</u> OF <u>1</u>
COMMENTS: No qualifiers assigned			

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

000008

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

000009

Project: FLUOR-HANFORD																			
Laboratory: EB																			
Case		SDG: H3027																	
Sample Number	B19PT4		B19PP8		B19PP9		B19PR0		B19PR1		B19PR2		B19PR3		B19PR4		B19PR5		
Remarks	Duplicate																		
Sample Date	2/3/05		2/3/05		2/3/05		2/3/05		2/3/05		2/3/05		2/4/05		2/7/05		2/7/05		
Radiochemistry	RTQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
Tritium	400	NA		0.160	U	0.223	U	0.109	U	0.116	U	0.030	U	-0.029	U	0.050	U	0.019	U
Technetium-99	15	NA		0.096	U	0.113	U	0.046	U	0.065	U	0.008	U	0.078	U	0.007	U	0.156	U
Iodine-129	2	NA		-0.104	U	0.497	U	-0.798	U	-0.109	U	-0.373	U	-0.473	U	-0.231	U	-0.764	U
Total Strontium	1	22.3		NA															
Total Uranium (ug/g)		1.70		NA															
Uranium-233/234(aspec)	1	1.03		NA															
Uranium-235(aspec)	1	0.085	U	NA		NA													
Uranium-238(aspec)	1	0.682		NA															
Plutonium-238	1	0.070	U	NA		NA													
Plutonium-239/240	1	10.0		NA															
Americium-241	1	0.821		NA															
Potassium-40		9.78		NA															
Cobalt-60	0.05		U U*	NA		NA													
Cesium 137	0.1	3.10		NA															
Radium-226		0.382		NA															
Radium-228		0.587		NA															
Europium-152	0.1	4.15		NA															
Europium-154	0.1	0.458		NA															
Europium-155	0.1		U U*	NA		NA													
Thorium-228		0.539		NA															
Thorium-232		0.587		NA															
Uranium-235(gea)			U U	NA		NA													
Uranium-238(gea)			U U	NA		NA													
Americium-241(gea)			U U	NA		NA													
NA = Not analyzed																			

000010

* - 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.

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3027

R502111-09

B19PT4

DATA SHEET

SDG <u>7248</u>	Client/Case no <u>Hanford</u>	SDG <u>H3027</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R502111-09</u>	Client sample id <u>B19PT4</u>	
Dept sample id <u>7248-009</u>	Location/Matrix <u>216-T-33; 19ft-21.5ft</u>	<u>SOLID</u>
Received <u>02/11/05</u>	Collected/Weight <u>02/03/05 08:50</u>	<u>737 g</u>
% solids <u>96.9</u>	Custody/SAF No <u>F04-015-117</u>	<u>F04-015</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Total Strontium	SR-RAD	22.3	0.96	0.34	1.0		SR
Total Uranium (ug/g)	7440-61-1	1.70	0.22	0.007	1.0		U_T
Uranium 233/234	U-233/234	1.03	0.29	0.13	1.0		U
Uranium 235	15117-96-1	0.085	0.085	0.16	1.0	U	U
Uranium 238	U-238	0.682	0.21	0.13	1.0		U
Plutonium 238	13981-16-3	0.070	0.070	0.27	1.0	U	PU
Plutonium 239/240	PU-239/240	10.0	1.5	0.27	1.0		PU
Americium 241	14596-10-2	0.821	0.42	0.31	1.0		AM
Potassium 40	13966-00-2	9.78	1.3	0.85			GAM
Cobalt 60	10198-40-0	U		<u>0.096</u>	0.050	U	GAM
Cesium 137	10045-97-3	3.10	0.20	<u>0.15</u>	0.10		GAM
Radium 226	13982-63-3	0.382	0.17	<u>0.20</u>	0.10		GAM
Radium 228	15262-20-1	0.587	0.39	<u>0.44</u>	0.20		GAM
Europium 152	14683-23-9	4.15	0.29	<u>0.26</u>	0.10		GAM
Europium 154	15585-10-1	0.458	0.31	<u>0.31</u>	0.10		GAM
Europium 155	14391-16-3	U		<u>0.34</u>	0.10	U	GAM
Thorium 228	14274-82-9	0.539	0.10	0.13			GAM
Thorium 232	TH-232	0.587	0.39	0.44			GAM
Uranium 235	15117-96-1	U		0.42		U	GAM
Uranium 238	U-238	U		14		U	GAM
Americium 241	14596-10-2	U		0.66		U	GAM

200-MW-1 Charac.Samp.& Analysis-Soil

R
5/21/05

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/03/05</u>

000011

EBERLINE SERVICES/RICHMOND
SAMPLE DELIVERY GROUP H3027

R502111-01

B19PP8

DATA SHEET

SDG <u>7248</u>	Client/Case no <u>Hanford</u>	SDG <u>H3027</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R502111-01</u>	Client sample id <u>B19PP8</u>	
Dept sample id <u>7248-001</u>	Location/Matrix <u>216-T-33; 16.5ft-19.0ft</u>	<u>SOLID</u>
Received <u>02/11/05</u>	Collected/Weight <u>02/03/05 07:50</u>	<u>94 g</u>
% solids <u>95.1</u>	Custody/SAF No <u>F04-015-102</u>	<u>F04-015</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	0.160	0.16	0.26	400	U	H
Technetium 99	14133-76-7	0.096	0.18	0.55	15	U	TC
Iodine 129	15046-84-1	-0.104	0.73	1.7	2.0	U	I

200-MW-1 Charac.Samp.& Analysis-Soil

R
5/24/05

000012

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version Ver <u>1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/03/05</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3027

R502111-02

B19PP9

DATA SHEET

SDG <u>7248</u>	Client/Case no <u>Hanford</u>	SDG <u>H3027</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R502111-02</u>	Client sample id <u>B19PP9</u>	
Dept sample id <u>7248-002</u>	Location/Matrix <u>216-T-33; 16.5ft-19.0ft</u>	<u>SOLID</u>
Received <u>02/11/05</u>	Collected/Weight <u>02/03/05 07:50</u>	<u>100 g</u>
% solids <u>96.3</u>	Custody/SAF No <u>F04-015-102</u>	<u>F04-015</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	0.223	0.15	0.24	400	U	H
Technetium 99	14133-76-7	0.113	0.18	0.55	15	U	TC
Iodine 129	15046-84-1	0.497	0.49	1.1	2.0	U	I

200-MW-1 Charac.Samp.& Analysis-Soil

W
5/21/05

000013

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/03/05</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3027

R502111-03

B19PRO

DATA SHEET

SDG <u>7248</u>	Client/Case no <u>Hanford</u>	SDG <u>H3027</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>No. 630</u>	
Lab sample id <u>R502111-03</u>	Client sample id <u>B19PRO</u>	
Dept sample id <u>7248-003</u>	Location/Matrix <u>216-T-33; 19ft-21.5ft</u>	<u>SOLID</u>
Received <u>02/11/05</u>	Collected/Weight <u>02/03/05 08:50</u>	<u>93 g</u>
% solids <u>96.5</u>	Custody/SAP No <u>F04-015-103</u>	<u>F04-015</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	0.109	0.16	0.26	400	U	H
Technetium 99	14133-76-7	0.046	0.18	0.57	15	U	TC
Iodine 129	15046-84-1	-0.798	1.9	<u>4.4</u>	2.0	U	I

200-MW-1 Charac.Samp.& Analysis-Soil

[Handwritten signature]
5/24/05

000014

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/03/05</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3027

R502111-04

B19PR1

DATA SHEET

SDG <u>7248</u>	Client/Case no <u>Hanford</u>	SDG <u>H3027</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R502111-04</u>	Client sample id <u>B19PR1</u>	
Dept sample id <u>7248-004</u>	Location/Matrix <u>216-T-33; 22.5ft-25.0ft</u>	<u>SOLID</u>
Received <u>02/11/05</u>	Collected/Weight <u>02/03/05 11:00</u>	<u>100 g</u>
% solids <u>95.9</u>	Custody/SAF No <u>F04-015-104</u>	<u>F04-015</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Tritium	10028-17-8	0.116	0.15	0.25	400	U	H
Technetium 99	14133-76-7	0.065	0.18	0.57	15	U	TC
Iodine 129	15046-84-1	-0.109	0.52	1.2	2.0	U	I

200-MW-1 Charac.Samp.& Analysis-Soil

Handwritten signature
5/21/05

000015

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/03/05</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3027

R502111-05

B19PR2

DATA SHEET

SDG <u>7248</u>	Client/Case no <u>Hanford</u>	SDG <u>H3027</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R502111-05</u>	Client sample id <u>B19PR2</u>	
Dept sample id <u>7248-005</u>	Location/Matrix <u>216-T-33; 27.5ft-30ft</u>	<u>SOLID</u>
Received <u>02/11/05</u>	Collected/Weight <u>02/03/05 13:10</u>	<u>95 g</u>
% solids <u>95.6</u>	Custody/SAF No <u>F04-015-105</u>	<u>F04-015</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALIFIERS	TEST
Tritium	10028-17-8	0.030	0.15	0.25	400	U	H
Technetium 99	14133-76-7	0.008	0.17	0.55	15	U	TC
Iodine 129	15046-84-1	-0.373	0.64	1.4	2.0	U	I

200-MW-1 Charac.Samp.& Analysis-Soil

Handwritten signature
5/21/05

000016

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/03/05</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3027

R502111-06

B19PR3

DATA SHEET

SDG <u>7248</u>	Client/Case no <u>Hanford</u>	SDG <u>H3027</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R502111-06</u>	Client sample id <u>B19PR3</u>	
Dept sample id <u>7248-006</u>	Location/Matrix <u>216-T-33; 47.5ft-50ft</u>	<u>SOLID</u>
Received <u>02/11/05</u>	Collected/Weight <u>02/04/05 07:50</u>	<u>104 g</u>
% solids <u>96.3</u>	Custody/SAF No <u>F04-015-106</u>	<u>F04-015</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-0.029	0.14	0.24	400	U	H
Technetium 99	14133-76-7	0.078	0.21	0.55	15	U	TC
Iodine 129	15046-84-1	-0.473	1.3	<u>3.1</u>	2.0	U	I

200-MW-1 Charac.Samp.& Analysis-Soil

Handwritten signature
5/21/05

000017

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/03/05</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3027

R502111-07

B19PR4

DATA SHEET

SDG <u>7248</u>	Client/Case no <u>Hanford</u>	SDG <u>H3027</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R502111-07</u>	Client sample id <u>B19PR4</u>	
Dept sample id <u>7248-007</u>	Location/Matrix <u>216-T-33; 110.5ft-113ft</u>	<u>SOLID</u>
Received <u>02/11/05</u>	Collected/Weight <u>02/07/05 07:20</u>	<u>68 g</u>
‡ solids <u>93.8</u>	Custody/SAF No <u>F04-015-107</u>	<u>F04-015</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	0.050	0.15	0.26	400	U	H
Technetium 99	14133-76-7	0.007	0.14	0.34	15	U	TC
Iodine 129	15046-84-1	-0.231	0.52	1.2	2.0	U	I

200-MW-1 Charac.Samp.& Analysis-Soil

Handwritten: ✓
5/21/05

DATA SHEETS

Page 7

SUMMARY DATA SECTION

Page 20

000018

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/03/05</u>

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3027

R502111-08

B19PR5

DATA SHEET

SDG <u>7248</u>	Client/Case no <u>Hanford</u>	SDG <u>H3027</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R502111-08</u>	Client sample id <u>B19PR5</u>	
Dept sample id <u>7248-008</u>	Location/Matrix <u>216-T-33; 130.5ft-133ft</u>	<u>SOLID</u>
Received <u>02/11/05</u>	Collected/Weight <u>02/07/05 10:20</u>	<u>69 g</u>
% solids <u>96.1</u>	Custody/SAF No <u>F04-015-108</u>	<u>F04-015</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	0.019	0.15	0.25	400	U	H
Technetium 99	14133-76-7	0.156	0.20	0.56	15	U	TC
Iodine 129	15046-84-1	-0.764	1.4	<u>3.3</u>	2.0	U	I

200-MW-1 Charac.Samp.& Analysis-Soil

R 5/21/05

000019

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DS</u>
Version <u>3.06</u>
Report date <u>04/03/05</u>

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000020

1.0 GENERAL

Fluor Hanford Inc. (FH) Sample Delivery Group H3027 was composed of nine solid (soil) samples designated under SAF No. F04-015 with a Project Designation of: 200-MW-1 Characterization Sampling and Analysis-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 Total Strontium Analyses

No problems were encountered during the course of the analyses.

2.3 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

2.4 Iodine-129 Analyses

No problems were encountered during the course of the analyses.

2.5 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

2.6 Total Uranium Analyses

No problems were encountered during the course of the analyses.

2.7 Isotopic Plutonium Analyses

No problems were encountered during the course of the analyses.

2.8 Americium-241 Analyses

No problems were encountered during the course of the analyses.

2.9 Gamma Spectroscopy

No problems were encountered during the course of the analyses.

FLUOR Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F04-015-102	PAGE 1 OF 1
COLLECTOR Pope/Pfister/Wiberg/Tyra		COMPANY CONTACT CS Clearlock		TELEPHONE NO. 372-9638	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8N	DATA TURNAROUND 45 Days / 45 Days
SAMPLING LOCATION 216-T-33; 16.5ft-19.0ft		PROJECT DESIGNATION 200-MW-1 Characterization Sampling and Analysis - Soil <i>H3027 (7248)</i>			SAF NO. F04-015	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. <i>GRP-03-014</i>		FIELD LOGBOOK NO. HNF-N-386 1	COA 119144E510	METHOD OF SHIPMENT Federal Express			
SHIPPED TO Eberline Services		OFFSITE PROPERTY NO. <i>See PTR 14850</i>			BILL OF LADING/AIR BILL NO. <i>See PTR 14850</i>		
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	Cool 4C	None			
		TYPE OF CONTAINER	ag	ag			
		NO. OF CONTAINER(S)	1	1			
		VOLUME	120	60ml			
	SPECIAL HANDLING AND/OR STORAGE Radioactive Tie To: B19PN7	SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Iodine-129; Technetium-99; Tridium - H3;		
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B19PP8	SOIL	<i>2-3-05</i>	<i>0750</i>		X		
B19PP9	SOIL	<i>2-3-05</i>	<i>0758</i>		X		
CHAIN OF POSSESSION		SIGN/ PRINT NAMES			SPECIAL INSTRUCTIONS		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	(1) NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196; <i>TMJ 8-10-04</i>			
<i>J.S. Lopez</i>	<i>2-3-05 1500</i>	<i>M. J. ...</i>	<i>2-3-05 1500</i>				
<i>M. J. ...</i>	<i>2/10/05 0905</i>	<i>M.H. ...</i>	<i>2/10/05 0905</i>				
<i>M.H. ...</i>	<i>2/10/05 0905</i>	<i>...</i>	<i>...</i>				
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
<i>F. E. ...</i>	<i>2/11/05</i>	<i>...</i>	<i>2/11/05 10:00</i>				
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME			
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME			

000022

FLUOR Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F04-015-104	PAGE 1	OF 1	
COLLECTOR Pope/Pfister/Wiberg/Tyra		COMPANY CONTACT CS Cearlock		TELEPHONE NO. 372-9638		PROJECT COORDINATOR TRENT, SJ		PRICE CODE 8N	DATA TURNAROUND
SAMPLING LOCATION 216-T-33; 22.5ft-25.0ft		PROJECT DESIGNATION 200-MW-1 Characterization Sampling and Analysis - Soil			SAF NO. F04-015		AIR QUALITY <input type="checkbox"/>		45 Days / 45 Days
ICE CHEST NO. <i>GRP-03-016</i>		FIELD LOGBOOK NO. HNF-N-386 1		COA 119144ES10		METHOD OF SHIPMENT Federal Express			
SHIPPED TO Eberline Services		OFFSITE PROPERTY NO. <i>See PTR 14850</i>			BILL OF LADING/AIRBILL NO. <i>See PTR 14850</i>				
MATRIX* A=Air DL=Drum L=Liquids DS=Drum S=Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION		Cool 4C	None				
		TYPE OF CONTAINER		#G	#G				
		NO. OF CONTAINER(S)		1	1				
	SPECIAL HANDLING AND/OR STORAGE Radioactive Tie To: B19PN9		VOLUME		120mL	60mL			
		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS Iodine-129; Technetium-99; Tritium - H3;					
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME						
B19PR1	SOIL	2-3-05	1100		X				
CHAIN OF POSSESSION				SIGN/ PRINT NAMES				SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM		DATE/TIME		RECEIVED BY/STORED IN		DATE/TIME		<i>TMT810-01</i> (1)NO2/NO3 - 253.2; Oil & Grease - 413.1; Chromium Hex - 7196;	
<i>DAVE A. ...</i>		<i>1/5/05</i>		<i>M. G. ...</i>		<i>2-3-05 1500</i>			
<i>M. G. ...</i>		<i>2/10/05 0905</i>		<i>M. G. ...</i>		<i>2/10/05 0905</i>			
<i>M. G. ...</i>		<i>2/10/05 0905</i>		<i>LED EX</i>					
<i>Fog EX</i>		<i>2/11/05</i>		<i>2/11/05</i>		<i>1000</i>			
RELINQUISHED BY/REMOVED FROM		DATE/TIME		RECEIVED BY/STORED IN		DATE/TIME			
RELINQUISHED BY/REMOVED FROM		DATE/TIME		RECEIVED BY/STORED IN		DATE/TIME			
RELINQUISHED BY/REMOVED FROM		DATE/TIME		RECEIVED BY/STORED IN		DATE/TIME			
RELINQUISHED BY/REMOVED FROM		DATE/TIME		RECEIVED BY/STORED IN		DATE/TIME			
LABORATORY SECTION	RECEIVED BY	TITLE				DATE/TIME			
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY				DATE/TIME			

