0076842

SAF-RC-032
100-F Remaining Sites Burial Grounds - Soil Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF VALIDATION PACKAGE TO:

Kathy Wendt (2) H4-21

COMMENTS:

SDG K1066 SAF-RC-032

Waste Site: 120-F-1

RECEIVED
APR 10 2008
EDMC

Date: 31 March 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-F Remaining Sites Burial Ground– Soil Full Protocol - Waste Site 120-F-1
Subject: Pesticide/PCB - Data Package No. K1066-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1066 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J16337	12/17/07	Soil	C	See note 1
J16338	12/17/07	Soil	C	See note 1
J16339	12/17/07	Soil	C	See note 1
J16340	12/17/07	Soil	C	See note 1
J16341	12/17/07	Soil	C	See note 1
J16342	12/17/07	Soil	C	See note 1

1 – PCBs by 8182 and pesticides by 8081A.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

- **Holding Times**

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

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

All holding times were acceptable.

- **Method Blank**

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

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike & Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

Due to the matrix spike and matrix spike duplicate being prepared in a separate preparation batch, all pesticide and PCB results in sample J16338, J16339, J16340, J16341 and J16342 were qualified as estimates and flagged "J".

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

All other accuracy results were acceptable.

Surrogate Recovery

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

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

Matrix spike/matrix spike duplicate results provide matrix-specific information on the precision of the method for specific target compound classes. Precision is expressed as the relative percent difference (RPD) between the recoveries of duplicate matrix spike analyses performed on a sample. For soil samples, results must be within RPD limits of plus/minus 30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

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

Due to the matrix spike and matrix spike duplicate being prepared in a separate preparation batch, all pesticide and PCB results in sample J16338, J16339, J16340, J16341 and J16342 were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data Package No. K1066 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to the matrix spike and matrix spike duplicate being prepared in a separate preparation batch, all pesticide and PCB results in sample J16338, J16339, J16340, J16341 and J16342 were qualified as estimates and flagged "J".

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

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

Fluor Hanford Data Validation Contract #29776 (June 2006), *Validation Statement of Work*, through Washington Closure Hanford Work Order #WB6081.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

PESTICIDE/PCB DATA QUALIFICATION SUMMARY*

SDG: K1066	REVIEWER: ELR	Project: 120-F-1	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Toxaphene	J	All	No MS, MSD or LCS recovery
All pesticide & PCB analytes	J	J16338, J16339 J16340, J16341 J16342	MS & MSD prepared in a separate preparation batch

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

Appendix 3

Annotated Laboratory Reports

PCBs by GC

Report Date: 01/03/08 09:00

RFW Batch Number: 0712L342 Client: TNU-HANFORD RC-032 Work Order: 11343606001 Page: 1

	Cust ID:	J16337	J16337	J16337	J16338	J16339	J16340
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
		REPREP	REPREP	REPREP			
Surrogate: Tetrachloro-m-xylene		96 %	100 %	108 %	105 %	99 %	96 %
Decachlorobiphenyl		100 %	100 %	114 %	102 %	99 %	97 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		14 U	95 %	109 %	14 U J	14 U J	14 U J
Aroclor-1221		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1232		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1242		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1248		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1254		14 U	14 U	14 U	14 U	14 U	14 U
Aroclor-1260		14 U	112 %	107 %	14 U	14 U	14 U

	Cust ID:	J16341	J16342	PBLKLF	PBLKLF BS	PBLKLC	PBLKLC BS
Sample Information	RFW#:	005	006	07LE0726-MB1	07LE0726-MB1	07LE0720-MB1	07LE0720-MB1
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
Surrogate: Tetrachloro-m-xylene		109 %	104 %	102 %	106 %	91 %	106 %
Decachlorobiphenyl		102 %	100 %	97 %	104 %	102 %	101 %
		fl	fl	fl	fl	fl	fl
Aroclor-1016		15 U J	15 U J	13 U	100 %	13 U	89 %
Aroclor-1221		15 U	15 U	13 U	13 U	13 U	13 U
Aroclor-1232		15 U	15 U	13 U	13 U	13 U	13 U
Aroclor-1242		15 U	15 U	13 U	13 U	13 U	13 U
Aroclor-1248		15 U	15 U	13 U	13 U	13 U	13 U
Aroclor-1254		23	15 U	13 U	13 U	13 U	13 U
Aroclor-1260		9.8	15 U	13 U	111 %	13 U	97 %

3/24/08

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

3/24/08

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Pesticide/PCBs by GC, CLP List

Report Date: 01/03/08 08:32

RFW Batch Number: 0712L342 Client: TNU-HANFORD RC-032 Work Order: 11343606001 Page: 1

	Cust ID:	J16337	J16337	J16337	J16338	J16339	J16340
Sample Information	RFW#:	001	001 MS	001 MSD	002	003	004
	Matrix:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	D.F.:	4.00	4.00	4.00	4.00	4.00	4.00
	Units:	UG/KG REPREP	UG/KG REPREP	UG/KG REPREP	UG/KG	UG/KG	UG/KG
Surrogate:	Tetrachloro-m-xylene	94 %	91 %	100 %	92 %	89 %	86 %
	Decachlorobiphenyl	91 %	83 %	92 %	94 %	90 %	84 %
		fl	fl	fl	fl	fl	fl
Alpha-BHC		1.4 U	98 %	110 %	1.4 U J	1.4 U J	1.4 U J
gamma-BHC (Lindane)		1.4 U	101 %	112 %	1.4 U	1.4 U	1.4 U
Beta-BHC		1.4 U	104 %	113 %	1.4 U	1.4 U	1.4 U
Heptachlor		1.4 U	97 %	107 %	1.4 U	1.4 U	1.4 U
Delta-BHC		1.4 U	91 %	103 %	1.4 U	1.4 U	1.4 U
Aldrin		1.4 U	99 %	110 %	1.4 U	1.4 U	1.4 U
Heptachlor epoxide		1.4 U	100 %	110 %	1.4 U	1.4 U	1.4 U
gamma-Chlordane		1.4 U	98 %	109 %	8.2	1.4 U	1.4 U
Endosulfan I		1.4 U	100 %	110 %	1.4 U	1.4 U	1.4 U
alpha-Chlordane		1.4 U	99 %	109 %	8.6	1.4 U	1.4 U
4,4'-DDE		1.4 U	102 %	113 %	1.4 U	1.4 U	1.4 U
Dieldrin		1.4 U	98 %	109 %	1.4 U	1.4 U	1.4 U
Endrin		1.4 U	98 %	108 %	1.4 U	1.4 U	1.4 U
4,4'-DDD		1.4 U	98 %	107 %	1.4 U	1.4 U	1.4 U
Endosulfan II		1.4 U	100 %	108 %	1.4 U	1.4 U	1.4 U
4,4'-DDT		1.4 U	100 %	108 %	1.4 U	1.4 U	1.4 U
Endrin aldehyde		1.4 U	94 %	102 %	1.4 U	1.4 U	1.4 U
Endosulfan sulfate		1.4 U	93 %	100 %	1.4 U	1.4 U	1.4 U
Methoxychlor		1.4 U	116 %	108 %	1.4 U	1.4 U	1.4 U
Endrin ketone		1.4 U	99 %	110 %	1.4 U	1.4 U	1.4 U
Toxaphene		14 U J	14 U	14 U	14 U	14 U	14 U

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

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3/29/08

	Cust ID:	J16341		J16342		PBLKLF		PBLKLF BS		PBLKLC		PBLKLC BS	
Sample Information	RFW#:	005		006		07LE0726-MB1		07LE0726-MB1		07LE0720-MB1		07LE0720-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	4.00		4.00		1.00		1.00		1.00		1.00	
	Units:	UG/KG		UG/KG		UG/KG		UG/KG		UG/KG		UG/KG	
Surrogate:	Tetrachloro-m-xylene	94	%	93	%	78	%	83	%	76	%	88	%
	Decachlorobiphenyl	91	%	92	%	74	%	81	%	76	%	79	%
			fl		fl		fl		fl		fl		fl
Alpha-BHC		1.5	U J	1.5	U J	0.33	U	104	%	0.33	U	88	%
gamma-BHC (Lindane)		1.5	U	1.5	U	0.33	U	101	%	0.33	U	98	%
Beta-BHC		1.5	U	1.5	U	0.33	U	96	%	0.33	U	94	%
Heptachlor		1.5	U	1.5	U	0.33	U	96	%	0.33	U	90	%
Delta-BHC		1.5	U	1.5	U	0.33	U	96	%	0.33	U	86	%
Aldrin		1.5	U	1.5	U	0.33	U	104	%	0.33	U	95	%
Heptachlor epoxide		1.5	U	1.5	U	0.33	U	100	%	0.33	U	95	%
gamma-Chlordane		1.5	U	1.5	U	0.33	U	103	%	0.33	U	97	%
Endosulfan I		1.8	J	1.5	U	0.33	U	102	%	0.33	U	106	%
alpha-Chlordane		1.5	U	1.5	U	0.33	U	101	%	0.33	U	98	%
4,4'-DDE		1.8	J	1.5	U	0.33	U	109	%	0.33	U	114	%
Dieldrin		1.5	U	1.5	U	0.33	U	106	%	0.33	U	100	%
Endrin		1.5	U	1.5	U	0.33	U	105	%	0.33	U	99	%
4,4'-DDD		1.5	U	1.5	U	0.33	U	106	%	0.33	U	111	%
Endosulfan II		1.5	U	1.5	U	0.33	U	102	%	0.33	U	100	%
4,4'-DDT		1.7	~~U~~ J	1.5	U	0.33	U	109	%	0.33	U	104	%
Endrin aldehyde		1.5	~~U~~ J	1.5	U	0.33	U	89	%	0.33	U	88	%
Endosulfan sulfate		1.5	U	1.5	U	0.33	U	100	%	0.33	U	95	%
Methoxychlor		1.5	U	1.5	U	0.33	U	99	%	0.33	U	93	%
Endrin ketone		1.5	U	1.5	U	0.33	U	104	%	0.33	U	96	%
Toxaphene		15	U	15	U	3.3	U	3.3	U	3.3	U	3.3	U

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

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Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-032
LVL #: 0712L342
SDG/SAF # K1066 / RC-032

W.O. #: 11343-606-001-9999-00
Date Received: 12-19-2007

PCB

Six (6) soil samples were collected on 12-17-2007.

The samples and their associated QC samples were extracted on 12-26,31-2007 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 12-27,28-2007 and 01-02-2007. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8082.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise. The following is a summary of the QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. All results presented in this report are derived from a sample that met LvLI's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. The samples and their 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 surrogate recoveries were within acceptance criteria.
6. All blank spike recoveries were within acceptance criteria.
7. All matrix spike recoveries were within acceptance criteria.
8. The initial calibrations associated with this data set were within acceptance criteria.
9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

r:\group\data\pest\tnu hanford\0712-342ks2.pcb.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 12 pages.

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

LIONVILLE LABORATORY INC.