FLUOR Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F04-015-105	PAGE 1 OF 1
COLLECTOR Pope/Pfister/Wberg/Tyra		COMPANY CONTACT CS Clearlock		TELEPHONE NO. 372-9638	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8N	DATA TURNAROUND 45 Days / 45 Days
SAMPLING LOCATION 216-T-33; 27.5ft-30ft		PROJECT DESIGNATION H3027 (7248) 200-MW-1 Characterization Sampling and Analysis - Soil			SAF NO. F04-015	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. GFP-03-016		FIELD LOGBOOK NO. HNF-N-386 1	COA 119144ES10	METHOD OF SHIPMENT Federal Express			
SHIPPED TO Eberline Services		OFFSITE PROPERTY NO. Su PTR 14850			BILL OF LADING/AIR BILL NO. Su PTR 14850		
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	Cool 4C	None			
		TYPE OF CONTAINER	aG	aG			
		NO. OF CONTAINER(S)	1	1			
	SPECIAL HANDLING AND/OR STORAGE Radioactive Tie To: B19PP0	SAMPLE ANALYSIS	SEE FROM (1) IN SPECIAL INSTRUCTIONS	Iodine-129; Technetium-99; Thorium - H3;			
		M08-10-04					
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B19PR2	SOIL	2/3/05	1310	X			
CHAIN OF POSSESSION				SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	(1)NO2/NO3-353.2; Oil & Grease - 413.1; Cesium Hex - 7196; M08-10-04			
T. Spore	2-2-05 1530	M. G. 26 / Ref. # 30	2-3-05 1506				
M. G. 26	2/3/05 0955	M. G. Bucher	2/3/05 0955				
M. G. Bucher	2/3/05 0955	LED EX					
F. D. EX	2/4/05	Z/KP	2/4/05 10:00				
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME			
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME			

FLUOR Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F04-015-106	PAGE 1 OF 1
COLLECTOR Pope/Pfister/Wiberg/Tyra		COMPANY CONTACT CS Clearlock		TELEPHONE NO. 372-9638		PROJECT COORDINATOR TRENT, SJ	
SAMPLING LOCATION 216-T-33; 47.5ft-SOIL		PROJECT DESIGNATION H3027 (7248) 200-MW-1 Characterization Sampling and Analysis - Soil			SAF NO. F04-015		PRICE CODE 8N AIR QUALITY <input type="checkbox"/>
ICE CHEST NO. GRP. 03-04		FIELD LOGBOOK NO. HNF-N-386 1		COA 119144ES10		METHOD OF SHIPMENT Federal Express	
SHIPPED TO Eberline Services		OFFSITE PROPERTY NO. 200 PIR 14850			BILL OF LADING/AIR BILL NO. 200 PIR 14850		
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION		Cool 4C	None		
		TYPE OF CONTAINER		gG	gG		
		NO. OF CONTAINER(S)		1	1		
		VOLUME		1200L	60mL		
SPECIAL HANDLING AND/OR STORAGE Radioactive Tie To: B19PP1		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Iodine-129; Technetium-99; Tritium - H3;		
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME				
B19PR3	SOIL	2-4-05	0750		X		
CHAIN OF POSSESSION		SIGN/ PRINT NAMES				SPECIAL INSTRUCTIONS TMS-10-04 (1)NO2/NO3-353.2; Oil & Grease - 413.1; Chromium Hex-7196;	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
JSR/PL/ASH	2-4-05 0945	MHO-026/RSF # 2	2-4-05 0945				
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
MHO-026/RSF # 3	2/11/05 0955	M.H. BURNER/M.H. BURNER	2/11/05 0955				
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
M.H. BURNER/M.H. BURNER	2/11/05 0955	DEL EX					
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
FED EX	2/11/05	7/19	2/11/05 10:00				
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME				
LABORATORY SECTION	RECEIVED BY	TITLE				DATE/TIME	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY				DATE/TIME	

000020

not agree with instr.

TMS-10-04

COLLECTOR Pope/Pfister/Wiberg/Tyra	COMPANY CONTACT CS Cearlock	TELEPHONE NO. 372-9638	PROJECT COORDINATOR TRENT, SJ	PRICE CODE SN	DATA TURNAROUND 45 Days / 45 Days
SAMPLING LOCATION 216-T-33; 130.5T-133ft	PROJECT DESIGNATION 200-MW-1 Characterization Sampling and Analysis - Soil		SAF NO. F04-015	AIR QUALITY <input type="checkbox"/>	

H3027 (7248)

ICE CHEST NO. <i>GRRP-03-016</i>	FIELD LOGBOOK NO. HNF-N-386 1	COA 119144ES10	METHOD OF SHIPMENT Federal Express		
--	---	--------------------------	--	--	--

SHIPPED TO Eberline Services	OFFSITE PROPERTY NO. <i>20 PTK 14850</i>	BILL OF LADING/AIR BILL NO. <i>20 PTK 14850</i>
--	--	---

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WT=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	Cool 4C	None																	
		TYPE OF CONTAINER	ag	ag																	
		NO. OF CONTAINER(S)	1	1																	
		VOLUME	120mL	60mL																	
		SPECIAL HANDLING AND/OR STORAGE Radioactive Tie To: B19PP3	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Iodine-129; Technetium-99; Tritium - H3;																

MMS-8-10-01

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME																	
B19PR5	SOIL	2-7-05	1020																	

000033

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	(±)NO2/NO3-353.2; Oil & Grease - 413.1; Chromium Hex - 7196; <i>MMS-8-10-01</i>	
J.S. Pope / A. S. ...	2-7-05 14:45	M. A. ...	2-7-05 14:45		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
M. A. ...	2/10/05 0930	M. A. ...	2/10/05 0930		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
M. A. ...	2/10/05 0930	M. A. ...	2/10/05 0930		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
F. E. D. ...	2/11/05	M. A. ...	2/11/05 10:00		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		

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

COLLECTOR: Pope/Pfister/Wiberg/Tyra
 COMPANY CONTACT: CS Cearlock
 TELEPHONE NO.: 372-9638
 PROJECT COORDINATOR: TRENT, SJ
 PRICE CODE: 8N
 DATA TURNAROUND: 45 Days / 45 Days

SAMPLING LOCATION: 216-T-33; 19ft-21.5ft
 PROJECT DESIGNATION: 200-MW-1 Characterization Sampling and Analysis - Soil
 SAF NO.: F04-015
 AIR QUALITY:

ICE CHEST NO.: GPP-03-016
 FIELD LOGBOOK NO.: HNF-N-386 1
 COA: 119144E510
 METHOD OF SHIPMENT: Federal Express

SHIPPED TO: Eberline Services
 OFFSITE PROPERTY NO.: 2u PTR 14850
 BILL OF LADING/AIR BILL NO.: 2u PTR 14850

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WT=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	
		TYPE OF CONTAINER	aG	aG	aGs*	aGs*	aG	aG		P
		NO. OF CONTAINER(S)	1	1	3	3	1	1	1	
		VOLUME	250mL	250mL	40mL	40mL	120mL	120mL	500mL	
SPECIAL HANDLING AND/OR STORAGE Radioactive Tie To: B19PNB	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	Alcohol, Glycole, Ketones - 8015 (1-Butanol)	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	PCBs - 8082;	SEE ITEM (5) IN SPECIAL INSTRUCTIONS		

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME							
B19PT4	SOIL	2-3-05	0850							X

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS (1)IC Anions - 300.0 {Fluoride, Nitrate, Nitrite, Phosphate, Sulfate} Total Cyanide - 9010; pH (Soil) - 9045; (2)ICP Metals - 6010A (Supertrace) {Cadmium, Chromium, Lead, Silver} ICP Metals - 6010A (Supertrace Add-On) {Copper} Mercury - 7471 - (CV); (3)VOA - 8260A (TCL); VOA - 8260A (Add-On) {cis-1,2-Dichloroethylene, n-Butylbenzene, trans-1,2-Dichloroethylene} (4)Semi-VOA - 8270A (Add-On) {Tributyl phosphate} TPH-Gasoline Range - WTPH-G; TPH-Diesel Range - WTPH-D (Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range) (5)Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155} Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-89,90 -- Total Sr; Total Uranium;
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
J. Spate / 2-3-05	2-3-05 1500	MO-026 / 2-3-05	2-3-05 1500	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
MO-026 / 2-10-05	2-10-05 1005	M.A. Buehler / 2-10-05	2-10-05 1005	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
M.A. Buehler / 2-10-05	2-10-05 1005	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
FED EX	2/11/05	RECEIVED BY/STORED IN	2/11/05 10:00	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	

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

Appendix 5

Data Validation Supporting Documentation

000030

**APPENDIX A
RADIOCHEMICAL DATA VALIDATION CHECKLIST**

VALIDATION LEVEL:	A	B	<u>C</u>	D	E
PROJECT:	200-mw-1		DATA PACKAGE: H3027		
VALIDATOR:	TLI	LAB: EB	DATE: 5/9/05		SDG: H3027
ANALYSES PERFORMED					
Gross Alpha/Beta Total Uranium	<u>Strontium-90</u> Radium-22	<u>Technetium-99</u> Titanium	<u>Alpha Spectroscopy</u> <u>1-129</u>	<u>Gamma Spectroscopy</u>	
SAMPLES/MATRIX					
<u>35</u> <u>976</u>	B19PP8	B19PP9	B19PRO	B19PR1	B19PR2
	B19PR4	B19PR3	B19PR5	B19PT4	
					Soil

1. Completeness N/A

Technical verification forms present? Yes No N/A

Comments: _____

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

Instruments/detectors calibrated? Yes No N/A
 Initial calibration acceptable? Yes No N/A
 Standards NIST traceable? Yes No N/A
 Standards Expired? Yes No N/A
 Calculation check acceptable? Yes No N/A

Comments: _____

3. Continuing Calibration (Levels D, E)

N/A

Calibration checked within required frequency?Yes No N/A

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

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

Calibration check standards expired?Yes No N/A

Calculation check acceptable?Yes No N/A

Comments: _____

4. Background Counts (Levels D, E).....

N/A

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

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

Calculation check acceptable?Yes No N/A

Comments: _____

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

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

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

Analytes detected in method blank? Yes No N/A

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

Field blank results acceptable? Yes No N/A

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

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

Comments: NO FB

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

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

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

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

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

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

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

Comments: _____

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: _____

- use traces yield per FHI

- 3# MS - OK

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

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

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

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

Comments: _____

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

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

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

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

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

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

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

Comments: _____ No FS or PM

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: 2 over

Appendix 6

Additional Documentation Requested by Client

000037

EBERLINE SERVICES / RICHMOND
SAMPLE DELIVERY GROUP H3027

R502111-11

Method Blank

METHOD BLANK

SDG <u>7248</u>	Client/Case no <u>Hanford</u>	SDG <u>H3027</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
Lab sample id <u>R502111-11</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7248-011</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>F04-015</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-0.003	0.15	0.26	400	U	H
Total Strontium	SR-RAD	0.043	0.14	0.27	1.0	U	SR
Technetium 99	14133-76-7	0.170	0.20	0.59	15	U	TC
Total Uranium (ug/g)	7440-61-1	0	0.003	0.007	1.0	U	U_T
Uranium 233/234	U-233/234	-0.018	0.037	0.14	1.0	U	U
Uranium 235	15117-96-1	0	0.045	0.17	1.0	U	U
Uranium 238	U-238	0.018	0.037	0.14	1.0	U	U
Plutonium 238	13981-16-3	0	0.064	0.24	1.0	U	PU
Plutonium 239/240	PU-239/240	0.032	0.064	0.24	1.0	U	PU
Americium 241	14596-10-2	0.177	0.14	0.27	1.0	U	AM
Iodine 129	15046-84-1	0.218	0.38	0.85	2.0	U	I
Potassium 40	13966-00-2	U		0.45		U	GAM
Cobalt 60	10198-40-0	U		0.017	0.050	U	GAM
Cesium 137	10045-97-3	U		0.017	0.10	U	GAM
Radium 226	13982-63-3	U		0.031	0.10	U	GAM
Radium 228	15262-20-1	U		0.070	0.20	U	GAM
Europium 152	14683-23-9	U		0.045	0.10	U	GAM
Europium 154	15585-10-1	U		0.048	0.10	U	GAM
Europium 155	14391-16-3	U		0.044	0.10	U	GAM
Thorium 228	14274-82-9	U		0.024		U	GAM
Thorium 232	TH-232	U		0.070		U	GAM
Uranium 235	15117-96-1	U		0.064		U	GAM
Uranium 238	U-238	U		1.8		U	GAM
Americium 241	14596-10-2	U		0.077		U	GAM

200-MW-1 Charac.Samp.& Analysis-Soil

QC-BLANK #51985

000038

Lab id	<u>EBRLNE</u>
Protocol	<u>Hanford</u>
Version	<u>Ver 1.0</u>
Form	<u>DVD-DS</u>
Version	<u>3.06</u>
Report date	<u>04/03/05</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3027

R502111-10

Lab Control Sample

LAB CONTROL SAMPLE

SDG <u>7248</u> Contact <u>Melissa C. Mannion</u>	Client/Case no <u>Hanford</u> SDG <u>H3027</u> Contract <u>No. 630</u>
Lab sample id <u>R502111-10</u> Dept sample id <u>7248-010</u>	Client sample id <u>Lab Control Sample</u> Material/Matrix _____ <u>SOLID</u> SAF No <u>F04-015</u>

ANALYTE	RESULT	2σ ERR	MDA	SDL	QUALI-	ADDED	2σ ERR	REC	3σ LMTS	PROTOCOL
	pCi/g	(COUNT)	pCi/g	pCi/g	FIERS TEST	pCi/g	pCi/g	%	(TOTAL)	LIMITS
Tritium	12.8	0.41	0.27	400	H	12.9	0.52	99	83-117	80-120
Total Strontium	12.0	0.64	0.28	1.0	SR	11.1	0.44	108	81-119	80-120
Technetium 99	123	2.4	0.61	15	TC	120	4.8	102	83-117	80-120
Total Uranium (ug/g)	38.8	1.0	0.073	1.0	U_T	36.2	1.4	107	84-116	80-120
Uranium 233/234	20.8	1.8	0.77	1.0	U	19.3	0.77	108	83-117	80-120
Uranium 235	15.7	1.5	0.15	1.0	U	15.7	0.63	100	83-117	80-120
Uranium 238	20.4	1.8	0.74	1.0	U	21.0	0.84	97	84-116	80-120
Plutonium 238	25.9	3.4	0.36	1.0	PU	26.4	1.1	98	78-122	80-120
Plutonium 239/240	27.1	3.5	0.36	1.0	PU	29.0	1.2	93	80-120	80-120
Americium 241	22.7	2.3	0.22	1.0	AM	22.4	0.90	101	82-118	80-120
Iodine 129	128	1.6	1.8	2.0	I	127	5.1	101	84-116	80-120
Cobalt 60	2.19	0.23	<u>0.13</u>	0.050	GAM	2.23	0.089	98	72-128	80-120
Cesium 137	2.50	0.19	<u>0.12</u>	0.10	GAM	2.25	0.090	111	71-129	80-120

200-MW-1 Charac.Samp.& Analysis-Soil

QC-LCS 51984 QC-LCS #51984

000039

Lab id <u>EBRLNE</u> Protocol <u>Hanford</u> Version <u>Ver 1.0</u> Form <u>DVD-LCS</u> Version <u>3.06</u> Report date <u>04/03/05</u>
--

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3027

R502111-12

B19PP8

DUPLICATE

SDG <u>7248</u> Contact <u>Melissa C. Mannion</u> DUPLICATE Lab sample id <u>R502111-12</u> Dept sample id <u>7248-012</u> % solids <u>95.1</u>	ORIGINAL Lab sample id <u>R502111-01</u> Dept sample id <u>7248-001</u> Received <u>02/11/05</u> % solids <u>95.1</u>	Client/Case no <u>Hanford</u> <u>SDG H3027</u> Contract No. <u>630</u> Client sample id <u>B19PP8</u> Location/Matrix <u>216-T-33; 16.5ft-19.0ft SOLID</u> Collected/Weight <u>02/03/05 07:50</u> <u>94 g</u> Custody/SAF No <u>F04-015-102</u> <u>F04-015</u>
---	--	---

ANALYTE	DUPLICATE		MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL		MDA pCi/g	QUALI- FIERS	RPD %	3σ TOT LIMIT	PROT
	pCi/g	2σ ERR (COUNT)					pCi/g	2σ ERR (COUNT)					
Tritium	0.056	0.15	0.24	400	U	H	0.160	0.16	0.26	U	-		
Technetium 99	0.175	0.21	0.61	15	U	TC	0.096	0.18	0.55	U	-		
Iodine 129	-0.456	1.5	<u>3.5</u>	2.0	U	I	-0.104	0.73	1.7	U	-		

200-MW-1 Charac.Samp.& Analysis-Soil

QC-DUP#1 51986

000040

Lab id <u>EBRLNE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>04/03/05</u>

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3027

R502111-13

B19PT4

DUPLICATE

SDG <u>7248</u> Contact <u>Melissa C. Mannion</u> DUPLICATE Lab sample id <u>R502111-13</u> Dept sample id <u>7248-013</u> ‡ solids <u>96.9</u>	ORIGINAL Lab sample id <u>R502111-09</u> Dept sample id <u>7248-009</u> Received <u>02/11/05</u> ‡ solids <u>96.9</u>	Client/Case no <u>Hanford</u> <u>SDG H3027</u> Contract <u>No. 630</u> Client sample id <u>B19PT4</u> Location/Matrix <u>216-T-33; 19ft-21.5ft</u> <u>SOLID</u> Collected/Weight <u>02/03/05 08:50</u> <u>737 g</u> Custody/SAP No <u>F04-015-117</u> <u>F04-015</u>
--	---	---

ANALYTE	DUPLICATE	2σ ERR	MDA	RDL	QUALI-	ORIGINAL	2σ ERR	MDA	QUALI-	RPD	3σ	PROT
	pCi/g	(COUNT)	pCi/g	pCi/g	FIERS TEST		pCi/g	(COUNT)	pCi/g	FIERS	‡	TOT
Total Strontium	20.8	0.82	0.25	1.0		SR	22.3	0.96	0.34	7	23	
Total Uranium (ug/g)	1.70	0.22	0.073	1.0		U_T	1.70	0.22	0.007	0	33	
Uranium 233/234	0.827	0.23	0.12	1.0		U	1.03	0.29	0.13	22	61	
Uranium 235	0.019	0.039	0.15	1.0	U	U	0.085	0.085	0.16	U	-	
Uranium 238	0.890	0.23	0.12	1.0		U	0.682	0.21	0.13	26	60	
Plutonium 238	0.126	0.17	0.32	1.0	U	PU	0.070	0.070	0.27	U	-	
Plutonium 239/240	8.79	1.4	0.32	1.0		PU	10.0	1.5	0.27	13	34	
Americium 241	0.602	0.29	0.27	1.0		AM	0.821	0.42	0.31	31	108	
Potassium 40	11.1	0.73	0.34			GAM	9.78	1.3	0.85	13	38	
Cobalt 60	U		0.066	0.050	U	GAM	U	0.096	U	-	-	
Cesium 137	3.07	0.096	0.068	0.10		GAM	3.10	0.20	0.15	1	34	
Radium 226	0.285	0.089	0.11	0.10		GAM	0.382	0.17	0.20	29	92	
Radium 228	0.631	0.19	0.20	0.20		GAM	0.587	0.39	0.44	7	112	
Europium 152	4.35	0.15	0.13	0.10		GAM	4.15	0.29	0.26	5	34	
Europium 154	0.410	0.16	0.16	0.10		GAM	0.458	0.31	0.31	11	125	
Europium 155	U		0.17	0.10	U	GAM	U	0.34	U	-	-	
Thorium 228	0.402	0.046	0.062			GAM	0.539	0.10	0.13	29	48	
Thorium 232	0.631	0.19	0.20			GAM	0.587	0.39	0.44	7	112	
Uranium 235	U		0.20		U	GAM	U	0.42	U	-	-	
Uranium 238	U		6.1		U	GAM	U	14	U	-	-	
Americium 241	U		0.29		U	GAM	U	0.66	U	-	-	

200-MW-1 Charac.Samp. & Analysis-Soil

QC-DUP#9 51987

000041

Lab id EBRLNE
 Protocol Hanford
 Version Ver 1.0
 Form DVD-DUP
 Version 3.06
 Report date 04/03/05

EBERLINE SERVICES/RICHMOND

SAMPLE DELIVERY GROUP H3027

R502111-14

B19PP8

MATRIX SPIKE

SDG <u>7248</u>	Client/Case no <u>Hanford</u>	<u>SDG H3027</u>
Contact <u>Melissa C. Mannion</u>	Contract No. <u>630</u>	
MATRIX SPIKE	ORIGINAL	
Lab sample id <u>R502111-14</u>	Lab sample id <u>R502111-01</u>	Client sample id <u>B19PP8</u>
Dept sample id <u>7248-014</u>	Dept sample id <u>7248-001</u>	Location/Matrix <u>216-T-33; 16.5ft-19.0ft SOLID</u>
	Received <u>02/11/05</u>	Collected/Weight <u>02/03/05 07:50 94 g</u>
‡ solids <u>95.1</u>	‡ solids <u>95.1</u>	Custody/SAP No <u>F04-015-102 F04-015</u>

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 ‡ (TOTAL)	LMTS LIMITS	PROTOCOL
Tritium	60.6	0.82	0.25	400	X H	65.1	2.6	0.160	0.16	93	85-115	60-140

200-MW-1 Charac.Samp.& Analysis-Soil

QC-MS#1 51988

MATRIX SPIKES

Page 1

SUMMARY DATA SECTION

Page 13

000042

Lab id <u>EBRINE</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-MS</u>
Version <u>3.06</u>
Report date <u>04/03/05</u>

Date: 24 May 2005
To: Fluor Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 200-MW-1 Characterization Sampling and Analysis - Soil
Subject: Volatiles - Data Package No. H3027



INTRODUCTION

This memo presents the results of data validation on Data Package No. H3027 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
B19PT4	2/3/05	Soil	C	See note 1

1 - Volatile by 8260A.

Data validation was conducted in accordance with the FHI validation statement of work and the 200-MW-1 Miscellaneous Waste Group OU RI/FS Workplan, DOE/RL-2001-65 (Rev. 0), April 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

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".

000001

All holding times were acceptable.

- **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".

Due to method blank contamination, the methylene chloride results was qualified as undetected and flagged "U".

All other 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.

000002

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

000003

- **Completeness**

Data package No. H3027 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

Due to method blank contamination, the methylene chloride results was qualified as undetected and flagged "U".

Ten 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-2001-65, Rev. 0, *200-MW-1 Miscellaneous Waste Group OUs RI/FS Work Plan*, April 2002.

000004

Appendix 1

Glossary of Data Reporting Qualifiers

000005

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).

000006

Appendix 2

Summary of Data Qualification

000007

VOLATILE DATA QUALIFICATION SUMMARY*

SDG: H3027	REVIEWER: TLI	DATE: 5/24/05	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Methylene Chloride	U	All	Method blank contamination

* - 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.

000008

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

000009

Project: FLUOR-HANFORD			
Laboratory: LLI			
Case:		SDG: H3027	
Sample Number		B19PT4	
Sample Date		2/3/05	
VOA/Alcohols/TPH-g	RTQL	Result	Q
Chloromethane		11	U
Bromomethane		11	U
Vinyl Chloride		11	U
Chloroethane		11	U
Methylene Chloride	5	15	U
Acetone		10	
Carbon Disulfide		6	U
1,1-Dichloroethene	5	6	U*
1,1-Dichloroethane	10	6	U
1,2-Dichloroethene (total)		6	U
Chloroform	5	6	U*
1,2-Dichloroethane		6	U
2-Butanone	10	11	U*
1,1,1-Trichloroethane	5	6	U*
Carbon Tetrachloride	5	6	U*
Vinyl Acetate		6	U
Bromodichloromethane		6	U
1,2-Dichloropropane		6	U
cis-1,3-Dichloropropene		6	U
Trichloroethene		6	U
Dibromochloromethane		6	U
1,1,2-Trichloroethane		6	U
Benzene	5	6	U*
trans-1,3-Dichloropropene		6	U
Bromoform		6	U
4-Methyl-2-pentanone		11	U
2-Hexanone		11	U
Tetrachloroethene		6	U
1,1,2,2-Tetrachloroethane		6	U
Toluene	5	6	U*
Chlorobenzene	5	6	U*
Ethylbenzene	5	6	U*
Styrene		6	U
Xylenes (total)	5	6	U*
n-Butylbenzene		6	U
trans-1,2-Dichloroethene		6	U
cis-1,2-Dichloroethene		6	U
* - RQTL exceeded			

Lionville Laboratory, Inc.
 Volatiles By GC/MS, Special List

Report Date: 02/22/05 14:18

RFW Batch Number: 0502L796

Client: TNUHANFORD FOB-015 H3027 Work Order: 11343606001 Page: 1a

38000000

Sample Information	Cust ID:	B19PT4	B19PT4	B19PT4	VBLKKB	VBLKKB BS
	RFW#:	003	003 MS	003 MSD	05LVG034-MB1	05LVG034-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.06	1.04	1.06	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg

	Toluene-d8	91 ‡	92 ‡	92 ‡	95 ‡	94 ‡
Surrogate	Bromofluorobenzene	95 ‡	96 ‡	97 ‡	100 ‡	97 ‡
Recovery	1,2-Dichloroethane-d4	112 ‡	111 ‡	109 ‡	102 ‡	105 ‡
		-----fl-----	-----fl-----	-----fl-----	-----fl-----	-----fl-----
Chloromethane		11 U	11 U	11 U	10 U	10 U
Bromomethane		11 U	11 U	11 U	10 U	10 U
Vinyl Chloride		11 U	11 U	11 U	10 U	10 U
Chloroethane		11 U	11 U	11 U	10 U	10 U
Methylene Chloride		15 U	15 B	19 B	7	4 JB
Acetone		10 J	8 J	8 J	10 U	10 U
Carbon Disulfide		6 U	6 U	6 U	5 U	5 U
1,1-Dichloroethene		6 U	93 ‡	108 ‡	5 U	87 ‡
1,1-Dichloroethane		6 U	6 U	6 U	5 U	5 U
1,2-Dichloroethene (total)		6 U	6 U	6 U	5 U	5 U
Chloroform		6 U	6 U	6 U	5 U	5 U
1,2-Dichloroethane		6 U	6 U	6 U	5 U	5 U
2-Butanone		11 U	11 U	11 U	10 U	10 U
1,1,1-Trichloroethane		6 U	6 U	6 U	5 U	5 U
Carbon Tetrachloride		6 U	6 U	6 U	5 U	5 U
Bromodichloromethane		6 U	6 U	6 U	5 U	5 U
1,2-Dichloropropane		6 U	6 U	6 U	5 U	5 U
cis-1,3-Dichloropropene		6 U	6 U	6 U	5 U	5 U
Trichloroethene		6 U	107 ‡	120 ‡	5 U	101 ‡
Dibromochloromethane		6 U	6 U	6 U	5 U	5 U
1,1,2-Trichloroethane		6 U	6 U	6 U	5 U	5 U
Benzene		6 U	103 ‡	117 ‡	5 U	100 ‡
Trans-1,3-Dichloropropene		6 U	6 U	6 U	5 U	5 U
Bromoform		6 U	6 U	6 U	5 U	5 U
4-Methyl-2-pentanone		11 U	11 U	11 U	10 U	10 U
2-Hexanone		11 U	11 U	11 U	10 U	10 U
Tetrachloroethene		6 U	6 U	6 U	5 U	5 U
1,1,2,2-Tetrachloroethane		6 U	6 U	6 U	5 U	5 U
Toluene		6 U	110 ‡	128 ‡	5 U	102 ‡

110001

Handwritten signature
5/21/05

** Outside of EPA CLP QC limits.

Cust ID: B19PT4 B19PT4 B19PT4 VBLKKB VBLKKB BA
 RPN#: 003 003 MS 003 MSD 05LVG034-MB1 05LVG034-MB1

	6 U	109 ‡	126 ‡	5 U	101 ‡
Chlorobenzene	6 U	6 U	6 U	5 U	5 U
Ethylbenzene	6 U	6 U	6 U	5 U	5 U
Styrene	6 U	6 U	6 U	5 U	5 U
Xylene (total)	6 U	6 U	6 U	5 U	5 U
N-butylbenzene	6 U	6 U	6 U	5 U	5 U
trans-1,2-Dichloroethene	6 U	6 U	6 U	5 U	5 U
cis-1,2-dichloroethene	6 U	6 U	6 U	5 U	5 U

*- Outside of EPA CLP QC limits.

T-999 P.02/02 F-084

6102803041

From-LIONVILLE LABORATORY INCORPORATED

Apr-08-05 03:49pm

000012

4/6/05
 Reyes
 000000007
 revised 4/6/05

VR
 5/21/07

REVISED
 Reyes
 4/6/05

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000013



Case Narrative

Client: TNU-HANFORD F04-015
LVL #: 0502L796
SDG/SAF # H3027/ F04-015

W.O. #: 11343-606-001-9999-00
Date Received: 02-11-2005

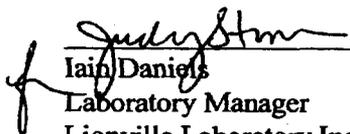
GC/MS VOLATILE

One (1) soil sample was collected on 02-03-2005.

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 client specified volatile target compounds on 02-15-2005.

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 analyzed within required holding time.
3. A non-target compound was detected in the method blank.
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 2x the CRQL.
8. Internal standard area criteria were not met for the matrix spike duplicate. The analysis of associated matrix spike sample fulfills the reanalysis requirement.
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

3/17/06
Date

son\group\data\voatnu-hanford\0502-796.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 19 pages.

000014

0000002

COLLECTOR: Pope/Pfister/Wiberg/Tyra
 COMPANY CONTACT: CS Clearlock TELEPHONE NO.: 372-9638 PROJECT COORDINATOR: TRENT, SJ
 SAMPLING LOCATION: 216-T-33; 19R-21.5R PROJECT DESIGNATION: 200-MW-1 Characterization Sampling and Analysis - Soil SAF NO.: F04-015
 PRICE CODE: SN AIR QUALITY: DATA TURNAROUND: 45 Days / 45 Days

ICE CHEST NO.: *GHP-03-008* FIELD LOGBOOK NO.: HNF-N-386 1 COA: 119144E510 METHOD OF SHIPMENT: Federal Express
 SHIPPED TO: *max 1044 Reera* OFFSITE PROPERTY NO.: *See PTC 14581* BILL OF LADING/AIR BILL NO.: *See PTC 14581*

MATRIX* A=Air DL=Drum L=Liquid DS=Drum S=Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION							None
		TYPE OF CONTAINER							
		NO. OF CONTAINER(S)							
		VOLUME							
		Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	
		gG	gG	gG*	gG*	gG	gG	gG	P
		1	1	3	3	1	1	1	
		250mL	250mL	40mL	40mL	120mL	120mL	120mL	
	SPECIAL HANDLING AND/OR STORAGE Radioactive Tie To: B19PN8	SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	Alcohol, Glycol, Ketone - BOLS (1-butanol)	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	PCBs - 8062; SEE ITEM (5) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME						
B19PT4	SOIL	2-3-05	0950	X	X	X	X	X	X

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	** The laboratory is to report both kerosene and diesel range compounds from the WTPH-D analysis. (1) IC Anions - 300.0 {Fluoride, Nitrate, Nitrite, Phosphate, Sulfate} Total Cyanide - 9010; pH (Soil) - 9045; (2) ICP Metals - 6010A (Supertrace) {Cadmium, Chromium, Lead, Silver} ICP Metals - 6010A (Supertrace Add-On) {Copper} Mercury - 7471 - (CV); (3) VOA - 8260A (TCL); VOA - 8260A (Add-On) {cis-1,2-Dichloroethylene, n-Butylbenzene, trans-1,2-Dichloroethylene} (4) Semi-VOA - 8270A (Add-On) {Tributyl phosphates} TPH-Gasoline Range - WTPH-G; TPH-Diesel Range - WTPH-D {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range} (5) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Americium-241, Isotopic Plutonium, Isotopic Uranium, Strontium-89,90 - Total Sr, Total Uranium}	
<i>J.P. Pfister</i>	<i>2-3-05 1510</i>	<i>M.G. RCF #3</i>	<i>2-3-05 1510</i>		
<i>M.G. RCF #3</i>	<i>2/10/05 1135</i>	<i>M.G. RCF #3</i>	<i>2/10/05 1135</i>		
<i>M.G. RCF #3</i>	<i>2/10/05 1135</i>	<i>Rel 42</i>			
<i>Rel 42</i>	<i>2-11-05 10910</i>	<i>M.G. RCF #3</i>	<i>2-11-05 10910</i>		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		

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

8868888812

Appendix 5

Data Validation Supporting Documentation

000016

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: methylene chloride - U at present level

None

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 PAS

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
Internal standard areas acceptable? Yes No N/A
Internal standard retention times acceptable? Yes No N/A
Standards traceable? Yes No N/A
Standards expired? Yes No N/A
Transcription/calculation errors? Yes No N/A
Comments: _____

7. HOLDING TIMES (all levels)

Samples properly preserved? Yes No N/A
Sample holding times acceptable? Yes No N/A
Comments: _____

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

Compound identification acceptable? (Levels D, E) Yes No N/A
Compound quantitation acceptable? (Levels D, E) Yes No N/A
Results reported for all requested analyses? Yes No N/A
Results supported in the raw data? (Levels D, E) Yes No N/A
Samples properly prepared? (Levels D, E) Yes No N/A
Laboratory properly identified and coded all TIC? (Levels D, E) Yes No N/A
Detection limits meet RDL? Yes No N/A
Transcription/calculation errors? (Levels D, E) Yes No N/A
Comments: 10 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: _____

Date: 24 May 2005
To: Fluor Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 200-MW-1 Characterization Sampling and Analysis - Soil
Subject: Semivolatile - Data Package No. H3027



INTRODUCTION

This memo presents the results of data validation on Data Package No. H3027 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
B19PT4	2/3/05	Soil	C	See note 1

1 -Semivolatiles by 8270, TPH-D (diesel and kerosene), gasoline range organics and 1-butanol by 8015B.