10. LvLI is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

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

1/4/08
Date

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

RECEIVED JAN 2008

Lionville Laboratory, Inc.
PCB ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-032 K1066 PCB

DATE RECEIVED: 12/19/07 LVL LOT # :0712L342

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J16337	001 R1	S	07LE0726	12/17/07	12/31/07	01/02/08
J16337	001 MS R1	S	07LE0726	12/17/07	12/31/07	01/02/08
J16337	001 MSD R1	S	07LE0726	12/17/07	12/31/07	01/02/08
J16338	002	S	07LE0720	12/17/07	12/26/07	12/28/07
J16339	003	S	07LE0720	12/17/07	12/26/07	12/28/07
J16340	004	S	07LE0720	12/17/07	12/26/07	12/28/07
J16341	005	S	07LE0720	12/17/07	12/26/07	12/28/07
J16342	006	S	07LE0720	12/17/07	12/26/07	12/28/07

LAB QC:

PBLKLF	MB1	S	07LE0726	N/A	12/31/07	01/02/08
PBLKLF	MB1 BS	S	07LE0726	N/A	12/31/07	01/02/08
PBLKLC	MB1	S	07LE0720	N/A	12/26/07	12/27/07
PBLKLC	MB1 BS	S	07LE0720	N/A	12/26/07	12/27/07

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-032
LVL #: 0712L342
SDG/SAF # K1066 / RC-032

W.O. #: 11343-606-001-9999-00
Date Received: 12-19-2007

CHLORINATED PESTICIEDS

Six (6) soil samples were collected on 12-17-2007.

The samples and their associated QC samples were extracted on 12-26,31-2007 and analyzed according to Lionville Laboratory SOPs based on SW846, 3rd Edition procedure on 12-28-2007 and 01-02-2007. The extraction procedure was based on method 3540C and the extracts were analyzed based on method 8081A.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise. The following is a summary of the QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. All results presented in this report are derived from a sample that met LvLI's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. The method blank was below the reporting limits for all target compounds.
4. All surrogate recoveries were within acceptance criteria.
5. All blank spike recoveries were within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
7. All samples required 4-fold instrument dilution due to their matrix.
8. The initial calibrations associated with this data set were within acceptance criteria.
9. The continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 13 pages.

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LvLI
LIONVILLE LABORATORY INC.

10. LvLI is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

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.

Brian Daniels
Laboratory Manager
Lionville Laboratory Incorporated

1/4/08
Date

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RECEIVED
JAN 2008

Lionville Laboratory, Inc.
PEST/PCB ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-032 K1066 Posd

DATE RECEIVED: 12/19/07 LVL LOT # :0712L342

CLIENT ID	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J16337	001 R1	S	07LE0726	12/17/07	12/31/07	01/02/08
J16337	001 MS R1	S	07LE0726	12/17/07	12/31/07	01/02/08
J16337	001 MSD R1	S	07LE0726	12/17/07	12/31/07	01/02/08
J16338	002	S	07LE0720	12/17/07	12/26/07	12/28/07
J16339	003	S	07LE0720	12/17/07	12/26/07	12/28/07
J16340	004	S	07LE0720	12/17/07	12/26/07	12/28/07
J16341	005	S	07LE0720	12/17/07	12/26/07	12/28/07
J16342	006	S	07LE0720	12/17/07	12/26/07	12/28/07

LAB QC:

PBLKLF	MB1	S	07LE0726	N/A	12/31/07	01/02/08
PBLKLF	MB1 BS	S	07LE0726	N/A	12/31/07	01/02/08
PBLKLC	MB1	S	07LE0720	N/A	12/26/07	12/28/07
PBLKLC	MB1 BS	S	07LE0720	N/A	12/26/07	12/28/07

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-032-177

Collector: T. Welch-Koelling	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7DAY		
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 120-F-1 Glass Dump SE Verification		SAF No.: RC-032
Ice Chest No.: ERC-99-046	Field Logbook No.: EFL-1174-4	COA: R120F12000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES / JONVILLE	Offsite Property No.: A080108		Bill of Lading/Air Bill No.: See DSIC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container	P	aG	aG	P	aG	aG	aG			
No. of Container(s)	2	1	1	1	1	1	1			
Volume	125mL	60mL	120mL	125mL	120mL	120mL	120mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	IC Anions - 300.0; pH (Soil) - 9045	Total Cyanide - 9010; Sulfides - 9030	Pesticides - 8081	TPH (Total) - 418.1			

Sample No.	Matrix *	Sample Date	Sample Time										
16337	SOIL	12-17-07	0855	X	X	X	X	X	X	X			5
16338	SOIL	12-17-07	1240	X	X	X	X	X	X	X			6
16339	SOIL	12-17-07	0905	X	X	X	X	X	X	X			7
16340	SOIL	12-17-07	0915	X	X	X	X	X	X	X			8
16341	SOIL	12-17-07	0925	X	X	X	X	X	X	X			9

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time 12-17-07 1354	Received By/Stored In	Date/Time 1354 12-17-07
Relinquished By/Removed From	Date/Time 1445 12-17-07	Received By/Stored In 3728/2C	Date/Time 1446 12-17-07
Relinquished By/Removed From 3728/2C 12-18-07	Date/Time 0900	Received By/Stored In 12-18-07	Date/Time 0900
Relinquished By/Removed From 12-18-07	Date/Time 1300	Received By/Stored In FED EX	Date/Time
Relinquished By/Removed From Fed Ex 12-19-07	Date/Time	Received By/Stored In 12-19-07	Date/Time 1500
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

samples from 3728 Ref # 2C
3728 Custodian removed samples for shipping on 12/18/07.
Sampler unavailable to relinquish

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

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

CH-EE-011

120021

000000010

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-032-177

Collector: T. Welch-Koelling	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7DAY		
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 120-F-1 Glass Dump SE Verification		SAF No.: RC-032
Ice Chest No.: ERC-99-046	Field Logbook No.: EFL-1174-4	COA: R120F12000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A080108		Bill of Lading/Air Bill No.: See DSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	P	aG	aG	P	aG	aG	aG				
No. of Container(s)	2	1	1	1	1	1	1				
Volume	125mL	60mL	120mL	125mL	120mL	120mL	120mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	IC Anions - 300.0; pH (Soil) - 9045	Total Cyanide - 9010; Sulfides - 9030	Pesticides - 8081	TPH (Total) - 418.1				
Sample No.	Matrix *	Sample Date	Sample Time								
I16342	SOIL	12-17-07	0930	X	X	X	X	X	X	X	10
I16354	SOIL	12-17-07	0940	X							8B

220002

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature]	12-17-07 1364	JRDeBusque JRDeBusque	1354 12-17-07
JR DeBusque JRDeBusque	12-17-07 1445	3728/2C	1445 12-17-07
3728/2C	12-18-07 0900	[signature]	12-18-07 0900
[signature]	12-18-07 1500	FED EX	
FED EX	12-19-07	[signature]	12-19-07 1500

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) {Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

samples from 3728 Ref # 2C.
3728 Custodian removed samples for shipping on 12/18/07.
Sampler unavailable to relinquish

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

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

ICH-EE-011

000000011

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 120-F-1			DATA PACKAGE: K1066		
VALIDATOR: ELR		LAB: LLI		DATE: 3/28/08	
			SDG: K1066		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J16337	J16338	J16339	J16340		
J16341	J16342				
					soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: _____

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

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

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

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

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

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

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

Comments: _____

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: no FB

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Comments: no PAS

MS + MSD - re-prepared w/ J16337 - J all other samples

toxaphene - No MS/MSD/LCS - J all

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments:

MS + MSD reprepared w/ J16 332 - J all other samples

no toxaphen MS/MSD - J all

6. SYSTEM PERFORMANCE (Levels D and E)

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

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

Comments:

7. HOLDING TIMES (all levels)

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

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

Comments:

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: _____

9. SAMPLE CLEANUP (Levels D and E)

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

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

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

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

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

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

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

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

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

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

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

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

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

Comments: _____

Date: 31 March 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-F Remaining Sites Burial Grounds – Soil Full Protocol – Waste Site 120-F-1
Subject: Wet Chemistry - Data Package No. K1066-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1066 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J16337	12/17/07	Soil	C	See note 1
J16338	12/17/07	Soil	C	See note 1
J16339	12/17/07	Soil	C	See note 1
J16340	12/17/07	Soil	C	See note 1
J16341	12/17/07	Soil	C	See note 1
J16342	12/17/07	Soil	C	See note 1

1 – pH by 9040B, IC anions by 300.0, petroleum hydrocarbons by 9071/418.1, cyanide by 9010B and sulfide by 9030B/9034 .

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, Rev. 4, February 2005). Appendices 1 through 6 provide the following information as indicated below:

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

DATA QUALITY PARAMETERS

- **Holding Times**

Analytical holding times for metals are assessed to ascertain whether the holding time requirements were met by the laboratory. The holding time requirements are as follows: Soil samples must be analyzed within 28 days for bromide, chloride, fluoride and sulfate, 14 days for petroleum hydrocarbons and cyanide, 7 days for sulfide, two days for nitrate, nitrite and phosphate and immediate (w/in 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 and phosphate results (except J16342) were qualified as estimates and flagged "J".

Due to the holding time being exceeded by greater than twice the limit, the nitrate and nitrite results in sample J16342 were rejected and flagged "UR".

Due to the holding time being exceeded by greater than twice the limit, the phosphate result in sample J16342 was qualified as an estimate 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 field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

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

Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

Due to the matrix spike being prepared in a different preparation batch, all IC anion results in sample J16342 were qualified as estimates and flagged "J".

Due to the matrix spike being prepared in a different preparation batch, all sulfide results in samples J16337, J16338, J16339, J16340 and J16341 were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

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

Due to the duplicate being prepared in a different preparation batch, all IC anion results in sample J16342 were qualified as estimates and flagged "J".

Due to the duplicate being prepared in a different preparation batch, all sulfide results in samples J16337, J16338, J16339, J16340 and J16341 were qualified as estimates and flagged "J".

All other laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQLs) to ensure that laboratory detection levels meet the required criteria. All the cyanide result in sample J16337 and all undetected sulfide and petroleum hydrocarbon results exceeded the RQL. Under the WCH statement of work, no qualification is required. All other analytes met the RQL.

- **Completeness**

Data package K1066 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 97%.

MAJOR DEFICIENCIES

The following major deficiency was noted:

- Due to the holding time being exceeded by greater than twice the limit, the nitrate and nitrite results in sample J16342 were rejected and flagged "UR".

Rejected date is unusable and should not be reported.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- 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 and phosphate results (except J16342) were qualified as estimates and flagged "J".

- Due to the holding time being exceeded by greater than twice the limit, the phosphate result in sample J16342 was qualified as an estimate and flagged "J".

- Due to the matrix spike being prepared in a different preparation batch, all IC anion results in sample J16342 were qualified as estimates and flagged "J".

- Due to the matrix spike being prepared in a different preparation batch, all sulfide results in samples J16337, J16338, J16339, J16340 and J16341 were

qualified as estimates and flagged "J".

- Due to the duplicate being prepared in a different preparation batch, all IC anion results in sample J16342 were qualified as estimates and flagged "J".

- Due to the duplicate being prepared in a different preparation batch, all sulfide results in samples J16337, J16338, J16339, J16340 and J16341 were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

All the cyanide result in sample J16337 and all undetected sulfide and petroleum hydrocarbon results exceeded the ROL. Under the WCH statement of work, no qualification is required.