Data validation was conducted in accordance with the FHI validation statement of work and the 200-MW-1 Miscellaneous Waste Group OU RI/FS Workplan, DOE/RL-2001-65 (Rev. 0), April 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

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 requirement for semivolatile organics are extraction within 14 days of the date of sample collection and analysis within 40 days from the date of extraction. Method 8015B requires analysis within 14 days.

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

000001

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 1-butanol, diesel range organics and kerosene results were qualified as estimates and flagged "J".

All holding times were met.

- **Method Blanks**

Method blank analyses are conducted to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. Analytical results for analytes present in any sample at less than five times the concentration of that analyte found in the associated blank are qualified as non-detects and flagged "U". Common laboratory contaminants present in samples at less than ten times the concentration of that analyte found in the associated blank are qualified as non-detects. If a sample result is less than the CRQL and is less than five times (or less than ten times for lab contaminants) the highest associated blank result, the sample result value is raised to the CRQL level and qualified as undetected "U".

Due to method blank contamination, all bis(2-ethylhexyl)phthalate and di-n-butylphthalate results were qualified as estimates and flagged "J".

All other 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

000002

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.

Due to matrix spike (8%) and matrix spike duplicate (9%) recoveries outside QC limits, all diesel range organics and kerosene results were qualified as estimates and flagged "J".

All other 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.

000003

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. The gasoline range organics result exceeded the analyte specific RTQL. Under the FHI statement of work, no qualification is required.

- **Completeness**

Data package No. H3027 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 1-butanol, diesel range organics and kerosene results were qualified as estimates and flagged "J". Due to method blank contamination, all bis(2-ethylhexyl)phthalate and di-n-butylphthalate results were qualified as estimates and flagged "J". Due to matrix spike (8%) and matrix spike duplicate (9%) recoveries outside QC limits, all diesel range organics and kerosene 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 gasoline range organics result exceeded the analyte specific RTQL. Under the FHI statement of work, no qualification is required.

000004

REFERENCES

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

DOE/RL-2001-65, Rev. 0, *200-MW-1 Miscellaneous Waste Group OUs RI/FS Work Plan*, April 2002.

000005

Appendix 1

Glossary of Data Reporting Qualifiers

000006

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

000008

SEMIVOLATILE DATA QUALIFICATION SUMMARY*

SDG: H3027	REVIEWER: TLI	DATE: 5/18/05	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
1-Butanol Kerosene Diesel range organics	J	All	Holding time
bis(2-ethylhexyl)phthalate di-n-butylphthalate	J	All	Blank contamination
Kerosene Diesel range organics	J	All	MS/MSD 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.

000009

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

000010

Project: FLUOR-HANFORD			
Laboratory: LLI			
Case:	SDG: H3027		
Sample Number	B19PT4		
Remarks			
Sample Date	2/3/05		
Extraction Date	2/15/05		
Analysis Date	2/16/05		
Semivolatile/8015B	RTQL	Result	Q
Phenol		350	U
bis(2-Chloroethyl)ether		350	U
2-Chlorophenol		350	U
1,3-Dichlorobenzene		350	U
1,4-Dichlorobenzene		350	U
1,2-Dichlorobenzene		350	U
2-methylphenol		350	U
2,2'-oxybis(1-chloropropane)		350	U
3 and/or 4-Methylphenol		350	U
N-Nitroso-di-n-propylamine		350	U
Hexachloroethane		350	U
Nitrobenzene		350	U
Isophorone		350	U
2-Nitrophenol		350	U
2,4-Dimethylphenol		350	U
bis(2-Chloroethoxy)methane		350	U
2,4-Dichlorophenol		350	U
1,2,4-Trichlorobenzene		350	U
Naphthalene		350	U
4-Chloroaniline		350	U
Hexachlorobutadiene		350	U
4-Chloro-3-methylphenol		350	U
2-Methylnaphthalene		350	U
Hexachlorocyclopentadiene		350	U
2,4,6-Trichlorophenol		350	U
2,4,5-Trichlorophenol		860	U
2-Chloronaphthalene		350	U
2-Nitroaniline		860	U
Dimethylphthalate		350	U
Acenaphthylene		350	U
2,6-Dinitrotoluene		350	U
3-Nitroaniline		860	U
Acenaphthene		350	U

1100011

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

Project: FLUOR-HANFORD		
Laboratory: LLI		
Case:	SDG: H3027	
Sample Number	B19PT4	
Remarks		
Sample Date	2/3/05	
Extraction Date	2/15/05	
Analysis Date	2/16/05	
Semivolatle/8015B	Result	Q
2,4-Dinitrophenol	860	U
4-Nitrophenol	860	U
Dibenzofuran	350	U
2,4-Dinitrotoluene	350	U
Diethylphthalate	350	U
4-Chlorophenyl-phenyl ether	350	U
Fluorene	350	U
4-Nitroaniline	860	U
4,6-Dinitro-2-methylphenol	860	U
N-Nitrosodiphenylamine	350	U
4-Bromophenyl-phenyl ether	350	U
Hexachlorobenzene	350	U
Pentachlorophenol	860	U
Phenanthrene	350	U
Anthracene	350	U
Carbazole	350	U
DI-n-butylphthalate	20	J
Fluoranthene	350	U
Pyrene	350	U
Butylbenzylphthalate	46	
3,3'-Dichlorobenzidine	350	U
Benzo(a)anthracene	350	U
Chrysene	350	U
bis(2-Ethylhexyl)phthalate	76	J
DI-n-octylphthalate	350	U
Benzo(b)fluoranthene	350	U
Benzo(k)fluoranthene	350	U
Benzo(a)pyrene	350	U
Indeno(1,2,3-cd)pyrene	350	U
Dibenz(a,h)anthracene	350	U
Benzo(g,h,i)perylene	350	U
Tributylphosphate	3300	360 U
Diesel Range Organics	5	130 J
Kerosene	5	76 J
1-Butanol	5	4.8 UJ
Gasoline Range Organics	5	28 U

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

Cust ID: B19PT4 B19PT4 B19PT4 SBLKEX SBLKEX BS

RFW#: 003 003 MS 003 MSD 05LE0120-MB1 05LE0120-MB1

2-Chloronaphthalene	350 U	350 U	350 U	330 U	330 U
2-Nitroaniline	860 U	860 U	860 U	830 U	830 U
Dimethylphthalate	350 U	350 U	350 U	330 U	330 U
Acenaphthylene	350 U	350 U	350 U	330 U	330 U
2,6-Dinitrotoluene	350 U	350 U	350 U	330 U	330 U
3-Nitroaniline	860 U	860 U	860 U	830 U	830 U
Acenaphthene	350 U	65 %	69 %	330 U	70 %
2,4-Dinitrophenol	860 U	860 U	860 U	830 U	830 U
4-Nitrophenol	860 U	63 %	76 %	830 U	73 %
Dibenzofuran	350 U	350 U	350 U	330 U	330 U
2,4-Dinitrotoluene	350 U	58 %	64 %	330 U	70 %
Diethylphthalate	350 U	350 U	350 U	330 U	330 U
4-Chlorophenyl-phenylether	350 U	350 U	350 U	330 U	330 U
Fluorene	350 U	350 U	350 U	330 U	330 U
4-Nitroaniline	860 U	860 U	860 U	830 U	830 U
4,6-Dinitro-2-methylphenol	860 U	860 U	860 U	830 U	830 U
N-Nitrosodiphenylamine (1)	350 U	350 U	350 U	330 U	330 U
4-Bromophenyl-phenylether	350 U	350 U	350 U	330 U	330 U
Hexachlorobenzene	350 U	350 U	350 U	330 U	330 U
Pentachlorophenol	860 U	64 %	72 %	830 U	60 %
Phenanthrene	350 U	350 U	350 U	330 U	330 U
Anthracene	350 U	350 U	350 U	330 U	330 U
Carbazole	350 U	350 U	350 U	330 U	330 U
Di-n-Butylphthalate	20 U J	30 JB	27 JB	19 J	330 U
Fluoranthene	350 U	350 U	350 U	330 U	330 U
Pyrene	350 U	68 %	72 %	330 U	70 %
Butylbenzylphthalate	46 J	350 U	350 U	330 U	330 U
3,3'-Dichlorobenzidine	350 U	350 U	350 U	330 U	330 U
Benzo(a)anthracene	350 U	350 U	350 U	330 U	330 U
Chrysene	350 U	350 U	350 U	330 U	330 U
bis(2-Ethylhexyl)phthalate	76 U J	110 JB	230 JB	68 J	38 JB
Di-n-Octyl phthalate	350 U	350 U	350 U	330 U	330 U
Benzo(b)fluoranthene	350 U	350 U	350 U	330 U	330 U
Benzo(k)fluoranthene	350 U	350 U	350 U	330 U	330 U
Benzo(a)pyrene	350 U	350 U	350 U	330 U	330 U
Indeno(1,2,3-cd)pyrene	350 U	350 U	350 U	330 U	330 U
Dibenzo(a,h)anthracene	350 U	350 U	350 U	330 U	330 U
Benzo(g,h,i)perylene	350 U	350 U	350 U	330 U	330 U
Tributylphosphate	350 U	350 U	350 U	330 U	330 U

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

000014

00000000

JK
5/21/04

Lionville Laboratory, Inc.

DIESEL RANGE ORGANICS BY GC

Report Date: 03/04/05 14:39

RFW Batch Number: 0502L796

Client: TNUHANFORD F03-015 H3027 Work Order: 11343606001 Page: 1

Sample Information	Cust ID:	B19PT4	B19PT4	B19PT4	BLK	BLK BS
RFW#:	003	003 MS	003 MSD	05LE0124-MB1	05LE0124-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	92 %	97 %	100 %	114 %	98 %	
-----fl-----fl-----fl-----fl-----fl-----fl-----fl						
Diesel Range Organics	130 J	8 * %	9 * %	12.0 U	84 %	
Kerosene	76 J	NS	NS	12.0 U	NS	

R 3/24/05

AS 3/24/05

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

0000015

00000057

RECEIVED

Lionville Laboratory, Inc.

GAS RANGE ORGANICS

Report Date: 02/17/05 09:29

RFW Batch Number: 0502L796

Client: TNU-HANFORD P04-015

Work Order: 11343606001 Page: 1

Sample Information	Cust ID:	B19PT4	B19PT4	B19PT4	TBLKTC	TBLKTC BS
RFW#:	003	003 MS	003 MSD	05LVJ216-MB1	05LVJ216-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	93 ‡	84 ‡	91 ‡	108 ‡	110 ‡	
-----fl-----fl-----fl-----fl-----fl-----fl-----fl-----fl						
Gasoline Range Organics (GRO)	28 U	97 ‡	79 ‡	30 U	126 ‡	

R *5/21/05*

2/2/05

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

0000017

00000072

00000001

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000018



Case Narrative

Client: TNU-HANFORD F04-015
LVL #: 0502L796
SDG/SAF # H3027/ F04-015

W.O. #: 11343-606-001-9999-00
Date Received: 02-11-2005

SEMIVOLATILE

One (1) soil sample was collected on 02-03-2005.

The sample and its associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 02-15-2005 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 02-16-2005.

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 LVL's sample acceptance policy.
2. The sample was extracted and analyzed within required holding time.
3. Non-target compounds were 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 contaminants Bis (2-Ethylhexyl) phthalate and Di-n-butylphthalate at levels 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.

f *Iain Daniels*
Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

3/17/05
Date

som\group\data\bnatnu-hanford\0502-796.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 19 pages.

000019

0000002



Case Narrative

Client: TNU-HANFORD F04-015
LVL #: 0502L796
SDG/SAF # H3027/ F04-015

W.O. #: 11343-606-001-9999-00
Date Received: 02-11-2005

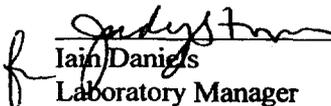
GRO

One (1) soil sample was collected on 02-03-2005.

The sample and its associated QC samples were analyzed according to Lionville Laboratory SOPs based on SW-846 method 8015 for Gasoline Range Organics (GRO) on 02-16-2005. 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 LVL's sample acceptance policy.
2. The sample was analyzed within required holding time.
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. The continuing calibration standards analyzed prior to sample extracts were outside the acceptance criteria for Gasoline Range Organics (GRO). A copy of the Sample Discrepancy Report (SDR) has been enclosed.
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

3/17/05
Date

son\group\data\gro\tnu-hanford\0502-796.doc

00000069

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.

000020

0000002

Lionville Laboratory Sample Discrepancy Report (SDR) SDR#: 05060478

Initiator: John Leach Batch: 05022796 Parameter: 620
 Date: 2/17/05 Samples: All Matrix: SO1
 Client: DMU Method: SWB46MCAWVICLP/ Prep Batch: 05LVS216

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 Picked 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)
 The CCU run prior to the samples was elevated for 620 @ 15.4%
 Limit 15%.

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. The CCU indicates a increase in instrument response. The ability to detect 620 was not improved. No loss found in SAMPLER.

[Handwritten Signature]

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:

- 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
<input checked="" type="checkbox"/>	Initiator	<input type="checkbox"/>	Metals: Beegle
<input checked="" type="checkbox"/>	Lab General Manager: M. Taylor	<input type="checkbox"/>	Inorganic: Perrone
<input checked="" type="checkbox"/>	Project Mgr: Stone/Johnson/Haslett	<input type="checkbox"/>	GC/LC: Kiger
<input checked="" type="checkbox"/>	Technical Mgr: Wesson/Daniels	<input type="checkbox"/>	MS: Rychlak/Layman
<input checked="" type="checkbox"/>	QA (file): Alberts	<input type="checkbox"/>	Log-in: Melnic
<input type="checkbox"/>	Data Management: Feldman	<input type="checkbox"/>	Admin: Soos
<input type="checkbox"/>	Sample Prep: Beegle/Kiger	<input type="checkbox"/>	Other: _____



Case Narrative

Client: TNU-HANFORD F04-015
LVL #: 0502L796
SDG/SAF # H3027/ F04-015

W.O. #: 11343-606-001-9999-00
Date Received: 02-11-2005

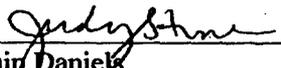
GC SCAN BY FID

One (1) soil sample was collected on 02-03-2005.

The sample and its associated QC samples were prepared on 02-17-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures based on method 8015B for 1-Butanol on 02-28-2005.

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 LVL's sample acceptance policy.
2. The sample was extracted and analyzed within required holding time.
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. Confirmation was not required because target compounds were not detected in the sample.
8. All initial calibrations were within acceptance criteria.
9. The continuing calibration standards analyzed prior to sample extracts were within the 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

3/13/05
Date

son:\group\data\gcs\0502-796-butanol

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 14 pages.