REFERENCES

Fluor Hanford Data Validation Contract #29776 (June 2006), *Validation Statement of Work*, through Washington Closure Hanford Work Order #WB6081.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K1066	REVIEWER: ELR	Project: 120-F-1	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
pH	J	All	Holding time exceeded by >2X the limit
Nitrate Nitrite Phosphate	J	All except J16342	Holding time exceeded by <2X the limit
Nitrate Nitrite	UR	J16342	Holding time exceeded by >2X the limit
Phosphate	J	J16342	Holding time exceeded by >2X the limit
Bromide Chloride Fluoride Sulfate Nitrate Nitrite Phosphate	J	J16342	MS and duplicate prepared in a different preparation batch
Sulfide	J	J16337, J16338 J16339, J16340 J16341	MS and duplicate prepared in a different preparation batch

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

Appendix 3

Annotated Laboratory Reports

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/03/08

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0712L342

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J16337	% Solids	95.8		%	0.01	1.0
		Bromide by IC	2.5	u	MG/KG	2.5	1.0
		Chloride by IC	34.0		MG/KG	2.5	1.0
		Fluoride by IC	3.4		MG/KG	2.5	1.0
		Nitrite by IC	2.49	u J	MG/KG	2.49	1.0
		Nitrate by IC	2.49	u J	MG/KG	2.49	1.0
		Cyanide, Total	0.51	u	MG/KG	0.51	1.0
		Phosphate by IC	2.5	u J	MG/KG	2.5	1.0
		Sulfate by IC	153		MG/KG	5.8	2.0
		pH	9.4	J	SOIL PH	0.01	1.0
		Petroleum Hydrocarbons	139	u	MG/KG	139	1.0
		Sulfide	21.5	u J	MG/KG	21.5	1.0
-002	J16338	% Solids	94.9		%	0.01	1.0
		Bromide by IC	2.5	u	MG/KG	2.5	1.0
		Chloride by IC	2.5	u	MG/KG	2.5	1.0
		Fluoride by IC	2.5	u	MG/KG	2.5	1.0
		Nitrite by IC	2.54	u J	MG/KG	2.54	1.0
		Nitrate by IC	2.54	u J	MG/KG	2.54	1.0
		Cyanide, Total	0.50	u	MG/KG	0.50	1.0
		Phosphate by IC	2.5	u J	MG/KG	2.5	1.0
		Sulfate by IC	2410		MG/KG	127	50.0
		pH	8.0	J	SOIL PH	0.01	1.0
		Petroleum Hydrocarbons	140	u	MG/KG	140	1.0
		Sulfide	21.5	u J	MG/KG	21.5	1.0
-003	J16339	% Solids	95.4		%	0.01	1.0
		Bromide by IC	2.6	u	MG/KG	2.6	1.0
		Chloride by IC	2.6	u	MG/KG	2.6	1.0
		Fluoride by IC	2.6	u	MG/KG	2.6	1.0
		Nitrite by IC	2.62	u J	MG/KG	2.62	1.0
		Nitrate by IC	2.62	u J	MG/KG	2.62	1.0
		Cyanide, Total	0.50	u	MG/KG	0.50	1.0
		Phosphate by IC	2.6	u J	MG/KG	2.6	1.0
		Sulfate by IC	32.8		MG/KG	2.6	1.0
		pH	8.7	J	SOIL PH	0.01	1.0
		Petroleum Hydrocarbons	140	u	MG/KG	140	1.0
		Sulfide	21.5	u J	MG/KG	21.5	1.0

3/30/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/03/08

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0712L342
WORK ORDER: 11343-606-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	J16340	% Solids	95.6		%	0.01	1.0
		Bromide by IC	2.7	u	MG/KG	2.7	1.0
		Chloride by IC	2.7	u	MG/KG	2.7	1.0
		Fluoride by IC	2.7	u	MG/KG	2.7	1.0
		Nitrite by IC	2.72	uJ	MG/KG	2.72	1.0
		Nitrate by IC	2.72	uJ	MG/KG	2.72	1.0
		Cyanide, Total	0.49	u	MG/KG	0.49	1.0
		Phosphate by IC	2.7	uJ	MG/KG	2.7	1.0
		Sulfate by IC	11.4		MG/KG	2.7	1.0
		pH	9.0	J	SOIL PH	0.01	1.0
		Petroleum Hydrocarbons	139	u	MG/KG	139	1.0
		Sulfide	21.1	uJ	MG/KG	21.1	1.0
-005	J16341	% Solids	91.5		%	0.01	1.0
		Bromide by IC	2.3	u	MG/KG	2.3	1.0
		Chloride by IC	2.3	u	MG/KG	2.3	1.0
		Fluoride by IC	2.3	u	MG/KG	2.3	1.0
		Nitrite by IC	2.27	uJ	MG/KG	2.27	1.0
		Nitrate by IC	18.6	J	MG/KG	2.27	1.0
		Cyanide, Total	0.48	u	MG/KG	0.48	1.0
		Phosphate by IC	6.8	J	MG/KG	2.3	1.0
		Sulfate by IC	51.3		MG/KG	2.3	1.0
		pH	8.1	J	SOIL PH	0.01	1.0
		Petroleum Hydrocarbons	145	u	MG/KG	145	1.0
		Sulfide	22.3	uJ	MG/KG	22.3	1.0
-006	J16342	% Solids	90.8		%	0.01	1.0
		Bromide by IC	2.6	uJ	MG/KG	2.6	1.0
		Chloride by IC	2.6	uJ	MG/KG	2.6	1.0
		Fluoride by IC	2.6	uJ	MG/KG	2.6	1.0
		Nitrite by IC	2.56	uR	MG/KG	2.56	1.0
		Nitrate by IC	2.56	uR	MG/KG	2.56	1.0
		Cyanide, Total	0.48	u	MG/KG	0.48	1.0
		Phosphate by IC	46.5	J	MG/KG	2.6	1.0
		Sulfate by IC	3.2	J	MG/KG	2.6	1.0
		pH	8.4	J	SOIL PH	0.01	1.0
		Petroleum Hydrocarbons	146	u	MG/KG	146	1.0
		Sulfide	22.7	u	MG/KG	22.7	1.0

3/30/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/03/08

CLIENT: TNU-HANFORD RC-032

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

LVL LOT #: 0712L342

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	J16354	% Solids	100	%	0.01	1.0

3/30/08

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-032 K1066
LVL#: 0712L342

W.O.#: 11343-606-001-9999-00
Date Received: 12-20-07

INORGANIC NARRATIVE

1. This narrative covers the analyses of 7 soil samples.

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

   LvLI is NELAP accredited by the State of Pennsylvania. For a complete list of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager. LvLI certifies that all test results meet the requirements of NELAC with any exception noted in the following statements.

3. Sample holding times as required by the method and/or contract were met with the exception of replicate analyses for Nitrate, Nitrite and Phosphate that were re-analyzed past hold.

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

5. The method blanks were within the method criteria.

6. The Laboratory Control Samples (LCS) were within the laboratory control limits with the exception of 07LIC081 for Bromide, Chloride and Nitrate that were below the 90-110% control limits at 89.3%, 89.9% and 89.0%, respectively. The duplicate LCS for Sulfide were within the 20% Relative Percent Difference (RPD) control limit.

7. The matrix spike recoveries for Bromide, Chloride, Fluoride, Nitrite, Nitrate, Phosphate, Sulfate, Petroleum Hydrocarbons (PHC), Total Cyanide and Sulfide were within the 75-125% control limits.

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 21 pages.

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

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

9. Results for soil 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

1/4/08
Date

njp\i12-342

LVLI
LIONVILLE LABORATORY INC.

RECEIVED
JAN 2008

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-032 K1066

DATE RECEIVED: 12/19/07 LVL LOT # :0712L342

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
J16337						
% SOLIDS	001	S	07L%S155	12/17/07	12/21/07	12/21/07
BROMIDE BY IC	001	S	07LIC079	12/17/07	12/21/07	12/21/07
BROMIDE BY IC	001 REP	S	07LIC079	12/17/07	12/21/07	12/26/07
BROMIDE BY IC	001 MS	S	07LIC079	12/17/07	12/21/07	12/21/07
CHLORIDE BY IC	001	S	07LIC079	12/17/07	12/21/07	12/21/07
CHLORIDE BY IC	001 REP	S	07LIC079	12/17/07	12/21/07	12/26/07
CHLORIDE BY IC	001 MS	S	07LIC079	12/17/07	12/21/07	12/21/07
FLUORIDE BY IC	001	S	07LIC079	12/17/07	12/21/07	12/21/07
FLUORIDE BY IC	001 REP	S	07LIC079	12/17/07	12/21/07	12/26/07
FLUORIDE BY IC	001 MS	S	07LIC079	12/17/07	12/21/07	12/21/07
NITRITE BY IC	001	S	07LIC079	12/17/07	12/21/07	12/21/07
NITRITE BY IC	001 REP	S	07LIC079	12/17/07	12/21/07	12/26/07
NITRITE BY IC	001 MS	S	07LIC079	12/17/07	12/21/07	12/21/07
NITRATE BY IC	001	S	07LIC079	12/17/07	12/21/07	12/21/07
NITRATE BY IC	001 REP	S	07LIC079	12/17/07	12/21/07	12/26/07
NITRATE BY IC	001 MS	S	07LIC079	12/17/07	12/21/07	12/21/07
TOTAL CYANIDE	001	S	07LC065	12/17/07	12/26/07	12/26/07
PHOSPHATE BY IC	001	S	07LIC079	12/17/07	12/21/07	12/21/07
PHOSPHATE BY IC	001 REP	S	07LIC079	12/17/07	12/21/07	12/26/07
PHOSPHATE BY IC	001 MS	S	07LIC079	12/17/07	12/21/07	12/21/07
SULFATE BY IC	001	S	07LIC079	12/17/07	12/21/07	12/26/07
SULFATE BY IC	001 REP	S	07LIC079	12/17/07	12/21/07	12/26/07
SULFATE BY IC	001 MS	S	07LIC079	12/17/07	12/21/07	12/26/07
PH	001	S	07LPH080	12/17/07	12/26/07	12/26/07
PH	001 REP	S	07LPH080	12/17/07	12/26/07	12/26/07
PETROLEUM HYDROCARBO	001	S	07LHC047	12/17/07	12/26/07	12/31/07
SULFIDE	001	S	07LSD028	12/17/07	12/21/07	12/21/07
J16338						
% SOLIDS	002	S	07L%S155	12/17/07	12/21/07	12/21/07
BROMIDE BY IC	002	S	07LIC079	12/17/07	12/21/07	12/21/07
CHLORIDE BY IC	002	S	07LIC079	12/17/07	12/21/07	12/21/07
FLUORIDE BY IC	002	S	07LIC079	12/17/07	12/21/07	12/21/07
NITRITE BY IC	002	S	07LIC079	12/17/07	12/21/07	12/21/07