000022

0000002

Lionville Laboratory, Inc.
 GCSC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-015 H3027

DATE RECEIVED: 02/11/05

LVL LOT # :0502L796

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B19PT4	003	S	05GCX002	02/03/05	02/17/05	02/28/04
B19PT4	003 MS	S	05GCX002	02/03/05	02/17/05	02/28/04
B19PT4	003 MSD	S	05GCX002	02/03/05	02/17/05	02/28/04

LAB QC:

BLK	MB1	S	05GCX002	N/A	02/17/05	02/28/04
BLK	MB1 BS	S	05GCX002	N/A	02/17/05	02/28/04
BLK	MB1 BSD	S	05GCX002	N/A	02/17/05	02/28/04

28 3/1/05



000023

00000083

~~00000001~~



Case Narrative

Client: TNU-HANFORD F04-015
LVL #: 0502L796
SDG/SAF # H3027/ F04-015

W.O. #: 11343-606-001-9999-00
Date Received: 02-11-2005

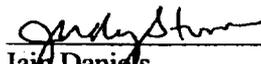
DIESEL RANGE ORGANICS

One (1) soil sample was collected on 02-03-2005.

The sample and its associated QC samples were extracted on 02-17-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 02-28-2005 and 03-01-2005. 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 LVL's sample acceptance policy.
2. The sample was extracted and analyzed within required holding time.
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 outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
7. All initial calibrations associated with this data set were within acceptance criteria.
8. The continuing calibration standards analyzed prior to sample extracts were within the 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.


Ian Daniels
Laboratory Manager
Lionville Laboratory Incorporated

3/17/05
Date

son\group\data\dro\tnu hanford\0502-796.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 15 pages.

000024

00000002

00000054

Lionville Laboratory, Inc.
 DRO ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-015 H3027

DATE RECEIVED: 02/11/05

LVL LOT # :0502L796

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B19PT4	003	S	05LE0124	02/03/05	02/17/05	03/01/05
B19PT4	003 MS	S	05LE0124	02/03/05	02/17/05	03/01/05
B19PT4	003 MSD	S	05LE0124	02/03/05	02/17/05	03/01/05

LAB QC:

BLK	MB1	S	05LE0124	N/A	02/17/05	02/28/05	<i>LEP-1/2/05</i>
BLK	MB1	S	05LE0124	N/A	02/17/05	02/28/05	
BLK	MB1 BS	S	05LE0124	N/A	02/17/05	02/28/05	

78 3/2/05



000025

00000053

00000001

LIONVILLE LABORATORY Sample Discrepancy Report (only) SDR# 0502L796

Initiator: IR
 Date: 3/1/05
 Client: TDU

Batch: 0502L796
 Samples: MS/MSD
 Method: SW846/MCAWW/CLP1 (C/DRC)

Parameter: C/DRC
 Matrix: Soil
 Prep Batch: 051EUI24

1. Reason for SDR

a. COC Discrepancy Tech Profile Error Client Request Sampler Error on C-OC
 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) low MS/MSD recoveries as 8% and 9% - due to matrix, and high targets in sample. 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)

Narrate

[Signature] 3/1/05

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: Stu Stalos

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

- X Initiator
- X Lab General Manager: M. Taylor
- X Project Mgr: Stone/Johnson/Haskett
- X Technical Mgr: Wesson/Daniels
- X QA (file): Alberts
- Data Management: Feldman
- Sample Prep: Beegle/Kiger

Route Distribution of Completed SDR

- Metals: Beegle
- Inorganic: Perrone
- GC/LC: Kiger
- MS: Rychlak/Layman
- Log-in: Melnic
- Admin: Soos
- Other: _____

FLUOR Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F04-015-117

PAGE 1 OF 1

COLLECTOR

Pope/Pfister/Wiberg/Tyra

COMPANY CONTACT

CS Cearlock

TELEPHONE NO.

372-9638

PROJECT COORDINATOR

TRENT, SJ

PRICE CODE 8N

DATA TURNAROUND

SAMPLING LOCATION

216-T-33; 19R-21.5R

PROJECT DESIGNATION

200-MW-1 Characterization Sampling and Analysis - Soil

SAF NO.

F04-015

AIR QUALITY

45 Days / 45 Days

ICE CHEST NO.

611P-03-008

FIELD LOGBOOK NO.

HNF-N-386 1

COA

119144E510

METHOD OF SHIPMENT

Federal Express

SHIPPED TO

Recre

OFFSITE PROPERTY NO.

See PTK 14587

BILL OF LADING/AIR BILL NO.

See PTK 14587

MATRIX*

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

POSSIBLE SAMPLE HAZARDS/ REMARKS

PRESERVATION

Cool 4C

Cool 4C

Cool 4C

Cool 4C

Cool 4C

Cool 4C

None

TYPE OF CONTAINER

aG

aG

aGs*

aGs*

aG

aG

P

NO. OF CONTAINER(S)

1

1

3

3

1

1

1

VOLUME

250mL

250mL

40mL

40mL

120mL

120mL

500mL

SPECIAL HANDLING AND/OR STORAGE

Radioactive Tie To: B19PN8

SAMPLE ANALYSIS

SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SEE ITEM (2) IN SPECIAL INSTRUCTIONS

SEE ITEM (3) IN SPECIAL INSTRUCTIONS

Alcohols, Glycols, Ketones - 8015 (1-Butanol)

SEE ITEM (4) IN SPECIAL INSTRUCTIONS

PCBs - 8082;

SEE ITEM (5) IN SPECIAL INSTRUCTIONS

2001-8-70-8

SAMPLE NO.

MATRIX*

SAMPLE DATE

SAMPLE TIME

B19PT4

SOIL

2-3-05

0958

X

X

X

X

X

X

X

CHAIN OF POSSESSION

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS

RELINQUISHED BY/REMOVED FROM

DATE/TIME

RECEIVED BY/STORED IN

DATE/TIME

3/17/05

2-3-05 1510

M0-026/RCF-#3

2-3-05 1510

RELINQUISHED BY/REMOVED FROM

DATE/TIME

RECEIVED BY/STORED IN

DATE/TIME

M0-026

2/10/05 1135

M.H. Bauk

2/10/05 1135

RELINQUISHED BY/REMOVED FROM

DATE/TIME

RECEIVED BY/STORED IN

DATE/TIME

M.H. Bauk

2/10/05 1135

Cell 72

RELINQUISHED BY/REMOVED FROM

DATE/TIME

RECEIVED BY/STORED IN

DATE/TIME

Red Ex

2-11-05 10910

WJ Smith

2-11-05 10910

RELINQUISHED BY/REMOVED FROM

DATE/TIME

RECEIVED BY/STORED IN

DATE/TIME

RELINQUISHED BY/REMOVED FROM

DATE/TIME

RECEIVED BY/STORED IN

DATE/TIME

RELINQUISHED BY/REMOVED FROM

DATE/TIME

RECEIVED BY/STORED IN

DATE/TIME

** The laboratory is to report both kerosene and diesel range compounds from the WTPH-D analysis.

- (1) IC Anions - 300.0 {Fluoride, Nitrate, Nitrite, Phosphate, Sulfate} Total Cyanide - 9010; pH (Soil) - 9045;
- (2) ICP Metals - 6010A (Supertrace) {Cadmium, Chromium, Lead, Silver} ICP Metals - 6010A (Supertrace Add-On) {Copper} Mercury - 7471 - (CV);
- (3) VOA - 8260A (TCL); VOA - 8260A (Add-On) {ds-1,2-Dichloroethylene, n-Butylbenzene, trans-1,2-Dichloroethylene}
- (4) Semi-VOA -- 8270A (Add-On) (Tributyl phosphate) TPH-Gasoline Range - WTPH-G; TPH-Diesel Range - WTPH-D {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range}
- (5) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-156, Americium-241, Isotopic Plutonium, Isotopic Uranium, Strontium-90,90 -- Total Sr; Total Uranium;

M0 18/10/05

LABORATORY SECTION

RECEIVED BY

TITLE

DATE/TIME

FINAL SAMPLE DISPOSITION

DISPOSAL METHOD

DISPOSED BY

DATE/TIME

000027

E03030312

Appendix 5

Data Validation Supporting Documentation

000028

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: MS di-n-butylphthalate + bis(2-ethylhexyl)phthalate - J

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: diesel + kerosene - MS/MSD - J all NO PAS

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
Internal standard areas acceptable? Yes No N/A
Internal standard retention times acceptable? Yes No N/A
Standards traceable? Yes No N/A
Standards expired? Yes No N/A
Transcription/calculation errors? Yes No N/A

Comments: _____

7. HOLDING TIMES (all levels)

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

Comments: 1-butanol - 25 days $\leq 2\%$ - J all
GRO - ok
Diesel & kerosene - 24 $\leq 2\%$ - 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: GRO 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: _____

Date: 24 May 2005
To: Fluor Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 200-MW-1 Characterization Sampling and Analysis - Soil
Subject: PCB - Data Package No. H3027



INTRODUCTION

This memo presents the results of data validation on Data Package No. H3027 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
B19PT4	2/3/05	Soil	C	See note 1

1 - PCBs by 8082.

Data validation was conducted in accordance with the FHI validation statement of work and the 200-MW-1 Miscellaneous Waste Group OU RI/FS Workplan, DOE/RL-2001-65 (Rev. 0), April 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

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 analyzed within 14 days of the date of sample collection.

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".

000001

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 the matrix spike/matrix spike duplicate being diluted out, all PCB results were qualified as estimates and flagged "J".

Surrogate Recovery

The analysis of surrogate compounds provides a measure of performance for individual samples. Matrix-specific surrogate compound recovery control windows have been established by the laboratory. When a surrogate compound recovery is outside the control window, all positively identified target compounds associated with the unacceptable surrogate recoveries are qualified as estimates and flagged "J". Non-

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

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

- **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 the matrix spike/matrix spike duplicate being diluted out, all PCB results were qualified as estimates and flagged "J".

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 undetected results exceeded the analyte specific RTQL. Under the FHI statement of work, no qualification is required.

- **Completeness**

Data Package No. H3027 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%.

000003

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to the holding time being exceeded by less than twice the limit, all PCB results were qualified as estimates and flagged "J".
- Due to the matrix spike/matrix spike duplicate being diluted out, all PCB results were qualified as estimates and flagged "J".
- Due to the surrogate being diluted out, all PCB 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 exceeded the analyte 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-2001-65, Rev. 0, *200-MW-1 Miscellaneous Waste Group OUs RI/FS Work Plan*, April 2002.

000004

Appendix 1

Glossary of Data Reporting Qualifiers

000005

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).

000006

Appendix 2

Summary of Data Qualification

000007

PCB DATA QUALIFICATION SUMMARY*

SDG: H3027	REVIEWER: TLI	DATE: 5/24/05	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
All	J	All	Holding time
All	J	All	Surrogate diluted out
All	J	All	MS/MSD diluted out

* - 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.

000008

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

000009

Project: FLUOR-HANFORD			
Laboratory: LLI			
Case:		SDG: H3027	
Sample Number		B19PT4	
Remarks			
Sample Date		2/3/2005	
Analysis Date		2/18/05	
PCB	RDL	Result	Q
Aroclor-1016	16.5	280	UJ
Aroclor-1221	16.5	280	UJ
Aroclor-1232	16.5	280	UJ
Aroclor-1242	16.5	280	UJ
Aroclor-1248	16.5	280	UJ
Aroclor-1254	16.5	1100	J
Aroclor-1260	16.5	280	UJ

000010

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000012



Case Narrative

Client: TNU-HANFORD F04-015
LVL #: 0502L796
SDG/SAF # H3027/ F04-015

W.O. #: 11343-606-001-9999-00
Date Received: 02-11-2005

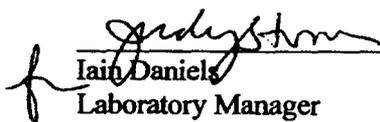
PCB

One (1) soil sample was collected on 02-03-2005.

The sample and its associated QC samples were extracted on 02-15-2005 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedures on 02-16,18-2005. 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 LVL's sample acceptance policy.
2. The sample was extracted and analyzed within required holding time.
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. All obtainable surrogate recoveries were within acceptance criteria.
6. The blank spike recoveries were within acceptance criteria.
7. The matrix spike recoveries were unobtainable due to the dilution required for the analysis.
8. The sample required a 20-fold dilution due to high concentration of target analytes.
9. All initial calibrations associated with this data set were within acceptance criteria.
10. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
11. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

3/17/05
Date

son\l:\group\data\pest\tnu hanford\0502-796.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 14 pages.

000013

-00000002-

FLUOR Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST							FURNISHED BY		DATE/TIME	
COLLECTOR Pope/Pfister/Wiberg/Tyra		COMPANY CONTACT CS Clearlock		TELEPHONE NO. 372-9638		PROJECT COORDINATOR TRENT, SJ			PRICE CODE 8N		DATA TURNAROUND 45 Days / 45 Days	
SAMPLING LOCATION 216-T-33; 19T-21.5T		PROJECT DESIGNATION 200-MW-1 Characterization Sampling and Analysis - Soil			SAP NO. F04-015			AIR QUALITY <input type="checkbox"/>				
ICE CHEST NO. <i>GRP-03-008</i>		FIELD LOGBOOK NO. HNF-N-386 1		COA 119144ES10		METHOD OF SHIPMENT Federal Express						
SHIPPED TO <i>max 10-04 Recra</i>		OFFSITE PROPERTY NO. <i>See PTK 14587</i>			BILL OF LADING/AIR BILL NO. <i>See PTK 14587</i>							
MATRIX* A=Air DL=Drum L=Liquid DS=Drum S=Soil SE=Sediment T=Timber V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION		Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	
		TYPE OF CONTAINER		aG	aG	aGs*	aGs*	aG	aG			
		NO. OF CONTAINER(S)		1	1	3	3	1	1	1		
		VOLUME		250mL	250mL	40mL	40mL	120mL	120mL	500mL		
SPECIAL HANDLING AND/OR STORAGE Radioactive Tie To: B19PN8		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	Alcohols, Glycols, Ketones - 8015 (1-Butanol)	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	PCBs - 8082;	SEE ITEM (5) IN SPECIAL INSTRUCTIONS		
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME									
B19PTA 00001	SOIL	2-3-05	0950	X	X	X	X	X	X			
CHAIN OF POSSESSION				SIGN/ PRINT NAMES				SPECIAL INSTRUCTIONS				
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME		** The laboratory is to report both kerosene and diesel range compounds from the WTPH-D analysis. (1) IC Anions - 300.0 (Fluoride, Nitrate, Nitrite, Phosphate, Sulfate) Total Cyanide - 8010; pH (Soil) - 9045; (2) ICP Metals - 6010A (Supertrace) (Cadmium, Chromium, Lead, Silver) ICP Metals - 6010A (Supertrace Add-On) (Copper) Mercury - 7471 - (CV); (3) VOA - 8260A (TCL); VOA - 8260A (Add-On) (cis-1,2-Dichloroethylene, n-Butylbenzene, trans-1,2-Dichloroethylene) (4) Semi-VOA - 8270A (Add-On) (Tributyl phosphate) TPH-Gasoline Range - WTPH-G; TPH-Diesel Range - WTPH-D (Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range) (5) Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Americium-241, Isotopic Plutonium, Isotopic Uranium, Strontium-90, 90 - Total Sr; Total Uranium)					
3/1/05		2-3-05 1510	MO-026/RCF #3		2-3-05 1510							
MO-026		2/10/05 1135	M.H. Buckner		2/10/05 1135							
M.H. Buckner		2/10/05 1135	Trell		2/10/05 1135							
Geo Ex		2-11-05 10910	W. Smith		2-11-05 10910							
LABORATORY SECTION	RECEIVED BY	TITLE				DATE/TIME						
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY				DATE/TIME						

83665867

5700000

Lionville Laboratory, Inc.
 PCB ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD FOB-015 H3027

DATE RECEIVED: 02/11/05

LVL LOT # :0502L796

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B19PT4	003	S	05LE0119	02/03/05	02/15/05	02/18/05
B19PT4	003 MS	S	05LE0119	02/03/05	02/15/05	02/18/05
B19PT4	003 MSD	S	05LE0119	02/03/05	02/15/05	02/18/05
LAB QC:						
PBLKGF	MB1	S	05LE0119	N/A	02/15/05	02/16/05
PBLKGF	MB1 BS	S	05LE0119	N/A	02/15/05	02/16/05

Handwritten signature



000015

00000019

~~00000001~~

Appendix 5

Data Validation Supporting Documentation

000016

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	<u>C</u>	D	E
PROJECT: 200-MW-1			DATA PACKAGE: H3027		
VALIDATOR: TLI		LAB: LLI		DATE: 5/9/05	
			SDG: H3027		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	<u>SW-846 8082</u>	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
B19PT4 5/7/0		B19PT4			
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 MB

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

Surrogates analyzed? Yes No N/A
Surrogate recoveries acceptable? Yes No N/A
Surrogates traceable? (Levels D, E) Yes No N/A
Surrogates expired? (Levels D, E) Yes No N/A
MS/MSD samples analyzed? Yes No N/A
MS/MSD results acceptable? Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) Yes No N/A
MS/MSD standards expired? (Levels D, E) Yes No N/A
LCS/BSS samples analyzed? Yes No N/A
LCS/BSS results acceptable? Yes No N/A
Standards traceable? (Levels D, E) Yes No N/A
Standards expired? (Levels D, E) Yes No N/A
Transcription/calculation errors? (Levels D, E) Yes No N/A
Performance audit sample(s) analyzed? Yes No N/A
Performance audit sample results acceptable? Yes No N/A
Comments: Surr- diluted out J all
MS/MSD - diluted out J all 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: MS/MSD diluted out T all

6. SYSTEM PERFORMANCE (Levels D and E)

Chromatographic performance acceptable? Yes No N/A

Positive results resolved acceptably? Yes No N/A

Comments: _____

7. HOLDING TIMES (all levels)

Samples properly preserved? Yes No N/A

Sample holding times acceptable? Yes No N/A

Comments: Hold time 15 days - T 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: all over

9. SAMPLE CLEANUP (Levels D and E)

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

Comments:

Date: 24 May 2005
To: Fluor Hanford Inc. (technical representative)
From: TechLaw, Inc.
Project: 200-MW-1 Characterization Sampling and Analysis - Soil
Subject: Inorganics - Data Package No. H3027



INTRODUCTION

This memo presents the results of data validation on Data Package No. H3027 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
B19PT4	2/3/05	Soil	C	See note 1

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

Data validation was conducted in accordance with the FHI validation statement of work and the 200-MW-1 Miscellaneous Waste Group OU RI/FS Workplan, DOE/RL-2001-65 (Rev. 0), April 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.