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-032 K1066

DATE RECEIVED: 12/19/07 LVL LOT # :0712L342

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NITRATE BY IC	002	S	07LIC079	12/17/07	12/21/07	12/21/07
TOTAL CYANIDE	002	S	07LC065	12/17/07	12/26/07	12/26/07
PHOSPHATE BY IC	002	S	07LIC079	12/17/07	12/21/07	12/21/07
SULFATE BY IC	002	S	07LIC079	12/17/07	12/21/07	12/26/07
PH	002	S	07LPH080	12/17/07	12/26/07	12/26/07
PETROLEUM HYDROCARBO	002	S	07LHC047	12/17/07	12/26/07	12/31/07
SULFIDE	002	S	07LSD028	12/17/07	12/21/07	12/21/07
J16339						
% SOLIDS	003	S	07L%S155	12/17/07	12/21/07	12/21/07
BROMIDE BY IC	003	S	07LIC079	12/17/07	12/21/07	12/21/07
CHLORIDE BY IC	003	S	07LIC079	12/17/07	12/21/07	12/21/07
FLUORIDE BY IC	003	S	07LIC079	12/17/07	12/21/07	12/21/07
NITRITE BY IC	003	S	07LIC079	12/17/07	12/21/07	12/21/07
NITRATE BY IC	003	S	07LIC079	12/17/07	12/21/07	12/21/07
TOTAL CYANIDE	003	S	07LC065	12/17/07	12/26/07	12/26/07
PHOSPHATE BY IC	003	S	07LIC079	12/17/07	12/21/07	12/21/07
SULFATE BY IC	003	S	07LIC079	12/17/07	12/21/07	12/21/07
PH	003	S	07LPH080	12/17/07	12/26/07	12/26/07
PETROLEUM HYDROCARBO	003	S	07LHC047	12/17/07	12/26/07	12/31/07
PETROLEUM HYDROCARBO	003 REP	S	07LHC047	12/17/07	12/26/07	12/31/07
PETROLEUM HYDROCARBO	003 MS	S	07LHC047	12/17/07	12/26/07	12/31/07
SULFIDE	003	S	07LSD028	12/17/07	12/21/07	12/21/07
J16340						
% SOLIDS	004	S	07L%S155	12/17/07	12/21/07	12/21/07
BROMIDE BY IC	004	S	07LIC079	12/17/07	12/21/07	12/21/07
CHLORIDE BY IC	004	S	07LIC079	12/17/07	12/21/07	12/21/07
FLUORIDE BY IC	004	S	07LIC079	12/17/07	12/21/07	12/21/07
NITRITE BY IC	004	S	07LIC079	12/17/07	12/21/07	12/21/07
NITRATE BY IC	004	S	07LIC079	12/17/07	12/21/07	12/21/07
TOTAL CYANIDE	004	S	07LC065	12/17/07	12/26/07	12/26/07
PHOSPHATE BY IC	004	S	07LIC079	12/17/07	12/21/07	12/21/07
SULFATE BY IC	004	S	07LIC079	12/17/07	12/21/07	12/21/07
PH	004	S	07LPH080	12/17/07	12/26/07	12/26/07
PETROLEUM HYDROCARBO	004	S	07LHC047	12/17/07	12/26/07	12/31/07

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-032 K1066

DATE RECEIVED: 12/19/07 LVL LOT # :0712L342

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SULFIDE	004	S	07LSD028	12/17/07	12/21/07	12/21/07
J16341						
% SOLIDS	005	S	07L%S155	12/17/07	12/21/07	12/21/07
BROMIDE BY IC	005	S	07LIC079	12/17/07	12/21/07	12/21/07
CHLORIDE BY IC	005	S	07LIC079	12/17/07	12/21/07	12/21/07
FLUORIDE BY IC	005	S	07LIC079	12/17/07	12/21/07	12/21/07
NITRITE BY IC	005	S	07LIC079	12/17/07	12/21/07	12/21/07
NITRATE BY IC	005	S	07LIC079	12/17/07	12/21/07	12/21/07
TOTAL CYANIDE	005	S	07LC065	12/17/07	12/26/07	12/26/07
PHOSPHATE BY IC	005	S	07LIC079	12/17/07	12/21/07	12/21/07
SULFATE BY IC	005	S	07LIC079	12/17/07	12/21/07	12/21/07
PH	005	S	07LPH080	12/17/07	12/26/07	12/26/07
PETROLEUM HYDROCARBO	005	S	07LHC047	12/17/07	12/26/07	12/31/07
SULFIDE	005	S	07LSD028	12/17/07	12/21/07	12/21/07
J16342						
% SOLIDS	006	S	07L%S155	12/17/07	12/21/07	12/21/07
% SOLIDS	006 REP	S	07L%S155	12/17/07	12/21/07	12/21/07
BROMIDE BY IC	006	S	07LICS81	12/17/07	12/24/07	12/26/07
CHLORIDE BY IC	006	S	07LICS81	12/17/07	12/24/07	12/26/07
FLUORIDE BY IC	006	S	07LICS81	12/17/07	12/24/07	12/26/07
NITRITE BY IC	006	S	07LICS81	12/17/07	12/24/07	12/26/07
NITRATE BY IC	006	S	07LICS81	12/17/07	12/24/07	12/26/07
TOTAL CYANIDE	006	S	07LC065	12/17/07	12/26/07	12/26/07
TOTAL CYANIDE	006 REP	S	07LC065	12/17/07	12/26/07	12/26/07
TOTAL CYANIDE	006 MS	S	07LC065	12/17/07	12/26/07	12/26/07
PHOSPHATE BY IC	006	S	07LICS81	12/17/07	12/24/07	12/26/07
SULFATE BY IC	006	S	07LICS81	12/17/07	12/24/07	12/26/07
PH	006	S	07LPH080	12/17/07	12/26/07	12/26/07
PETROLEUM HYDROCARBO	006	S	07LHC047	12/17/07	12/26/07	12/31/07
SULFIDE	006	S	07LSD029	12/17/07	12/24/07	12/24/07
SULFIDE	006 REP	S	07LSD029	12/17/07	12/24/07	12/24/07
SULFIDE	006 MS	S	07LSD029	12/17/07	12/24/07	12/24/07
J16354						
% SOLIDS	007	S	07L%S155	12/17/07	12/21/07	12/21/07

LAB QC:

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-032 K1066

DATE RECEIVED: 12/19/07 LVL LOT # :0712L342

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
BROMIDE BY IC	MB1	S	07LIC079	N/A	12/21/07	12/26/07
BROMIDE BY IC	MB1 BS	S	07LIC079	N/A	12/21/07	12/26/07
CHLORIDE BY IC	MB1	S	07LIC079	N/A	12/21/07	12/26/07
CHLORIDE BY IC	MB1 BS	S	07LIC079	N/A	12/21/07	12/26/07
FLUORIDE BY IC	MB1	S	07LIC079	N/A	12/21/07	12/26/07
FLUORIDE BY IC	MB1 BS	S	07LIC079	N/A	12/21/07	12/26/07
NITRITE BY IC	MB1	S	07LIC079	N/A	12/21/07	12/26/07
NITRITE BY IC	MB1 BS	S	07LIC079	N/A	12/21/07	12/26/07
NITRATE BY IC	MB1	S	07LIC079	N/A	12/21/07	12/26/07
NITRATE BY IC	MB1 BS	S	07LIC079	N/A	12/21/07	12/26/07
TOTAL CYANIDE	LCS L	S	07LC065	N/A	12/26/07	12/26/07
TOTAL CYANIDE	LCS L	S	07LC065	N/A	12/26/07	12/26/07
TOTAL CYANIDE	MB1	S	07LC065	N/A	12/26/07	12/26/07
PHOSPHATE BY IC	MB1	S	07LIC079	N/A	12/21/07	12/26/07
PHOSPHATE BY IC	MB1 BS	S	07LIC079	N/A	12/21/07	12/26/07
SULFATE BY IC	MB1	S	07LIC079	N/A	12/21/07	12/26/07
SULFATE BY IC	MB1 BS	S	07LIC079	N/A	12/21/07	12/26/07
PETROLEUM HYDROCARBO	MB1	S	07LHC047	N/A	12/26/07	12/31/07
PETROLEUM HYDROCARBO	MB1 BS	S	07LHC047	N/A	12/26/07	12/31/07
SULFIDE	MB1	S	07LSD028	N/A	12/21/07	12/21/07
SULFIDE	MB1 BS	S	07LSD028	N/A	12/21/07	12/21/07
SULFIDE	MB1 BSD	S	07LSD028	N/A	12/21/07	12/21/07
BROMIDE BY IC	MB1	S	07LICS81	N/A	12/24/07	12/26/07
BROMIDE BY IC	MB1 BS	S	07LICS81	N/A	12/24/07	12/26/07
CHLORIDE BY IC	MB1	S	07LICS81	N/A	12/24/07	12/26/07
CHLORIDE BY IC	MB1 BS	S	07LICS81	N/A	12/24/07	12/26/07
FLUORIDE BY IC	MB1	S	07LICS81	N/A	12/24/07	12/26/07
FLUORIDE BY IC	MB1 BS	S	07LICS81	N/A	12/24/07	12/26/07
NITRITE BY IC	MB1	S	07LICS81	N/A	12/24/07	12/26/07
NITRITE BY IC	MB1 BS	S	07LICS81	N/A	12/24/07	12/26/07
NITRATE BY IC	MB1	S	07LICS81	N/A	12/24/07	12/26/07
NITRATE BY IC	MB1 BS	S	07LICS81	N/A	12/24/07	12/26/07
PHOSPHATE BY IC	MB1	S	07LICS81	N/A	12/24/07	12/26/07
PHOSPHATE BY IC	MB1 BS	S	07LICS81	N/A	12/24/07	12/26/07
SULFATE BY IC	MB1	S	07LICS81	N/A	12/24/07	12/26/07

Lionville Laboratory, Inc.
INORGANIC ANALYTICAL DATA PACKAGE FOR
TNUHANFORD RC-032 K1066

DATE RECEIVED: 12/19/07 LVL LOT # :0712L342

CLIENT ID /ANALYSIS	LVL #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SULFATE BY IC	MB1 BS	S	07LICS81	N/A	12/24/07	12/26/07
SULFIDE	MB1	S	07LSD029	N/A	12/24/07	12/24/07
SULFIDE	MB1 BS	S	07LSD029	N/A	12/24/07	12/24/07
SULFIDE	MB1 BSD	S	07LSD029	N/A	12/24/07	12/24/07

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-032-177

Collector: T. Welch-Koelling	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7DAY		
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 120-F-1 Glass Dump SE Verification		SAF No.: RC-032
Ice Chest No.: ERC-99-046	Field Logbook No.: EFL-1174-4	COA: R120F12000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A080108		Bill of Lading/Air Bill No.: See OSIC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

000022

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	P	aG	aG	P	aG	aG	aG				
No. of Container(s)	2	1	1	1	1	1	1				
Volume	125mL	60mL	120mL	125mL	120mL	120mL	120mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	IC Anions - 300.0; pH (Soil) - 9045	Total Cyanide - 9010; Sulfides - 9030	Pesticides - 8081	TPH (Total) - 418.1				