000001

- **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.

All MS/MSD results were acceptable.

000002

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.

Due to an RPD outside QC limits (44.3%), all chromium results were qualified as estimates and flagged "J".

All other 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 quantitation limits (RTQLs) to ensure that laboratory detection levels meet the required criteria. All results met the analyte specific RTQL.

000003

- **Completeness**

Data package No. H3027 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 an RPD outside QC limits (44.3%), all chromium 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-2001-65, Rev. 0, *200-MW-1 Miscellaneous Waste Group OUs RI/FS Work Plan*, April 2002.

000004

Appendix 1

Glossary of Data Reporting Qualifiers

000005

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).

000006

Appendix 2

Summary of Data Qualification

000007

INORGANIC DATA QUALIFICATION SUMMARY*

SDG: H3027	REVIEWER: TLI	DATE: 5/24/05	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Chromium	J	All	RPD

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

000008

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

000009

Project: FLUOR HANFORD							
Laboratory: LLI							
Case		SDG: H3027					
Sample Number		B19PT4					
Remarks							
Sample Date		2/3/05					
Inorganics		Result	Q	Result	Q	Result	Q
Silver	0.5	0.05	U				
Cadmium	0.5	0.63					
Chromium	1	24.4	J				
Copper	2.5	30.8					
Mercury	0.2	0.05					
Lead	1	17.0					

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 03/15/05

CLIENT: TNUHANFORD P03-015 H3027
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0502L796

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	B19PT4	Silver, Total	0.05	u MG/KG	0.05	1.0
		Cadmium, Total	0.63	MG/KG	0.04	1.0
		Chromium, Total	24.4	MG/KG	0.04	1.0
		Copper, Total	30.8	MG/KG	0.05	1.0
		Mercury, Total	0.05	MG/KG	0.02	1.0
		Lead, Total	17.0	MG/KG	0.19	1.0

pc
5/21/05

000011

00000102

~~00000000~~

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000012



Analytical Report

Client: TNU-HANFORD F04-015
LVL#: 0502L796
SDG/SAF#: H3027/F04-015

W.O.#: 11343-606-001-9999-00
Date Received: 02-11-05

METALS CASE NARRATIVE

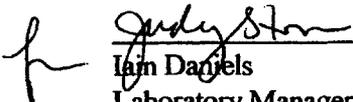
1. This narrative covers the analysis of 1 soil sample.
2. The sample was prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. All results presented in this report are derived from samples that met LVL's sample acceptance policy.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury) with the exception of the ending CCV for Cadmium, Chromium, and Lead in file TA0225B. The matrix spike sample was rerun for these analytes in file TA0226B.
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. All matrix spike (MS) recoveries were within the 75-125% control limits. Refer to the Inorganics Accuracy Report.
11. The duplicate analyses for 2 analytes were outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 20 pages.

000013

00000098

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



Ian Daniels
Laboratory Manager
Lionville Laboratory Incorporated
jjw/m02-796

3/16/08
Date



000014

00000099

~~00000002~~

FLUOR Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						F04-015-117		PAGE 1 OF 1	
COLLECTOR Pope/Pfister/Wiberg/Tyra		COMPANY CONTACT CS Clearlock		TELEPHONE NO. 372-9638		PROJECT COORDINATOR TRENT, SJ		PRICE CODE 8N		DATA TURNAROUND 45 Days / 45 Days	
SAMPLING LOCATION 216-T-33; 19R-21.5R		PROJECT DESIGNATION 200-MW-1 Characterization Sampling and Analysis - Soil				SAF NO. F04-015		AIR QUALITY <input type="checkbox"/>			
ICE CHEST NO. <i>GPP-03-008</i>		FIELD LOGBOOK NO. HNF-N-386 1		COA 119144ES10		METHOD OF SHIPMENT Federal Express					
SHIPPED TO <i>max 10-04 Recra</i>		OFFSITE PROPERTY NO. <i>See PTK 14587</i>				BILL OF LADING/AIR BILL NO. <i>See PTK 14587</i>					
MATRIX* A=Air DL=Drum L=Liquid DS=Drum S=Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION		Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None
		TYPE OF CONTAINER		aG	aG	aGs*	aGs*	aG	aG		P
		NO. OF CONTAINER(S)		1	1	3	3	1	1	1	
	VOLUME		250mL	250mL	40mL	40mL	120mL	120mL			
SPECIAL HANDLING AND/OR STORAGE Radioactive Tie To: B19PN8		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	Alcohol, Glycols, Ketones - 8015 (1-Buand)	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	PCBs - 8082;	SEE ITEM (5) IN SPECIAL INSTRUCTIONS	
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME								
B19PT4	SOIL	2-3-05	0950	X	X	X	X	X	X		
CHAIN OF POSSESSION				SIGN/ PRINT NAMES				SPECIAL INSTRUCTIONS			
RELINQUISHED BY/REMOVED FROM		DATE/TIME		RECEIVED BY/STORED IN		DATE/TIME		** The laboratory is to report both kerosene and diesel range compounds from the WTPH-D analysis. (1)IC Anions - 300.0 (Fluoride, Nitrate, Nitrite, Phosphate, Sulfate) Total Cyanide - 8010; pH (Soil) - 9045; (2)ICP Metals - 6010A (Supertrace) (Cadmium, Chromium, Lead, Silver) ICP Metals - 6010A (Supertrace Add-On) (Copper) Mercury - 7471 - (CV); (3)VOA - 8260A (TCL); VOA - 8260A (Add-On) (cis-1,2-Dichloroethylene, n-Butylbenzene, trans-1,2-Dichloroethylene) (4)Semi-VOA -- 8270A (Add-On) (Tributyl phosphate) TPH-Gasoline Range - WTPH-G; TPH-Diesel Range - WTPH-D (Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range) (5)Gamma Spectroscopy (Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155) Americium-241; Isotopic Plutonium; Isotopic Uranium; Strontium-80,90 -- Total Sr; Total Uranium;			
<i>351149/2-3-05</i>		<i>1510</i>		<i>M.G. 026/RCF #3</i>		<i>2-3-05 1510</i>					
<i>M.G. 026</i>		<i>2/10/05 1135</i>		<i>M.H. Buchholz</i>		<i>2/10/05 1135</i>					
<i>M.H. Buchholz</i>		<i>2/10/05 1135</i>		<i>Cell 92</i>		<i>2/10/05 1135</i>					
<i>Ex</i>		<i>2-11-05 10910</i>		<i>M.J. Smith</i>		<i>2-11-05 10910</i>					
LABORATORY SECTION	RECEIVED BY	TITLE				DATE/TIME					
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY				DATE/TIME					

000015

12

000010

Appendix 5

Data Validation Supporting Documentation

000016

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	200-MW-1		DATA PACKAGE: H3027		
VALIDATOR:	TLD	LAB: LLI	DATE: 5/9/05		
			SDG: H3027		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
B19PT4					
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: no PMS

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: Chromium - 44% I el

6. ICP QUALITY CONTROL (Levels D and E)

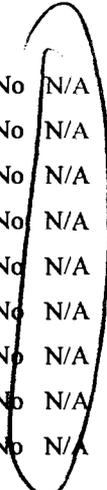
- ICP serial dilution samples analyzed? Yes No N/A
- ICP serial dilution %D values acceptable? Yes No N/A
- ICP post digestion spike required? Yes No N/A
- ICP post digestion spike values acceptable? Yes No N/A
- Standards traceable? Yes No N/A
- Standards expired? Yes No N/A
- Transcription/calculation errors? Yes No N/A

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

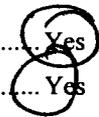
- Duplicate injections performed as required? Yes No N/A
- Duplicate injection %RSD values acceptable? Yes No N/A
- Analytical spikes performed as required? Yes No N/A
- Analytical spike recoveries acceptable? Yes No N/A
- Standards traceable? Yes No N/A
- Standards expired? Yes No N/A
- MSA performed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



Comments: _____

8. HOLDING TIMES (all levels)

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



Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

Comments: _____

Appendix 6

Additional Documentation Requested by Client

000022

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/15/05

CLIENT: TNUHANFORD F03-015 H3027
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0502L796

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	05L0102-MB1	Silver, Total	0.05 u	MG/KG	0.05	1.0
		Cadmium, Total	0.04 u	MG/KG	0.04	1.0
		Chromium, Total	0.04 u	MG/KG	0.04	1.0
		Copper, Total	0.07	MG/KG	0.05	1.0
		Lead, Total	0.19 u	MG/KG	0.19	1.0
BLANK1	05C0035-MB1	Mercury, Total	0.02 u	MG/KG	0.02	1.0

000023

00000103

~~00000007~~

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 03/15/05

CLIENT: TRUHANFORD P03-015 H3027
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0502L796

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-003	B19PT4	Silver, Total	4.8	0.05u	5.1	92.8	1.0
		Cadmium, Total	5.2	0.63	5.1	88.7	1.0
		Chromium, Total	42.9	24.4	20.5	90.1	1.0
		Copper, Total	52.9	30.8	25.6	86.2	1.0
		Mercury, Total	0.20	0.05	0.16	93.2	1.0
		Lead, Total	61.5	17.0	51.3	86.6	1.0

000024

000024 JZ
 3/15/05
~~00000000~~

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 03/15/05

CLIENT: TNUHANFORD P03-015 H3027
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0502L796

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR(REP)
			RESULT	REPLICATE	RPD	
-003REP	B19PT4	Silver, Total	0.05u	0.05u	NC	1.0
		Cadmium, Total	0.63	0.52	19.5	1.0
		Chromium, Total	24.4	38.3	44.3	1.0
		Copper, Total	30.8	26.0	16.9	1.0
		Mercury, Total	0.05	0.05	9.7	1.0
		Lead, Total	17.0	13.5	23.0	1.0

000025

0000105

~~00000000~~

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 03/15/05

CLIENT: TNUHANFORD P03-015 H3027
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0502L796

SAMPLE	SITE ID	ANALYTE	SPIKED		UNITS	%RECOV
			SAMPLE	AMOUNT		
LCS1	05L0102-LC1	Silver, LCS	49.6	50.0	MG/KG	99.2
		Cadmium, LCS	24.4	25.0	MG/KG	97.6
		Chromium, LCS	50.3	50.0	MG/KG	100.6
		Copper, LCS	127	125	MG/KG	101.8
		Lead, LCS	246	250	MG/KG	98.6
LCS1	05C0035-LC1	Mercury, LCS	6.3	6.2	MG/KG	101.1

000026

0000106

00000010

Date: 24 May 2005
 To: Fluor Hanford Inc. (technical representative)
 From: TechLaw, Inc.
 Project: 200-MW-1 Characterization Sampling and Analysis - Soil
 Subject: Wet Chemistry - Data Package No. H3027



INTRODUCTION

This memo presents the results of data validation on Data Package No. H3027 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
B19PT4	2/3/05	Soil	C	See note 1 *
B19PP8	2/3/05	Soil	C	See note 2
B19PP9	2/3/05	Soil	C	See note 2
B19PR0	2/3/05	Soil	C	See note 2
B19PR1	2/3/05	Soil	C	See note 2
B19PR2	2/3/05	Soil	C	See note 2
B19PR3	2/4/05	Soil	C	See note 2
B19PR4	2/7/05	Soil	C	See note 2
B19PR5	2/7/05	Soil	C	See note 2

- 1 - Anions by 300.0, pH by 9045C, cyanide by 9010B.
- 2 - Chromium VI by 7196A, nitrate/nitrite by 353.1, oil & grease by 9071A.
- * - 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-MW-1 Miscellaneous Waste Group OU RI/FS Workplan, DOE/RL-2001-65 (Rev. 0), April 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

000001

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 nitrate/nitrite, oil & grease, fluoride and sulfate; 14 days for cyanide; 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 nitrate/nitrite results in samples B19PP8, B19PP9, B19PR0, B19PR1 and B19PR2 were qualified as estimates and flagged "J".

Due to the holding time being exceeded by less than twice the limit, all fluoride and sulfate 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.

000002

- **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.

000003

Field Duplicate

One set of field duplicate samples (B19PP8/B19PP9) were submitted for analysis. Field duplicate samples are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required target quantitation limits (RTQLs) to ensure that laboratory detection levels meet the required criteria. All undetected oil & grease, fluoride and cyanide results 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. H3027 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 88%.

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 nitrate/nitrite results in samples B19PP8, B19PP9, B19PRO, B19PR1 and B19PR2 were qualified as estimates and flagged "J". Due to the holding time being exceeded by less than twice the limit, all fluoride and sulfate 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 oil & grease, fluoride and cyanide results were reported above the RTQL. Under the FHI statement of work, no qualification is required.

000004

REFERENCES

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

DOE/RL-2001-65, Rev. 0, *200-MW-1 Miscellaneous Waste Group OUs RI/FS Work Plan*, April 2002.

Appendix 1

Glossary of Data Reporting Qualifiers

000006

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).

000007

Appendix 2

Summary of Data Qualification

000008

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: H3027	REVIEWER: TLI	DATE: 5/24/05	PAGE <u>1</u> OF <u>1</u>
COMMENTS:			
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
pH Fluoride Sulfate	J	All	Holding time
Nitrate/nitrite	J	B19PP8, B19PP9, B19PRO, B19PR1 B19PR2	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.

000009

Appendix 3

Qualified Data Summary and Annotated Laboratory Reports

000010

Project: FLUOR-HANFORD																											
Laboratory: LLI																											
Case		SDG: H3027																									
Sample Number	B19PT4			B19PP8			B19PP9			B19PR0			B19PR1			B19PR2			B19PR3			B19PR4			B19PR5		
Remarks	Duplicate																										
Sample Date	2/3/2005			2/3/2005			2/3/2005			2/3/2005			2/3/2005			2/3/2005			2/4/2005			2/7/2005			2/7/2005		
Wet Chemistry	RTQL	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q		
Fluoride	5	13.0	UJ	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
Cyanide	0.5	0.51	U	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
Sulfate	5	145	J	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
pH**		7.8	J	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA			
Chromium VI	0.5	NA		0.21	U	0.20	U	0.21	U	0.21	U	0.22		0.21	U	0.21	U	0.21	U	0.21	U	0.21	U	0.21	U		
Nitrate/nitrite		NA		42.7	J	43.2	J	42.9	J	19.0	J	2.6	J	2.1		4.1		8.8									
Oil & Grease	200	NA		689	U	678	U	688	U	688	U	689	U	691	U	712	U	694	U								
** - Units are pH units																											
NA - Not analyzed																											

000011

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

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/15/05

CLIENT: TNUHANFORD F03-015 H3027
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0502L796

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	B19PP8	% Solids	96.8	%	0.01	1.0
		Chromium VI	0.21	u MG/KG	0.21	1.0
		Nitrate Nitrite	42.7	J MG/KG	1.0	5.0
		Oil & Grease Gravimetri	689	u MG/KG	689	1.0
-002	B19PP9	% Solids	98.4	%	0.01	1.0
		Chromium VI	0.20	u MG/KG	0.20	1.0
		Nitrate Nitrite	43.2	J MG/KG	0.99	5.0
		Oil & Grease Gravimetri	678	u MG/KG	678	1.0
-003	B19PT4	% Solids	96.5	%	0.01	1.0
		Fluoride by IC	13.0	uJ MG/KG	13.0	10.0
		Nitrate by IC	1.30	u MG/KG	1.30	1.0
		Nitrite by IC	187	MG/KG	13.0	10.0
		Cyanide, Total	0.51	u MG/KG	0.51	1.0
		Phosphate by IC	8.3	MG/KG	1.3	1.0
		Sulfate by IC	145	J MG/KG	13.0	10.0
		pH	7.8	J SOIL PH	0.01	1.0
-004	B19PR0	% Solids	96.9	%	0.01	1.0
		Chromium VI	0.21	u MG/KG	0.21	1.0
		Nitrate Nitrite	42.9	J MG/KG	1.0	5.0
		Oil & Grease Gravimetri	688	u MG/KG	688	1.0
-005	B19PR1	% Solids	96.8	%	0.01	1.0
		Chromium VI	0.21	u MG/KG	0.21	1.0
		Nitrate Nitrite	19.0	J MG/KG	0.41	2.0
		Oil & Grease Gravimetri	688	u MG/KG	688	1.0
-006	B19PR2	% Solids	96.7	%	0.01	1.0
		Chromium VI	0.22	MG/KG	0.21	1.0
		Nitrate Nitrite	2.6	J MG/KG	0.20	1.0
		Oil & Grease Gravimetri	689	u MG/KG	689	1.0
-007	B19PR3	% Solids	96.5	%	0.01	1.0
		Chromium VI	0.21	u MG/KG	0.21	1.0
		Nitrate Nitrite	2.1	MG/KG	0.21	1.0
		Oil & Grease Gravimetri	691	u MG/KG	691	1.0
-008	B19PR4	% Solids	93.6	%	0.01	1.0

JR 5/21/05

000012

08

0000124

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 03/15/05

CLIENT: TRUHANFORD P03-015 H3027
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0502L796

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-008	B19PR4	Chromium VI	0.21	u MG/KG	0.21	1.0
		Nitrate Nitrite	4.1	MG/KG	0.21	1.0
		Oil & Grease Gravimetri	712	u MG/KG	712	1.0
-009	B19PR5	% Solids	96.1	%	0.01	1.0
		Chromium VI	0.21	u MG/KG	0.21	1.0
		Nitrate Nitrite	8.8	MG/KG	0.20	1.0
		Oil & Grease Gravimetri	694	u MG/KG	694	1.0

Handwritten signature
 5/21/05

000013

09
 0000135

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

000014



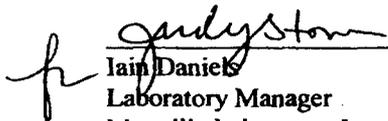
Analytical Report

Client: TNU-HANFORD F03-015 H3027
LVL#: 0502L796

W.O.#: 11343-606-001-9999-00
Date Received: 02-11-05

INORGANIC NARRATIVE

1. This narrative covers the analyses of 9 soil samples.
2. The sample was 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.
4. The results presented in this report are derived from samples that met LVL's sample acceptance policy.
5. The method blanks were within the method criteria.
6. The Laboratory Control Samples (LCS) were within the laboratory control limits.
7. The matrix spike (MS) recoveries for Chromium VI, Nitrate Nitrite, Oil and Grease, Fluoride, Nitrite, Total Cyanide, Phosphate and Sulfate were within the 75-125% control limits however MS recovery for Nitrite was above the control limits at 127.0% that may be attributed to sample inhomogeneity.
8. The replicate analyses for Percent Solids, Chromium VI, Nitrate Nitrite, Fluoride, Nitrite, Nitrate, Total Cyanide, Phosphate, Sulfate, pH and Oil and Grease were within the 20% Relative Percent Difference (RPD) control limit.
9. Results for solid samples are reported on a dry weight basis.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.


Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated
njp02-796

3/16/05
Date

The results presented in this report relate to the analytical testing and conditions of the samples upon receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 24 pages.

000015

04

FLUOR Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				P04-015-102	PAGE 1 OF 1		
COLLECTOR Pope/Pfister/Wiberg/Tyra		COMPANY CONTACT CS Cearlock		TELEPHONE NO. 372-9638	PROJECT COORDINATOR TRENT, SJ		PRICE CODE 8N	DATA TURNAROUND 45 Days / 45 Days	
SAMPLING LOCATION 216-T-33; 16.5R-19.0R		PROJECT DESIGNATION 200-MW-1 Characterization Sampling and Analysis - Soil			SAF NO. F04-015		AIR QUALITY <input type="checkbox"/>		
ICE CHEST NO. <i>ARP-03-008</i>		FIELD LOGBOOK NO. HNF-N-386 1		COA 119144ES10	METHOD OF SHIPMENT Federal Express				
SHIPPED TO <i>MTR-1004</i> Recre		OFFSITE PROPERTY NO. <i>24 PTR 14857</i>			BILL OF LADING/AIR BILL NO. <i>24 PTR 14857</i>				
MATRIX* A=Air DL=Drum L=Liquid DS=Drum S=Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WT=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION		Cool 4C	None				
		TYPE OF CONTAINER		gG	gG				
		NO. OF CONTAINER(S)		1	1				
	SPECIAL HANDLING AND/OR STORAGE Radioactive Tie To: B19PN7		VOLUME		120mL	60mL			
		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS Isotope-133; Technetium-99; Tritium-13;					
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME						
B19PP8	SOIL	<i>2-3-05</i>	<i>0750</i>	<i>X</i>					
B19PP9	SOIL	<i>2-3-05</i>	<i>0750</i>	<i>X</i>					
CHAIN OF POSSESSION		SIGN/ PRINT NAMES				SPECIAL INSTRUCTIONS			
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	(1)NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196;					
<i>J. S. Pope</i>	<i>2-3-05 1500</i>	<i>M. A. Bunn</i>	<i>2-3-05 1500</i>						
<i>M. A. Bunn</i>	<i>2-3-05 1115</i>	<i>M. A. Bunn</i>	<i>2-3-05 1115</i>						
<i>M. A. Bunn</i>	<i>2-11-05 10910</i>	<i>J. S. Pope</i>	<i>2-11-05 10910</i>						
<i>Med Ex</i>	<i>2-11-05 10910</i>	<i>J. S. Pope</i>	<i>2-11-05 10910</i>						
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME						
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME						
LABORATORY SECTION	RECEIVED BY	TITLE				DATE/TIME			
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY				DATE/TIME			

15

MTR-1004

0000132

FLUOR Hanford Inc.

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F04-015-117

PAGE 1 OF 1

COLLECTOR Pope/Pfister/Wiberg/Tyra	COMPANY CONTACT CS Cearlock	TELEPHONE NO. 372-9638	PROJECT COORDINATOR TRENT, SJ	PRICE CODE BN	DATA TURNAROUND 45 Days / 45 Days
SAMPLING LOCATION 216-T-33; 19T-21.5T	PROJECT DESIGNATION 200-MW-1 Characterization Sampling and Analysis - Soil		SAF NO. F04-015	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. GFP-03-008	FIELD LOGBOOK NO. HNF-N-386 1	COA 119144ES10	METHOD OF SHIPMENT Federal Express		

SHIPPED TO max 10-4 Recra	OFFSITE PROPERTY NO. See PTK 14581	BILL OF LADING/AIR BILL NO. See PTK 14581
-------------------------------------	--	---

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	
			TYPE OF CONTAINER	aG	aG	aGs*	aGs*	aG	aG	P
			NO. OF CONTAINER(S)	1	1	3	3	1	1	1
			VOLUME	250mL	250mL	40mL	40mL	120mL	120mL	500mL
	SPECIAL HANDLING AND/OR STORAGE Radioactive Tie To: B19PN8	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	Alcohols, Glycols, Ketones - 8015 (1-Butanol)	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	PCRs - 8082	SEE ITEM (5) IN SPECIAL INSTRUCTIONS	

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME						
B19PT4	SOIL	2-3-05	0950	X	X	X	X	X	X

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	** The laboratory is to report both kerosene and diesel range compounds from the WTPH-D analysis. (1) IC Anions - 300.0 {Fluoride, Nitrate, Nitrite, Phosphate, Sulfate} Total Cyanide - 9010; pH (Soil) - 9045; (2) ICP Metals - 6010A (Supertrace) {Cadmium, Chromium, Lead, Silver} ICP Metals - 6010A (Supertrace Add-On) {Copper} Mercury - 7471 - (CV); (3) VOA - 8260A (TCL); VOA - 8260A (Add-On) {cis-1,2-Dichloroethylene, n-Butylbenzene, trans-1,2-Dichloroethylene} (4) Semi-VOA - 8270A (Add-On) {Tributyl phosphate} TPH-Gasoline Range - WTPH-G; TPH-Diesel Range - WTPH-D {Total petroleum hydrocarbons - diesel range, Total petroleum hydrocarbons - kerosene range} (5) Gamma Spectroscopy {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Americium-241, Isotopic Plutonium, Isotopic Uranium, Strontium-89,90 - Total Sr, Total Uranium}	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		

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

MAT 8-10-04

000017

000153

FLUOR Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F04-015-104	PAGE 1 OF 1
COLLECTOR Pope/Pfister/Wiberg/Tyra		COMPANY CONTACT CS Clearlock	TELEPHONE NO. 372-9638	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8N	DATA TURNAROUND 45 Days / 45 Days
SAMPLING LOCATION 216-T-33; 22.5N-25.0E		PROJECT DESIGNATION 200-MW-1 Characterization Sampling and Analysis - Soil		SAF NO. F04-015	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. <i>OPP-03-008</i>		FIELD LOGBOOK NO. HNF-N-386 1	COA 119144ES10	METHOD OF SHIPMENT Federal Express		
SHIPPED TO <i>Libertine Services</i>		OFFSITE PROPERTY NO. <i>200 PTR 14851</i>		BILL OF LADING/AIR BILL NO. <i>See PTR 14851</i>		
MATRIX* A=Air DL=Drum L=Liquid DS=Drum S=Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	Cool 4C	None		
		TYPE OF CONTAINER	9G	9G		
		NO. OF CONTAINER(S)	1	1		
	VOLUME	120mL	60mL			
SPECIAL HANDLING AND/OR STORAGE Radioactive Tie To: B19PN9	SAMPLE ANALYSIS	SEE ITEM (1) ON SPECIAL INSTRUCTIONS	Iodine-129; Technetium-99; Tritium - H3;			
SAMPLE NO.		MATRIX*	SAMPLE DATE	SAMPLE TIME		
B19PR1		SOIL	2-3-05	1100	X	
000019						
CHAIN OF POSSESSION			SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME	
<i>J.P. Pfeister</i>		2-3-05 1500	<i>MK-626/Pfister #3</i>		2-3-05 1500	
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME	
<i>M. J. Pfeister</i>		2-24-05 1115	<i>M. J. Pfeister</i>		2-24-05 1115	
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME	
<i>M. J. Pfeister</i>		2-11-05 10910	<i>J. Pfeister</i>		2-11-05 10910	
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME	
<i>J. Pfeister</i>		2-11-05 10910	<i>J. Pfeister</i>		2-11-05 10910	
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME	
RELINQUISHED BY/REMOVED FROM		DATE/TIME	RECEIVED BY/STORED IN		DATE/TIME	
LABORATORY SECTION		RECEIVED BY	TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION		DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

61

0000135

FLUOR Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F04-015-105	PAGE 1 OF 1	
COLLECTOR Pope/Pfister/Wiberg/Tyra		COMPANY CONTACT CS Cearlock		TELEPHONE NO. 372-9638	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8N	DATA TURNAROUND . 45 Days / 45 Days	
SAMPLING LOCATION 216-T-33; 27.5ft-30R		PROJECT DESIGNATION 200-MW-1 Characterization Sampling and Analysis - Soil			SAF NO. F04-015	AIR QUALITY <input type="checkbox"/>		
ICE CHEST NO. <i>G.P. 03-008</i>		FIELD LOGBOOK NO. HNF-N-386 1	COA 119144ES10		METHOD OF SHIPMENT Federal Express			
SHIPPED TO <i>AMS 8-10-01</i> <i>Perce</i>		OFFSITE PROPERTY NO. <i>See VTR 14857</i>			BILL OF LADING/AIR BILL NO. <i>See VTR 14857</i>			
MATRIX* A=Air DL=Drum L=Liquid DS=Drum S=Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	Cool 4C	None				
		TYPE OF CONTAINER	gG	gG				
		NO. OF CONTAINER(S)	1	1				
		VOLUME	120mL	60mL				
SPECIAL HANDLING AND/OR STORAGE Radioactive Tie To: B19PP0		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Iodine-129; Technetium-99; Tritium - H3;				
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME					
B19PR2	SOIL	2/3/05	1310	X				
CHAIN OF POSSESSION		SIGN/ PRINT NAMES			SPECIAL INSTRUCTIONS (1)NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196;			
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME					
<i>J. Pope</i>	<i>2-3-05 1500</i>	<i>MU-026 / REG #3</i>	<i>2-3-05 1500</i>					
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME					
<i>M.P. Pope</i>	<i>2-3-05 1115</i>	<i>M.H. Danaher</i>	<i>2-3-05 1115</i>					
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME					
<i>M.H. Danaher</i>	<i>2-11-05 1010</i>	<i>Red EA</i>	<i>2-11-05 1010</i>					
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME					
<i>Red EA</i>	<i>2-11-05 1010</i>	<i>D. J. Smith</i>	<i>2-11-05 1010</i>					
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME					
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME					
LABORATORY SECTION	RECEIVED BY	TITLE			DATE/TIME			
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY			DATE/TIME			

20

0000138

FLUOR Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F04-015-107	PAGE 1 OF 1
COLLECTOR Pope/Pfister/Wiberg/Tyra		COMPANY CONTACT CS Clearlock		TELEPHONE NO. 372-9638	PROJECT COORDINATOR TRENT, SJ	PRICE CODE 8N DATA TURNAROUND 45 Days / 45 Days
SAMPLING LOCATION 216-T-33; 110.5F-113R		PROJECT DESIGNATION 200-MW-1 Characterization Sampling and Analysis - Soil			SAF NO. F04-015	AIR QUALITY <input type="checkbox"/>
ICE CHEST NO. <i>APP-03-028</i>		FIELD LOGBOOK NO. HNF-N-386 1	COA 119144E510		METHOD OF SHIPMENT Federal Express	
SHIPPED TO <i>TRC & Ben Eberline Services</i> <i>Rera</i>		OFFSITE PROPERTY NO. <i>See PTR 14851</i>			BILL OF LADING/AIR BILL NO. <i>See PTR 14851</i>	
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	Cool °C	None		
		TYPE OF CONTAINER	gG	gG		
		NO. OF CONTAINER(S)	1	1		
		VOLUME	120mL	60mL		
	SPECIAL HANDLING AND/OR STORAGE Radioactive Tie To: B19PP2	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Iodine-125; Technetium-99; Tritium - H3;		
SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B19PR4	SOIL	2-7-05	0720	X		
CHAIN OF POSSESSION				SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	(1)NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196;		
<i>J.S. Pope</i>	<i>2-7-05 1445</i>	<i>MO-026/Ref.# 3</i>	<i>2-7-05 1445</i>			
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME			
<i>M.S. Pope</i>	<i>3-2-05 1115</i>	<i>M.H. Brown</i>	<i>2-10-05 1115</i>			
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME			
<i>M.H. Brown</i>	<i>2-10-05 1115</i>	<i>LED EX</i>				
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME			
<i>LED EX</i>	<i>2-11-05/0910</i>	<i>W. Smith</i>	<i>2-11-05/0910</i>			
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME			
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME			
LABORATORY SECTION	RECEIVED BY	TITLE		DATE/TIME		
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME		

22

000022

MAY 8 10 07

000008

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

F04-015-108

PAGE 1 OF 1

COLLECTOR Pope/Pfister/W/berg/Tyra	COMPANY CONTACT CS Cearlock	TELEPHONE NO. 372-9638	PROJECT COORDINATOR TRENT, SJ	PRICE CODE SN	DATA TURNAROUND 45 Days / 45 Days
SAMPLING LOCATION 216-T-33; 130.5R-133R	PROJECT DESIGNATION 200-MW-1 Characterization Sampling and Analysis - Soil		SAF NO. F04-015	AIR QUALITY <input type="checkbox"/>	