Sample No.	Matrix *	Sample Date	Sample Time										
J16337	SOIL	12-17-07	0855	X	X	X	X	X	X	X			5
J16338	SOIL	12-17-07	1240	X	X	X	X	X	X	X			6
J16339	SOIL	12-17-07	0905	X	X	X	X	X	X	X			7
J16340	SOIL	12-17-07	0915	X	X	X	X	X	X	X			8
J16341	SOIL	12-17-07	0925	X	X	X	X	X	X	X			9

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time 12-17-07 1354	Received By/Stored In	Date/Time 1354 12-17-07
Relinquished By/Removed From	Date/Time 1445 12-17-07	Received By/Stored In	Date/Time 1446 12-17-07
Relinquished By/Removed From	Date/Time 3728/2C 12-18-07 0900	Received By/Stored In	Date/Time 12-18-07 0900
Relinquished By/Removed From	Date/Time 12-18-07 1300	Received By/Stored In	Date/Time FED EX
Relinquished By/Removed From	Date/Time Fed Ex 12-19-07	Received By/Stored In	Date/Time 12-19-07 1500
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

samples from 3728 Ref # 2C
3728 Custodian removed samples for shipping on 12/18/07.
Sampler unavailable to relinquish

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

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

ICH-EE-011

000000019

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-032-177 | Page 1 of 1

Collector: T. Welch-Koelling	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7DAY		
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 120-F-1 Glass Dump SE Verification		SAF No.: RC-032
Ice Chest No.: ERC-99-046	Field Logbook No.: EFL-1174-4	COA: R120F12000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A080108		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C			
Type of Container	P	aG	aG	P	aG	aG	aG			
No. of Container(s)	2	1	1	1	1	1	1			
Volume	125mL	60mL	120mL	125mL	120mL	120mL	120mL			
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	IC Anions - 300.0; pH (Soil) - 9045	Total Cyanide - 9010; Sulfides - 9030	Pesticides - 8081	TPH (Total) - 418.1			
Sample No. / Matrix * / Sample Date / Sample Time										
H6342 / SOIL / 12-17-07 / 0930	X	X	X	X	X	X	X			10
H6354 / SOIL / 12-17-07 / 0940	X									EB

000023

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time 12-17-07 1354	Received By/Stored In	Date/Time 1354 12-17-07
Relinquished By/Removed From	Date/Time 1445 12-17-07	Received By/Stored In 3728/2C	Date/Time 1445 12-17-07
Relinquished By/Removed From 3728/2C	Date/Time 12-18-07 0900	Received By/Stored In	Date/Time 12-18-07 0900
Relinquished By/Removed From	Date/Time 12-18-07 1500	Received By/Stored In FED EX	Date/Time
Relinquished By/Removed From FED EX	Date/Time 12-19-07	Received By/Stored In	Date/Time 12-19-07 1500
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

samples from 3728 Ref # 2C.
3728 Custodian removed samples for shipping on 12/18/07.
Sampler unavailable to relinquish

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

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

FCH-EE-011

000000020

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 120-F-1			DATA PACKAGE: K1066		
VALIDATOR: ELR		LAB: LLI		DATE: 3/28/08	
			SDG: K1066		

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

SAMPLES/MATRIX					
J16337	J16338	J16339	J16340	J16341	J16342
					soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: _____

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

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

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

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

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

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

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

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

Comments: _____

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: no FB

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

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

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

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

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

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

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

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

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

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

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

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

Comments: no MS

MS – IC anions – 34 – in sep prep batch – J

MS – Sulfide – all but 34 in sep prep batch – J

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:

dup - in seperate ~~[illegible]~~ prep batch - J IC anion in 34

dup - in sep prep batch - sulfide - all but J4

6. HOLDING TIMES (all levels)

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

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

Comments:

plt >2x - J all

IC anions <2x - J all (except 242)

IC anions >2x - 242 J/UR

nitrate, nitrite & phosphate

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: TPH + sulfide – undet ons
cyanide in 37 ons

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/03/08

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0712L342

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

SAMPLE	SITE ID	ANALYTE	RESULT		UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	07LIC079-MB1	Bromide by IC	2.1	u	MG/KG	2.1	1.0
		Chloride by IC	2.1	u	MG/KG	2.1	1.0
		Fluoride by IC	2.1	u	MG/KG	2.1	1.0
		Nitrite by IC	2.12	u	MG/KG	2.12	1.0
		Nitrate by IC	2.12	u	MG/KG	2.12	1.0
		Phosphate by IC	2.1	u	MG/KG	2.1	1.0
		Sulfate by IC	2.1	u	MG/KG	2.1	1.0
BLANK1	07LC065-MB1	Cyanide, Total	0.48	u	MG/KG	0.48	1.0
BLANK10	07LHC047-MB1	Petroleum Hydrocarbons	133	u	MG/KG	133	1.0
BLANK10	07LSD028-MB1	Sulfide	21.3	u	MG/KG	21.3	1.0
BLANK10	07LICS81-MB1	Bromide by IC	2.1	u	MG/KG	2.1	1.0
		Chloride by IC	2.1	u	MG/KG	2.1	1.0
		Fluoride by IC	2.1	u	MG/KG	2.1	1.0
		Nitrite by IC	2.08	u	MG/KG	2.08	1.0
		Nitrate by IC	2.08	u	MG/KG	2.08	1.0
		Phosphate by IC	2.1	u	MG/KG	2.1	1.0
		Sulfate by IC	2.1	u	MG/KG	2.1	1.0
BLANK10	07LSD029-MB1	Sulfide	20.3	u	MG/KG	20.3	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 01/03/08

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0712L342

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J16337	Bromide by IC	114	0.0	115	99.5	2.0
		Chloride by IC	148	34.0	115	99.5	2.0
		Fluoride by IC	112	3.4	115	94.3	2.0
		Nitrite by IC	116	2.49u	115	101.3	2.0
		Nitrate by IC	121	2.49u	115	105.2	2.0
		Phosphate by IC	116	2.5 u	115	100.5	2.0
		Sulfate by IC	348	153	249	78.5	5.0
-003	J16339	Petroleum Hydrocarbons	543	0.0	585	92.9	1.0
-006	J16342	Cyanide, Total	4.71	0.48u	4.90	96.2	1.0
		Sulfide	222	5.7	247	87.3	1.0
BLANK10	07LIC079-MB1	Bromide by IC	71.0	2.1 u	77.3	91.9	1.0
		Chloride by IC	71.7	2.1 u	77.3	92.7	1.0
		Fluoride by IC	71.5	2.1 u	77.3	92.4	1.0
		Nitrite by IC	71.1	2.12u	77.3	92.0	1.0
		Nitrate by IC	70.2	2.12u	77.3	90.8	1.0
		Phosphate by IC	73.8	2.1 u	77.3	95.4	1.0
		Sulfate by IC	72.4	2.1 u	77.3	93.6	1.0
BLANK10	07LHC047-MB1	Petroleum Hydrocarbons	537	133 u	560	95.9	1.0
BLANK10	07LSD029-MB1	Sulfide	224	21.3 u	243	92.2	1.0
		Sulfide MSD	228	21.3 u	252	90.4	1.0
BLANK10	07LICS81-MB1	Bromide by IC	70.4	2.1 u	78.8	89.3	1.0
		Chloride by IC	70.9	2.1 u	78.8	89.9	1.0
		Fluoride by IC	71.8	2.1 u	78.8	91.1	1.0
		Nitrite by IC	71.2	2.08u	78.8	90.3	1.0
		Nitrate by IC	70.1	2.08u	78.8	89.0	1.0
		Phosphate by IC	76.2	2.1 u	78.8	96.8	1.0
		Sulfate by IC	84.3	2.1 u	78.8	107.0	1.0
BLANK10	07LSD029-MB1	Sulfide	193	20.3 u	213	90.5	1.0
		Sulfide MSD	203	20.3 u	213	95.1	1.0

Lionville Laboratory, Inc.

INORGANICS DUPLICATE SPIKE REPORT 01/03/08

CLIENT: TNU-HANFORD RC-032

LVL LOT #: 0712L342

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

SAMPLE	SITE ID	ANALYTE	SPIKE#1 %RECOV	SPIKE#2 %RECOV	%DIFF
BLANK10	07LSD028-MB1	Sulfide	92.2	90.4	1.9
BLANK10	07LSD029-MB1	Sulfide	90.5	95.1	5.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 01/03/08

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0712L342

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J16337	Bromide by IC	2.5 u	2.4 u	NC	1.0
		Chloride by IC	34.0	37.0	8.4	1.0
		Fluoride by IC	3.4	2.4 u	~~NC~~ 47.3	1.0
		Nitrite by IC	2.49u	2.35u	NC	1.0
		Nitrate by IC	2.49u	2.35u	NC	1.0
		Phosphate by IC	2.5 u	2.4 u	NC	1.0
		Sulfate by IC	153	118	26.1	2.0
		pH	9.4	9.3	0.3	1.0
-003REP	J16339	Petroleum Hydrocarbons	140 u	139 u	NC	1.0
-006REP	J16342	% Solids	90.8	90.8	0.022	1.0
		Cyanide, Total	0.48u	0.50u	NC	1.0
		Sulfide	22.7 u	22.4 u	NC	1.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/03/08

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0712L342

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCSS1	07LC065-LCS1	Cyanide, Total LCS	1.90	2.0	MG/KG	94.8
LCSS2	07LC065-LCS2	Cyanide, Total LCS	9.77	10.0	MG/KG	97.7

Date: 31 March 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-F Remaining Sites Burial Grounds – Soil Full Protocol – Waste Site 120-F-1
Subject: Inorganics - Data Package No. K1066-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1066 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J16337	12/17/07	Soil	C	See note 1
J16338	12/17/07	Soil	C	See note 1
J16339	12/17/07	Soil	C	See note 1
J16340	12/17/07	Soil	C	See note 1
J16341	12/17/07	Soil	C	See note 1
J16342	12/17/07	Soil	C	See note 1
J16354	12/17/07	Soil	C	See note 1

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

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 6 provide the following information as indicated below:

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

DATA QUALITY PARAMETERS

- **Holding Times**

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

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

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

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

Due to method blank contamination, the calcium, sodium and zinc result in sample J16354 were qualified as undetected and flagged "UJ".

All other preparation blank results were acceptable.

Field (Equipment) Blank

One field blank (J16354) was submitted for analysis. Aluminum, barium, copper, iron, potassium, magnesium, manganese, lead and silicon were detected in the equipment blank. Under the WCH statement of work, no qualification is required.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

Matrix spike (MS) and laboratory control sample (LCS) analyses are used to assess the analytical accuracy of the reported data. The matrix spike is used to assess the effect of the matrix on the ability to accurately quantify sample concentrations. Recoveries must fall within the range of 70% to 130%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 69% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 130% or less than 70%

and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 130% and a sample result less than the IDL, no qualification is required.

All accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

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

All laboratory duplicate results were acceptable.

Field Duplicate

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data package No. K1066 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiency was noted:

- Due to method blank contamination, the calcium, sodium and zinc results in sample J16354 were qualified as undetected and flagged "UJ".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

REFERENCES

Fluor Hanford Data Validation Contract #29776 (June 2006), *Validation Statement of Work*, through Washington Closure Hanford Work Order #WB6081.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

METALS DATA QUALIFICATION SUMMARY*

SDG: K1066	REVIEWER: ELR	Project: 120-F-1	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Calcium Sodium Zinc	UJ	J16354	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.