ICE CHEST NO. ARP-03-008	FIELD LOGBOOK NO. HNF-N-386 1	COA 119144E510	METHOD OF SHIPMENT Federal Express		
SHIPPED TO Eberline Services Rusa	OFFSITE PROPERTY NO. Su PTL 14581	BILL OF LADING/AIR BILL NO. Su PTL 14581			

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water W1=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS SPECIAL HANDLING AND/OR STORAGE Radioactive Tie To: B19PP3	PRESERVATION	Cool 4C	None						
		TYPE OF CONTAINER	gG	gG						
		NO. OF CONTAINER(S)	1	1						
		VOLUME	120mL	60mL						
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	Iodine-129; Technetium-99; Tritium - H3;						

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME						
B19PR5	SOIL	2-7-05	1020	X					

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	(1)NO2/NO3 - 353.2; Oil & Grease - 413.1; Chromium Hex - 7196;	
J.S. Pope	2-7-05 1445	MU-026	1445		
M.P. Pfister	2-10-05 1115	M.P. Pfister	2-10-05 1115		
M.P. Pfister	2-10-05 1115	LLU			
W. Berg	2-11-05 0910	W. Berg	2-11-05 0910		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		

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

32

000000

Appendix 5

Data Validation Supporting Documentation

000024

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	200-MW-1		DATA PACKAGE:	H3027	
VALIDATOR:	TLF	LAB:	LLI	DATE:	5/9/05
		SDG:	H3027		
ANALYSES PERFORMED					
Anions/IC	TOC	TOX	TPH-418.1	Oil and Grease	Alkalinity
Ammonia	BOD/COD	Chloride	Chromium-VI	pH	NO₃/NO₂
Sulfate	TDS	TKN	Phosphate	cyanide	
SAMPLES/MATRIX					
B19PTY B19PP8 B19PP9 B19PRO B19PRI					
B19PR2 B19PR3 B19PR4 B19PR5					
nitrate, nitrite + phosphate not validated per ET Skew FHI 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
Spike standards NIST traceable? (Levels D, E)..... Yes No N/A
Spike standards expired? (Levels D, E)..... Yes No N/A
LCS/BSS samples analyzed? Yes No N/A
LCS/BSS results acceptable?..... Yes No N/A
Standards traceable? (Levels D, E)..... Yes No N/A
Standards expired? (Levels D, E)..... Yes No N/A
Transcription/calculation errors? (Levels D, E)..... Yes No N/A
Performance audit sample(s) analyzed? Yes No N/A
Performance audit sample results acceptable?..... Yes No N/A

Comments: NO PAS

GENERAL CHEMISTRY 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: *ph > 2X - J all*
NO₂/NO₃ - ~~2X~~ ^{3/10} - < 4 2X - J all ^{1/10} P8 P9 R0 R1 R2
Fluoride - 32 dg < 2X - J all
sulfate - < 2X - J all

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: Fluoride, cyanide - oil + grease - all

Appendix 6

Additional Documentation Requested by Client

000029

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 03/15/05

CLIENT: TNUHANFORD F03-015 H3027
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0502L796

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	05LVI013-MB1	Chromium VI	0.20	u MG/KG	0.20	1.0
BLANK10	05LN3011-MB1	Nitrate Nitrite	0.20	u MG/KG	0.20	1.0
BLANK10	05LOG009-MB1	Oil & Grease Gravimetri	667	u MG/KG	667	1.0
BLANK10	05LOG008-MB1	Oil & Grease Gravimetri	667	u MG/KG	667	1.0
BLANK10	05LICB12-MB1	Fluoride by IC	2.5	u MG/KG	2.5	1.0
		Nitrite by IC	2.50	u MG/KG	2.50	1.0
		Nitrate by IC	2.50	u MG/KG	2.50	1.0
		Phosphate by IC	2.5	u MG/KG	2.5	1.0
		Sulfate by IC	2.5	u MG/KG	2.5	1.0
BLANK1	05LCA08-MB1	Cyanide, Total	0.50	u MG/KG	0.50	1.0

000030

~~10~~
 0000126

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 03/15/05

CLIENT: TNUHANFORD F03-015 H3027
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0502L796

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPX)
-001	B19PP8	Chromium VI	4.2	0.10	4.1	99.4	1.0
		Chromium VI MSD	1220	0.10	1190	102.8	100
		Nitrate Nitrite	96.2	42.7	51.2	104.5	10.0
		Oil & Grease Gravimetr	5960	689 u	6860	86.9	1.0
-003	B19PT4	Fluoride by IC	308	1.8	260	117.9	10.0
		Nitrite by IC	59.9	1.30u	52.0	115.2	2.0
		Nitrate by IC	517	187	260	127.0	10.0
		Cyanide, Total	4.25	0.51u	4.44	95.6	1.0
		Phosphate by IC	64.3	8.3	52.0	107.8	2.0
		Sulfate by IC	469	145	260	124.7	10.0
BLANK10	05LVI013-MB1	Chromium VI	4.0	0.20u	4.0	100.3	1.0
		Chromium VI MSD	1180	0.20u	1110	105.8	100
BLANK10	05LN3011-MB1	Nitrate Nitrite	5.0	0.20u	5.0	99.0	1.0
BLANK10	05LOG009-MB1	Oil & Grease Gravimetr	5910	667 u	6640	89.0	1.0
BLANK10	05LOG008-MB1	Oil & Grease Gravimetr	6280	667 u	6710	93.6	1.0
BLANK10	05LICB12-MB1	Fluoride by IC	49.6	2.5 u	50.0	99.2	1.0
		Nitrite by IC	50.8	2.50u	50.0	101.7	1.0
		Nitrate by IC	51.6	2.50u	50.0	103.2	1.0
		Phosphate by IC	54.7	2.5 u	50.0	109.3	1.0
		Sulfate by IC	50.7	2.5 u	50.0	101.4	1.0

000031

11
 0000127

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 03/15/05

CLIENT: TNUHANFORD P03-015 H3027
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0502L796

SAMPLE	SITE ID	ANALYTE	SPIKE#1		SPIKE#2	
			%RECOV	%RECOV	%RECOV	%DIFF
-001	H19PP8	Chromium VI	99.4	102.8	3.4	
BLANK10	05LVI013-ME1	Chromium VI	100.3	105.8	5.4	

000032

0000128

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 03/15/05

CLIENT: TRUHANFORD F03-015 H3027
 WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0502L796

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-001REP	B19PP8	‡ Solids	96.8	97.7	0.99	1.0
		Chromium VI	0.21u	0.23	NC	1.0
		Nitrate Nitrite	42.7	42.4	0.75	5.0
-003REP	B19PT4	‡ Solids	96.5	97.4	0.95	1.0
		Fluoride by IC	13.0 u	13.0 u	NC	10.0
		Nitrite by IC	1.30u	1.30u	NC	1.0
		Nitrate by IC	187	183	2.0	10.0
		Cyanide, Total	0.51u	0.50u	NC	1.0
		Phosphate by IC	8.3	8.0	3.7	1.0
		Sulfate by IC	145	144	1.1	10.0
		pH	7.9	7.9	0.4	1.0
-005REP	B19PR1	Oil & Grease Gravimetri	688 u	688 u	NC	1.0

000033

000013
 0000129

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 03/15/05

CLIENT: TNUHANFORD F03-015 H3027
WORK ORDER: 11343-606-001-9999-00

LVL LOT #: 0502L796

SAMPLE	SITE ID	ANALYTE	SPIKED	SPIKED	UNITS	%RECOV
			SAMPLE	AMOUNT		
LCSS1	05LCA08-LCS1	Cyanide, Total LCS	2.01	2.0	MG/KG	100.4
LCSS2	05LCA08-LCS2	Cyanide, Total LCS	10.2	10.0	MG/KG	102.0

0000130

000034

14

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-015 H3027



DATE RECEIVED: 02/11/05

LVL LOT # :0502L796

CLIENT ID /ANALYSIS LVL # MTX PREP # COLLECTION EXTR/PREP ANALYSIS

B19PP8

% SOLIDS	001	S	05L*S021	02/03/05	02/15/05	02/15/05
% SOLIDS	001 REP	S	05L*S021	02/03/05	02/15/05	02/15/05
CHROMIUM VI	001	S	05LVI013	02/03/05	02/15/05	02/15/05
CHROMIUM VI	001 REP	S	05LVI013	02/03/05	02/15/05	02/15/05
CHROMIUM VI	001 MS	S	05LVI013	02/03/05	02/15/05	02/15/05
CHROMIUM VI	001 MSD	S	05LVI013	02/03/05	02/15/05	02/15/05
NITRATE NITRITE	001	S	05LN3011	02/03/05	03/04/05	03/04/05
NITRATE NITRITE	001 REP	S	05LN3011	02/03/05	03/04/05	03/04/05
NITRATE NITRITE	001 MS	S	05LN3011	02/03/05	03/04/05	03/04/05
OIL & GREASE BY GRAV	001	S	05LOG009	02/03/05	02/25/05	02/28/05
OIL AND GREASE BY GR	001 MS	S	05LOG009	02/03/05	02/25/05	02/28/05

B19PP9

% SOLIDS	002	S	05L*S021	02/03/05	02/15/05	02/15/05
CHROMIUM VI	002	S	05LVI013	02/03/05	02/15/05	02/15/05
NITRATE NITRITE	002	S	05LN3011	02/03/05	03/04/05	03/04/05
OIL & GREASE BY GRAV	002	S	05LOG008	02/03/05	02/16/05	02/17/05

B19PT4

% SOLIDS	003	S	05L*S020	02/03/05	02/14/05	02/14/05
% SOLIDS	003 REP	S	05L*S020	02/03/05	02/14/05	02/14/05
FLUORIDE BY IC	003	S	05LICB12	02/03/05	03/07/05	03/07/05
FLUORIDE BY IC	003 REP	S	05LICB12	02/03/05	03/07/05	03/07/05
FLUORIDE BY IC	003 MS	S	05LICB12	02/03/05	03/07/05	03/07/05
NITRITE BY IC	003	S	05LICB12	02/03/05	03/07/05	03/07/05
NITRITE BY IC	003 REP	S	05LICB12	02/03/05	03/07/05	03/07/05
NITRITE BY IC	003 MS	S	05LICB12	02/03/05	03/07/05	03/07/05
NITRATE BY IC	003	S	05LICB12	02/03/05	03/07/05	03/07/05
NITRATE BY IC	003 REP	S	05LICB12	02/03/05	03/07/05	03/07/05
NITRATE BY IC	003 MS	S	05LICB12	02/03/05	03/07/05	03/07/05
TOTAL CYANIDE	003	S	05LCA08	02/03/05	02/14/05	02/14/05
TOTAL CYANIDE	003 REP	S	05LCA08	02/03/05	02/14/05	02/14/05
TOTAL CYANIDE	003 MS	S	05LCA08	02/03/05	02/14/05	02/14/05

000035

01
0000117

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-015 H3027

DATE RECEIVED: 02/11/05

LVL LOT # :0502L796

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
PHOSPHATE BY IC	003	S	05LICB12	02/03/05	03/07/05	03/07/05
PHOSPHATE BY IC	003 REP	S	05LICB12	02/03/05	03/07/05	03/07/05
PHOSPHATE BY IC	003 MS	S	05LICB12	02/03/05	03/07/05	03/07/05
SULFATE BY IC	003	S	05LICB12	02/03/05	03/07/05	03/07/05
SULFATE BY IC	003 REP	S	05LICB12	02/03/05	03/07/05	03/07/05
SULFATE BY IC	003 MS	S	05LICB12	02/03/05	03/07/05	03/07/05
PH	003	S	05LPH010	02/03/05	02/16/05	02/16/05
PH	003 REP	S	05LPH010	02/03/05	02/16/05	02/16/05
B19PR0						
% SOLIDS	004	S	05L*S021	02/03/05	02/15/05	02/15/05
CHROMIUM VI	004	S	05LVI013	02/03/05	02/15/05	02/15/05
NITRATE NITRITE	004	S	05LN3011	02/03/05	03/04/05	03/04/05
OIL & GREASE BY GRAV	004	S	05LOG008	02/03/05	02/16/05	02/17/05
B19PR1						
% SOLIDS	005	S	05L*S021	02/03/05	02/15/05	02/15/05
CHROMIUM VI	005	S	05LVI013	02/03/05	02/15/05	02/15/05
NITRATE NITRITE	005	S	05LN3011	02/03/05	03/04/05	03/04/05
OIL & GREASE BY GRAV	005	S	05LOG008	02/03/05	02/16/05	02/17/05
OIL AND GREASE BY GR	005 REP	S	05LOG008	02/03/05	02/16/05	02/17/05
B19PR2						
% SOLIDS	006	S	05L*S021	02/03/05	02/15/05	02/15/05
CHROMIUM VI	006	S	05LVI013	02/03/05	02/15/05	02/15/05
NITRATE NITRITE	006	S	05LN3011	02/03/05	03/04/05	03/04/05
OIL & GREASE BY GRAV	006	S	05LOG008	02/03/05	02/16/05	02/17/05
B19PR3						
% SOLIDS	007	S	05L*S021	02/04/05	02/15/05	02/15/05
CHROMIUM VI	007	S	05LVI013	02/04/05	02/15/05	02/15/05
NITRATE NITRITE	007	S	05LN3011	02/04/05	03/04/05	03/04/05
OIL & GREASE BY GRAV	007	S	05LOG008	02/04/05	02/16/05	02/17/05
B19PR4						
% SOLIDS	008	S	05L*S021	02/07/05	02/15/05	02/15/05

000036

~~02~~
0000118

Lionville Laboratory, Inc.
 INORGANIC ANALYTICAL DATA PACKAGE FOR
 TNUHANFORD F03-015 H3027

DATE RECEIVED: 02/11/05

LVL LOT # :0502L796

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
CHROMIUM VI	008	S	05LVI013	02/07/05	02/15/05	02/15/05
NITRATE NITRITE	008	S	05LN3011	02/07/05	03/04/05	03/04/05
OIL & GREASE BY GRAV	008	S	05LOG009	02/07/05	02/25/05	02/28/05
B19PR5						
% SOLIDS	009	S	05L%S021	02/07/05	02/15/05	02/15/05
CHROMIUM VI	009	S	05LVI013	02/07/05	02/15/05	02/15/05
NITRATE NITRITE	009	S	05LN3011	02/07/05	03/04/05	03/04/05
OIL & GREASE BY GRAV	009	S	05LOG009	02/07/05	02/25/05	02/28/05

LAB QC:

CHROMIUM VI	MB1	S	05LVI013	N/A	02/15/05	02/15/05
CHROMIUM VI	MB1 BS	S	05LVI013	N/A	02/15/05	02/15/05
CHROMIUM VI	MB1 BSD	S	05LVI013	N/A	02/15/05	02/15/05
NITRATE NITRITE	MB1	S	05LN3011	N/A	03/04/05	03/04/05
NITRATE NITRITE	MB1 BS	S	05LN3011	N/A	03/04/05	03/04/05
OIL & GREASE BY GRAV	MB1	S	05LOG009	N/A	02/25/05	02/28/05
OIL AND GREASE BY GR	MB1 BS	S	05LOG009	N/A	02/25/05	02/28/05
OIL & GREASE BY GRAV	MB1	S	05LOG008	N/A	02/16/05	02/17/05
OIL AND GREASE BY GR	MB1 BS	S	05LOG008	N/A	02/16/05	02/17/05
FLUORIDE BY IC	MB1	S	05LICB12	N/A	03/07/05	03/07/05
FLUORIDE BY IC	MB1 BS	S	05LICB12	N/A	03/07/05	03/07/05
NITRITE BY IC	MB1	S	05LICB12	N/A	03/07/05	03/07/05
NITRITE BY IC	MB1 BS	S	05LICB12	N/A	03/07/05	03/07/05
NITRATE BY IC	MB1	S	05LICB12	N/A	03/07/05	03/07/05
NITRATE BY IC	MB1 BS	S	05LICB12	N/A	03/07/05	03/07/05
TOTAL CYANIDE	LCS L	S	05LCA08	N/A	02/14/05	02/14/05
TOTAL CYANIDE	LCS L	S	05LCA08	N/A	02/14/05	02/14/05
TOTAL CYANIDE	MB1	S	05LCA08	N/A	02/14/05	02/14/05
PHOSPHATE BY IC	MB1	S	05LICB12	N/A	03/07/05	03/07/05
PHOSPHATE BY IC	MB1 BS	S	05LICB12	N/A	03/07/05	03/07/05
SULFATE BY IC	MB1	S	05LICB12	N/A	03/07/05	03/07/05
SULFATE BY IC	MB1 BS	S	05LICB12	N/A	03/07/05	03/07/05

000037

03
0000119