Appendix 3

Annotated Laboratory Reports

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/03/08

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0712L342

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-001	J16337	Silver, Total	0.28 u	MG/KG	0.28	3.0
		Aluminum, Total	5070	MG/KG	11.4	3.0
		Arsenic, Total	3.2	MG/KG	1.4	3.0
		Boron, Total	5.6	MG/KG	1.4	3.0
		Barium, Total	36.0	MG/KG	0.28	3.0
		Beryllium, Total	0.58	MG/KG	0.14	3.0
		Calcium, Total	3440	MG/KG	11.4	3.0
		Cadmium, Total	0.14 u	MG/KG	0.14	3.0
		Cobalt, Total	4.6	MG/KG	0.57	3.0
		Chromium, Total	7.3	MG/KG	0.57	3.0
		Copper, Total	13.3	MG/KG	0.57	3.0
		Iron, Total	12900	MG/KG	12.8	3.0
		Mercury, Total	0.009u	MG/KG	0.009	1.0
		Potassium, Total	678	MG/KG	11.4	3.0
		Magnesium, Total	4020	MG/KG	7.1	3.0
		Manganese, Total	229	MG/KG	0.11	3.0
		Molybdenum, Total	0.85 u	MG/KG	0.85	3.0
		Sodium, Total	430	MG/KG	5.7	3.0
		Nickel, Total	8.8	MG/KG	0.57	3.0
		Lead, Total	2.6	MG/KG	0.85	3.0
		Antimony, Total	0.85 u	MG/KG	0.85	3.0
		Selenium, Total	1.7 u	MG/KG	1.7	3.0
		Silicon, Total	2320	MG/KG	11.4	3.0
		Vanadium, Total	33.3	MG/KG	0.40	3.0
		Zinc, Total	28.1	MG/KG	1.7	3.0

3/29/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/03/08

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0712L342

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-002	J16338	Silver, Total	0.27 u	MG/KG	0.27	3.0
		Aluminum, Total	5100	MG/KG	11.0	3.0
		Arsenic, Total	2.3	MG/KG	1.4	3.0
		Boron, Total	1.4 u	MG/KG	1.4	3.0
		Barium, Total	36.3	MG/KG	0.27	3.0
		Beryllium, Total	0.47	MG/KG	0.14	3.0
		Calcium, Total	7250	MG/KG	11.0	3.0
		Cadmium, Total	0.14 u	MG/KG	0.14	3.0
		Cobalt, Total	4.3	MG/KG	0.55	3.0
		Chromium, Total	7.6	MG/KG	0.55	3.0
		Copper, Total	11.4	MG/KG	0.55	3.0
		Iron, Total	11000	MG/KG	12.4	3.0
		Mercury, Total	0.01	MG/KG	0.01	1.0
		Potassium, Total	704	MG/KG	11.0	3.0
		Magnesium, Total	3610	MG/KG	6.9	3.0
		Manganese, Total	206	MG/KG	0.11	3.0
		Molybdenum, Total	0.82 u	MG/KG	0.82	3.0
		Sodium, Total	152	MG/KG	5.5	3.0
		Nickel, Total	9.9	MG/KG	0.55	3.0
		Lead, Total	2.8	MG/KG	0.82	3.0
		Antimony, Total	0.82 u	MG/KG	0.82	3.0
		Selenium, Total	1.6 u	MG/KG	1.6	3.0
		Silicon, Total	1650	MG/KG	11.0	3.0
		Vanadium, Total	25.7	MG/KG	0.38	3.0
		Zinc, Total	28.4	MG/KG	1.6	3.0

3/29/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/03/08

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0712L342

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-003	J16339	Silver, Total	0.30 u	MG/KG	0.30	3.0
		Aluminum, Total	5430	MG/KG	12.0	3.0
		Arsenic, Total	2.4	MG/KG	1.5	3.0
		Boron, Total	1.8	MG/KG	1.5	3.0
		Barium, Total	52.3	MG/KG	0.30	3.0
		Beryllium, Total	0.70	MG/KG	0.15	3.0
		Calcium, Total	3880	MG/KG	12.0	3.0
		Cadmium, Total	0.15 u	MG/KG	0.15	3.0
		Cobalt, Total	4.9	MG/KG	0.60	3.0
		Chromium, Total	7.3	MG/KG	0.60	3.0
		Copper, Total	11.1	MG/KG	0.60	3.0
		Iron, Total	15000	MG/KG	13.5	3.0
		Mercury, Total	0.02	MG/KG	0.01	1.0
		Potassium, Total	954	MG/KG	12.0	3.0
		Magnesium, Total	3710	MG/KG	7.5	3.0
		Manganese, Total	247	MG/KG	0.12	3.0
		Molybdenum, Total	0.90 u	MG/KG	0.90	3.0
		Sodium, Total	172	MG/KG	6.0	3.0
		Nickel, Total	8.4	MG/KG	0.60	3.0
		Lead, Total	5.5	MG/KG	0.90	3.0
		Antimony, Total	0.90 u	MG/KG	0.90	3.0
		Selenium, Total	1.8 u	MG/KG	1.8	3.0
		Silicon, Total	2420	MG/KG	12.0	3.0
		Vanadium, Total	38.3	MG/KG	0.42	3.0
		Zinc, Total	39.0	MG/KG	1.8	3.0

3/29/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/03/08

CLIENT: TNU-HANFORD RC-032

LVL LOT #: 0712L342

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-004	J16340	Silver, Total	0.27 u	MG/KG	0.27	3.0
		Aluminum, Total	4910	MG/KG	10.6	3.0
		Arsenic, Total	2.4	MG/KG	1.3	3.0
		Boron, Total	1.3 u	MG/KG	1.3	3.0
		Barium, Total	29.3	MG/KG	0.27	3.0
		Beryllium, Total	0.54	MG/KG	0.13	3.0
		Calcium, Total	3100	MG/KG	10.6	3.0
		Cadmium, Total	0.13 u	MG/KG	0.13	3.0
		Cobalt, Total	4.2	MG/KG	0.53	3.0
		Chromium, Total	8.1	MG/KG	0.53	3.0
		Copper, Total	13.1	MG/KG	0.53	3.0
		Iron, Total	12300	MG/KG	12.0	3.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	784	MG/KG	10.6	3.0
		Magnesium, Total	3580	MG/KG	6.6	3.0
		Manganese, Total	216	MG/KG	0.11	3.0
		Molybdenum, Total	0.80 u	MG/KG	0.80	3.0
		Sodium, Total	193	MG/KG	5.3	3.0
		Nickel, Total	9.1	MG/KG	0.53	3.0
		Lead, Total	2.6	MG/KG	0.80	3.0
		Antimony, Total	0.80 u	MG/KG	0.80	3.0
		Selenium, Total	1.6 u	MG/KG	1.6	3.0
		Silicon, Total	1860	MG/KG	10.6	3.0
		Vanadium, Total	31.4	MG/KG	0.37	3.0
		Zinc, Total	30.9	MG/KG	1.6	3.0

3/29/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/03/08

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0712L342

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-005	J16341	Silver, Total	0.31 u	MG/KG	0.31	3.0
		Aluminum, Total	5130	MG/KG	12.4	3.0
		Arsenic, Total	2.5	MG/KG	1.5	3.0
		Boron, Total	2.4	MG/KG	1.5	3.0
		Barium, Total	70.2	MG/KG	0.31	3.0
		Beryllium, Total	0.77	MG/KG	0.15	3.0
		Calcium, Total	4050	MG/KG	12.4	3.0
		Cadmium, Total	0.15 u	MG/KG	0.15	3.0
		Cobalt, Total	5.4	MG/KG	0.62	3.0
		Chromium, Total	5.7	MG/KG	0.62	3.0
		Copper, Total	10.4	MG/KG	0.62	3.0
		Iron, Total	16300	MG/KG	13.9	3.0
		Mercury, Total	0.06	MG/KG	0.009	1.0
		Potassium, Total	1160	MG/KG	12.4	3.0
		Magnesium, Total	3430	MG/KG	7.7	3.0
		Manganese, Total	270	MG/KG	0.12	3.0
		Molybdenum, Total	0.93 u	MG/KG	0.93	3.0
		Sodium, Total	154	MG/KG	6.2	3.0
		Nickel, Total	7.7	MG/KG	0.62	3.0
		Lead, Total	9.6	MG/KG	0.93	3.0
		Antimony, Total	0.93 u	MG/KG	0.93	3.0
		Selenium, Total	1.9 u	MG/KG	1.9	3.0
		Silicon, Total	2900	MG/KG	12.4	3.0
		Vanadium, Total	36.4	MG/KG	0.43	3.0
		Zinc, Total	47.1	MG/KG	1.9	3.0

3/29/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/03/08

CLIENT: TNU-HANFORD RC-032

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

LVL LOT #: 0712L342

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-006	J16342	Silver, Total	0.32 u	MG/KG	0.32	3.0
		Aluminum, Total	6320	MG/KG	12.7	3.0
		Arsenic, Total	2.8	MG/KG	1.6	3.0
		Boron, Total	1.6 u	MG/KG	1.6	3.0
		Barium, Total	72.0	MG/KG	0.32	3.0
		Beryllium, Total	0.99	MG/KG	0.16	3.0
		Calcium, Total	3650	MG/KG	12.7	3.0
		Cadmium, Total	0.16 u	MG/KG	0.16	3.0
		Cobalt, Total	6.1	MG/KG	0.64	3.0
		Chromium, Total	6.6	MG/KG	0.64	3.0
		Copper, Total	10.0	MG/KG	0.64	3.0
		Iron, Total	19900	MG/KG	14.3	3.0
		Mercury, Total	0.01 u	MG/KG	0.01	1.0
		Potassium, Total	1210	MG/KG	12.7	3.0
		Magnesium, Total	4100	MG/KG	7.9	3.0
		Manganese, Total	314	MG/KG	0.13	3.0
		Molybdenum, Total	0.95 u	MG/KG	0.95	3.0
		Sodium, Total	180	MG/KG	6.4	3.0
		Nickel, Total	8.9	MG/KG	0.64	3.0
		Lead, Total	3.3	MG/KG	0.95	3.0
		Antimony, Total	0.95 u	MG/KG	0.95	3.0
		Selenium, Total	1.9 u	MG/KG	1.9	3.0
		Silicon, Total	3200	MG/KG	12.7	3.0
		Vanadium, Total	49.7	MG/KG	0.44	3.0
		Zinc, Total	39.4	MG/KG	1.9	3.0

3/29/08

Lionville Laboratory, Inc.

INORGANICS DATA SUMMARY REPORT 01/03/08

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0712L342

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

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-007	J16354	Silver, Total	0.09 u	MG/KG	0.09	1.0
		Aluminum, Total	80.7	MG/KG	3.7	1.0
		Arsenic, Total	0.46 u	MG/KG	0.46	1.0
		Boron, Total	0.46 u	MG/KG	0.46	1.0
		Barium, Total	1.7	MG/KG	0.09	1.0
		Beryllium, Total	0.05 u	MG/KG	0.05	1.0
		Calcium, Total	23.9 UJ	MG/KG	3.7	1.0
		Cadmium, Total	0.05 u	MG/KG	0.05	1.0
		Cobalt, Total	0.19 u	MG/KG	0.19	1.0
		Chromium, Total	0.19 u	MG/KG	0.19	1.0
		Copper, Total	0.25	MG/KG	0.19	1.0
		Iron, Total	156	MG/KG	4.2	1.0
		Mercury, Total	0.009u	MG/KG	0.009	1.0
		Potassium, Total	37.3	MG/KG	3.7	1.0
		Magnesium, Total	10.3	MG/KG	2.3	1.0
		Manganese, Total	4.2	MG/KG	0.04	1.0
		Molybdenum, Total	0.28 u	MG/KG	0.28	1.0
		Sodium, Total	9.2 UJ	MG/KG	1.9	1.0
		Nickel, Total	0.19 u	MG/KG	0.19	1.0
		Lead, Total	0.34	MG/KG	0.28	1.0
		Antimony, Total	0.28 u	MG/KG	0.28	1.0
		Selenium, Total	0.56 u	MG/KG	0.56	1.0
		Silicon, Total	102	MG/KG	3.7	1.0
		Vanadium, Total	0.21	MG/KG	0.13	1.0
		Zinc, Total	0.63UJ	MG/KG	0.56	1.0

3/29/08

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Analytical Report

Client: TNU-HANFORD RC-032
LVL#: 0712L342
SDG/SAF#: /RC-032

W.O.#: 11343-606-001-9999-00
Date Received: 12-19-07

METALS CASE NARRATIVE

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

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

1. This narrative covers the analysis of 7 soil samples.

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

   All ICP metal samples were run with a 3-fold dilutions with the exception of sample J16354. All dilutions were due to sample matrix.

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

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

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

6. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL). Refer to the Inorganics Method Blank Data Summary..

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

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

9. The matrix spike (MS) recoveries for 3 analytes were outside the 75-125% control limits. Refer to the Inorganics Accuracy 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 31 pages.

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

10. For analytes where the ICP MS is out-of-control, a post-digestion MS (PDS) and serial dilution are performed. A serial dilution is performed for Mercury. A PDS was prepared at meaningful concentration level for the following analytes:

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J16337	Aluminum	60,000	109
	Iron	60,000	106
	Silicon	6,000	97

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

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

13. LvLI is NELAP accredited by the state of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

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

Iain Daniels
Laboratory Manager
Lionville Laboratory Incorporated

1/4/08
Date

tlb/m12-342

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-032-177 | Page 2 of 3

Collector: T. Welch-Koelling	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7DAY		
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 120-F-1 Glass Dump SE Verification		SAF No.: RC-032
Ice Chest No.: ERC-99-046	Field Logbook No.: EFL-1174-4	COA: R120F12000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A080108		Bill of Lading/Air Bill No.: See OSIC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

SAMPLE ANALYSIS												
Preservation				None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C		
Type of Container				P	aG	aG	P	aG	aG	aG		
No. of Container(s)				2	1	1	1	1	1	1		
Volume				125mL	60mL	120mL	125mL	120mL	120mL	120mL		
				See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	IC Anions - 300.0; pH (Soil) - 9045	Total Cyanide - 9010; Sulfides - 9030	Pesticides - 8081	TPH (Total) - 418.1		
Sample No.	Matrix *	Sample Date	Sample Time									
J16337	SOIL	12-17-07	0855	X	X	X	X	X	X	X		5
J16338	SOIL	12-17-07	1240	X	X	X	X	X	X	X		6
J16339	SOIL	12-17-07	0905	X	X	X	X	X	X	X		7
J16340	SOIL	12-17-07	0915	X	X	X	X	X	X	X		8
J16341	SOIL	12-17-07	0925	X	X	X	X	X	X	X		9

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From	12-17-07 1354	Received By/Stored In: JRDeBuigne	1354 12-17-07
Relinquished By/Removed From: JRDeBuigne	1445 12-17-07	Received By/Stored In: 3728/2C	1445 12-17-07
Relinquished By/Removed From: 3728/2C	12-18-07 0900	Received By/Stored In	12-18-07 0900
Relinquished By/Removed From	12-18-07 1500	Received By/Stored In: FED EX	
Relinquished By/Removed From: Fed Ex	12-18-07	Received By/Stored In	12-18-07 1500
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

samples from 3728 Ref # 2C
3728 Custodian removed samples for shipping on 12/18/07.
Sampler unavailable to relinquish

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

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

VCH-EE-011

000020

000000029

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-032-177 | Page 1 of 1

Collector: T. Welch-Koelling	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7DAY		
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 120-F-1 Glass Dump SE Verification		SAF No.: RC-032
Ice Chest No.: ERC-99-046	Field Logbook No.: EFL-1174-4	COA: R120F12000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A080108		Bill of Lading/Air Bill No.: See DSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	P	aG	aG	P	aG	aG	aG				
No. of Container(s)	2	1	1	1	1	1	1				
Volume	125mL	60mL	120mL	125mL	120mL	120mL	120mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	IC Anions - 300.0; pH (Soil) - 9045	Total Cyanide - 9010; Sulfides - 9030	Pesticides - 8081	TPH (Total) - 418.1				
Sample No.	Matrix *	Sample Date	Sample Time								
J16342	SOIL	12-17-07	0930	X	X	X	X	X	X	X	10
J16354	SOIL	12-17-07	0940	X							EB

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
[signature]	12-17-07 1354	JRDeBurque JRDeBurque	1354 12-17-07
JR DeBurque JRDeBurque	12-17-07 1445	3728/2C	1445 12-17-07
3728/2C	12-18-07 0900	KMSingleton	12-18-07 0900
KMSingleton	12-18-07 1500	FED EX	
FED EX	12-19-07	[signature]	12-19-07 1500
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

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

samples from 3728 Ref # 2C.
3728 Custodian removed samples for shipping on 12/18/07.
Sampler unavailable to relinquish

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

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

VCH-EE-011

000021

000000030

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 120-F-1			DATA PACKAGE: K1066		
VALIDATOR: ELR		LAB: LLI		DATE: 3/28/08	
			SDG: K1066		

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

SAMPLES/MATRIX
J16337 J16338 J16339 J16340 J16341
J16342 J16354
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: 54 - Calcium, sodium, zinc - UJ

FB- aluminum, barium, copper, Fe, potassium, magnesium, manganese, lead, silicon + vanadium

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 pts

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: _____

6. ICP QUALITY CONTROL (Levels D and E)

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

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

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

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

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

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

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

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

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

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

Comments: _____

8. HOLDING TIMES (all levels)

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

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

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

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

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

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

Comments:

Appendix 6

Additional Documentation Requested by Client

Lionville Laboratory, Inc.

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/03/08

CLIENT: TNU-HANFORD RC-032

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

LVL LOT #: 0712L342

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK1	07L0637-MB1	Silver, Total	0.10 u	MG/KG	0.10	1.0
		Aluminum, Total	4.0 u	MG/KG	4.0	1.0
		Arsenic, Total	0.50 u	MG/KG	0.50	1.0
		Boron, Total	0.50 u	MG/KG	0.50	1.0
		Barium, Total	0.10 u	MG/KG	0.10	1.0
		Beryllium, Total	0.05 u	MG/KG	0.05	1.0
		Calcium, Total	8.5	MG/KG	4.0	1.0
		Cadmium, Total	0.05 u	MG/KG	0.05	1.0
		Cobalt, Total	0.20 u	MG/KG	0.20	1.0
		Chromium, Total	0.20 u	MG/KG	0.20	1.0
		Copper, Total	0.20 u	MG/KG	0.20	1.0
		Iron, Total	4.5 u	MG/KG	4.5	1.0
		Potassium, Total	4.0 u	MG/KG	4.0	1.0
		Magnesium, Total	2.5 u	MG/KG	2.5	1.0
		Manganese, Total	0.04 u	MG/KG	0.04	1.0
		Molybdenum, Total	0.30 u	MG/KG	0.30	1.0
		Sodium, Total	6.6	MG/KG	2.0	1.0
		Nickel, Total	0.20 u	MG/KG	0.20	1.0
		Lead, Total	0.30 u	MG/KG	0.30	1.0
		Antimony, Total	0.30 u	MG/KG	0.30	1.0
		Selenium, Total	0.60 u	MG/KG	0.60	1.0
		Silicon, Total	4.0 u	MG/KG	4.0	1.0
		Vanadium, Total	0.14 u	MG/KG	0.14	1.0
		Zinc, Total	0.95	MG/KG	0.60	1.0
BLANK1	07C0227-MB1	Mercury, Total	0.01 u	MG/KG	0.01	1.0

Lionville Laboratory, Inc.

INORGANICS ACCURACY REPORT 01/03/08

CLIENT: TNU-HANFORD RC-032

LVL LOT #: 0712L342

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR(SPK)
-001	J16337	Silver, Total	4.3	0.28u	4.7	91.5	3.0
		Aluminum, Total	5390	5070	190	168.5*	3.0
		Arsenic, Total	184	3.2	190	95.4	3.0
		Boron, Total	93.6	5.6	94.9	92.7	3.0
		Barium, Total	216	36.0	190	94.8	3.0
		Beryllium, Total	5.2	0.58	4.7	98.2	3.0
		Calcium, Total	5780	3440	2370	98.9	3.0
		Cadmium, Total	4.5	0.14u	4.7	95.7	3.0
		Cobalt, Total	50.5	4.6	47.5	96.6	3.0
		Chromium, Total	25.7	7.3	19.0	96.8	3.0
		Copper, Total	36.3	13.3	23.7	97.0	3.0
		Iron, Total	13300	12900	94.9	443.9*	3.0
		Mercury, Total	0.14	0.00u	0.13	104.5	1.0
		Potassium, Total	2900	678	2370	93.7	3.0
		Magnesium, Total	6400	4020	2370	100.2	3.0
		Manganese, Total	279	229	47.5	106.5*	3.0
		Molybdenum, Total	87.2	0.85u	94.9	91.9	3.0
		Sodium, Total	2600	430	2370	91.6	3.0
		Nickel, Total	54.9	8.8	47.5	97.1	3.0
		Lead, Total	48.4	2.6	47.5	96.4	3.0
		Antimony, Total	40.0	0.85u	47.5	84.2	3.0
		Selenium, Total	158	1.7 u	190	83.5	3.0
		Silicon, Total	2260	2320	94.9	-66. *	3.0
		Vanadium, Total	78.9	33.3	47.5	96.0	3.0
		Zinc, Total	73.7	28.1	47.5	96.0	3.0

Lionville Laboratory, Inc.

INORGANICS PRECISION REPORT 01/03/08

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0712L342

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

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR(REP)
-001REP	J16337	Silver, Total	0.28u	0.28u	NC	3.0
		Aluminum, Total	5070	5180	2.2	3.0
		Arsenic, Total	3.2	3.6	11.8	3.0
		Boron, Total	5.6	1.9	98.7	3.0
		Barium, Total	36.0	38.7	7.2	3.0
		Beryllium, Total	0.58	0.63	8.0	3.0
		Calcium, Total	3440	4010	15.5	3.0
		Cadmium, Total	0.14u	0.14u	NC	3.0
		Cobalt, Total	4.6	5.0	8.3	3.0
		Chromium, Total	7.3	7.2	1.4	3.0
		Copper, Total	13.3	13.6	2.2	3.0
		Iron, Total	12900	13900	7.8	3.0
		Mercury, Total	0.00u	0.01u	NC	1.0
		Potassium, Total	678	785	14.6	3.0
		Magnesium, Total	4020	4410	9.2	3.0
		Manganese, Total	229	250	9.0	3.0
		Molybdenum, Total	0.85u	0.85u	NC	3.0
		Sodium, Total	430	432	0.37	3.0
		Nickel, Total	8.8	9.7	9.7	3.0
		Lead, Total	2.6	3.4	26.7	3.0
		Antimony, Total	0.85u	0.92	NC	3.0
		Selenium, Total	1.7 u	1.7 u	NC	3.0
		Silicon, Total	2320	2110	9.7	3.0
		Vanadium, Total	33.3	35.0	5.0	3.0
		Zinc, Total	28.1	30.0	6.5	3.0

Lionville Laboratory, Inc.

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/03/08

CLIENT: TNU-HANFORD RC-032 LVL LOT #: 0712L342

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

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
LCS1	07L0637-LC1	Silver, LCS	46.7	50.0	MG/KG	93.4
		Aluminum, LCS	489	500	MG/KG	97.7
		Arsenic, LCS	944	1000	MG/KG	94.4
		Boron, LCS	470	500	MG/KG	94.0
		Barium, LCS	481	500	MG/KG	96.2
		Beryllium, LCS	24.4	25.0	MG/KG	97.6
		Calcium, LCS	2430	2500	MG/KG	97.1
		Cadmium, LCS	24.2	25.0	MG/KG	96.8
		Cobalt, LCS	242	250	MG/KG	97.0
		Chromium, LCS	48.6	50.0	MG/KG	97.2
		Copper, LCS	121	125	MG/KG	96.9
		Iron, LCS	486	500	MG/KG	97.1
		Potassium, LCS	2330	2500	MG/KG	93.3
		Magnesium, LCS	2390	2500	MG/KG	95.7
		Manganese, LCS	73.6	75.0	MG/KG	98.1
		Molybdenum, LCS	460	500	MG/KG	92.1
		Sodium, LCS	2310	2500	MG/KG	92.5
		Nickel, LCS	194	200	MG/KG	97.2
		Lead, LCS	243	250	MG/KG	97.3
		Antimony, LCS	273	300	MG/KG	91.1
		Selenium, LCS	908	1000	MG/KG	90.8
		Silicon, LCS	456	500	MG/KG	91.3
		Vanadium, LCS	239	250	MG/KG	95.8
		Zinc, LCS	95.7	100	MG/KG	95.7
LCS1	07C0227-LC1	Mercury, LCS	4.8	4.7	MG/KG	102.4

Date: 31 March 2008
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-F Remaining Sites Burial Grounds – Soil Full Protocol- Waste Site 120-F-1
Subject: Semivolatile - Data Package No. K1066-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K1066 prepared by Lionville Laboratory Inc. (LLI). A list of samples validated along with the analyses reported and the method of analysis is provided in the following table.

Sample ID	Sample Date	Media	Validation	Analyte
J16337	12/17/07	Soil	C	See note 1
J16338	12/17/07	Soil	C	See note 1
J16339	12/17/07	Soil	C	See note 1
J16340	12/17/07	Soil	C	See note 1
J16341	12/17/07	Soil	C	See note 1
J16342	12/17/07	Soil	C	See note 1

1 – Semivolatiles by 8270C.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, February 2005). Appendices 1 through 5 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

- **Holding Times**

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

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

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 detected bis(2-ethylhexyl)phthalate results were raised to the RQL, 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 Recoveries

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

Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

Due to matrix spike and matrix spike duplicate recoveries outside QC limits (49% & 45%), all 2,2'-oxybis(1-chloropropane) results were qualified as estimates and flagged "J".

Due to LCS recoveries outside QC limits, all 2,4-dinitrophenol (28%), 4,6-dinitro-2-methylphenol (47%) and pentachlorophenol (48%) results were qualified as estimates and flagged "J".

All other accuracy 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 +/-30%. If RPD values are out of specification and the sample concentration is less than five times the spike concentration, all associated detected sample results are qualified as estimates and flagged "J". If RPD values are out of specification and the sample concentration is greater than five times the spike concentration, no qualification is required.

Due to an RPD outside QC limits (56%), all 2,4-dinitrophenol results were qualified as estimates and flagged "J".

All other precision results were acceptable.

Field Duplicate Samples

No field duplicates were submitted for analysis.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. Forty-eight semivolatile analytes exceeded the RQL. Under the WCH statement of work, no qualification is required. All other undetected analytes met the RQL.

- **Completeness**

Data package No. K1066 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to method blank contamination, all detected bis(2-ethylhexyl)phthalate results were raised to the RQL, qualified as undetected and flagged "U".

- Due to matrix spike and matrix spike duplicate recoveries outside QC limits (49% & 45%), all 2,2'-oxybis(1-chloropropane) results were qualified as estimates and flagged "J".

- Due to LCS recoveries outside QC limits, all 2,4-dinitrophenol (28%), 4,6-dinitro-2-methylphenol (47%) and pentachlorophenol (48%) results were qualified as estimates and flagged "J".

- Due to an RPD outside QC limits (56%), all 2,4-dinitrophenol results were qualified as estimates and flagged "J".

Data flagged "J" indicates that the associated concentration is an estimate, but under the WCH statement of work, the data may be usable for decision-making purposes. All other validated results are considered accurate within the standard error associated with the methods.

Forty-eight semivolatile analytes exceeded the RQL. Under the WCH statement of work, no qualification is required.

REFERENCES

Fluor Hanford Data Validation Contract #29776 (June 2006), *Validation Statement of Work*, through Washington Closure Hanford Work Order #WB6081.

DOE/RL-96-22, Rev. 4, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, February 2005.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

SEMIVOLATILE DATA QUALIFICATION SUMMARY*

SDG: K1066	REVIEWER: ELR	Project: 120-F-1	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Bis(2-ethylhexyl)phthalate	U at RQL	J16338, J16339 J16340, J16341 J16342	Method blank contamination
2,2'-oxybis(1-chloropropane)	J	All	MS & MSD recovery
2,4-dinitrophenol 4,6-dinitro-2-methylphenol Pentachlorophenol	J	All	LCS recovery
2,4-dinitrophenol	J	All	RPD

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

Appendix 3

Annotated Laboratory Reports

RFW Batch Number: 0712L342 Client: TNU-HANFORD RC-032 Work Order: 11343606001 Page: 1a

	Cust ID:	J16337		J16337		J16337		J16338		J16339		J16340	
Sample Information	RFW#:	001		001 MS		001 MSD		002		003		004	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	64	%	69	%	61	%	68	%	60	%	53	%
	2-Fluorobiphenyl	64	%	67	%	62	%	67	%	61	%	55	%
	Terphenyl-d14	85	%	94	%	85	%	114	%	88	%	104	%
	Phenol-d5	74	%	82	%	71	%	83	%	72	%	70	%
	2-Fluorophenol	80	%	85	%	74	%	90	%	69	%	70	%
	2,4,6-Tribromophenol	75	%	53	%	42	%	67	%	36	%	49	%
			fl		fl		fl		fl		fl		fl
Phenol		350	U	86	%	80	%	350	U	350	U	350	U
bis(2-Chloroethyl)ether		350	U	65	%	62	%	350	U	350	U	350	U
2-Chlorophenol		350	U	89	%	83	%	350	U	350	U	350	U
1,3-Dichlorobenzene		350	U	70	%	68	%	350	U	350	U	350	U
1,4-Dichlorobenzene		350	U	72	%	67	%	350	U	350	U	350	U
1,2-Dichlorobenzene		350	U	75	%	68	%	350	U	350	U	350	U
2-Methylphenol		350	U	85	%	79	%	350	U	350	U	350	U
2,2'-oxybis(1-Chloropropane)		350	U J	49 *	%	45 *	%	350	U J	350	U J	350	U J
3/4 Methylphenol		350	U	88	%	81	%	350	U	350	U	350	U
N-Nitroso-di-n-propylamine		350	U	76	%	69	%	350	U	350	U	350	U
Hexachloroethane		350	U	61	%	57	%	350	U	350	U	350	U
Nitrobenzene		350	U	69	%	66	%	350	U	350	U	350	U
Isophorone		350	U	83	%	79	%	350	U	350	U	350	U
2-Nitrophenol		350	U	83	%	82	%	350	U	350	U	350	U
2,4-Dimethylphenol		350	U	67	%	64	%	350	U	350	U	350	U
bis(2-Chloroethoxy)methane		350	U	75	%	75	%	350	U	350	U	350	U
2,4-Dichlorophenol		350	U	83	%	87	%	350	U	350	U	350	U
1,2,4-Trichlorobenzene		350	U	72	%	72	%	350	U	350	U	350	U
Naphthalene		350	U	74	%	72	%	350	U	350	U	350	U
4-Chloroaniline		350	U	59	%	77	%	350	U	350	U	350	U
Hexachlorobutadiene		350	U	78	%	74	%	350	U	350	U	350	U
4-Chloro-3-methylphenol		350	U	104	%	100	%	350	U	350	U	350	U
2-Methylnaphthalene		350	U	80	%	79	%	350	U	350	U	350	U
Hexachlorocyclopentadiene		350	U	61	%	55	%	350	U	350	U	350	U
2,4,6-Trichlorophenol		350	U	58	%	56	%	350	U	350	U	350	U
2,4,5-Trichlorophenol		870	U	79	%	80	%	880	U	870	U	870	U

*= Outside of EPA CLP QC limits.

K 3/30/08

0000000008

0000011

Case ID:	J16337		J16337		J16337		J16338		J16339		J16340	
RFW#:	001		001 MS		001 MSD		002		003		004	
2-Chloronaphthalene	350	U	74	%	73	%	350	U	350	U	350	U
2-Nitroaniline	870	U	78	%	80	%	880	U	870	U	870	U
Dimethylphthalate	350	U	81	%	79	%	350	U	350	U	350	U
Acenaphthylene	350	U	73	%	72	%	350	U	350	U	350	U
2,6-Dinitrotoluene	350	U	78	%	88	%	350	U	350	U	350	U
3-Nitroaniline	870	U	74	%	82	%	880	U	870	U	870	U
Acenaphthene	350	U	74	%	69	%	350	U	350	U	350	U
2,4-Dinitrophenol	870	U J	48	%	27	%	880	U J	870	U J	870	U J
4-Nitrophenol	870	U	52	%	51	%	880	U	870	U	870	U
Dibenzofuran	350	U	80	%	80	%	350	U	350	U	350	U
2,4-Dinitrotoluene	350	U	96	%	89	%	350	U	350	U	350	U
Diethylphthalate	350	U	80	%	79	%	350	U	350	U	350	U
4-Chlorophenyl-phenylether	350	U	77	%	76	%	350	U	350	U	350	U
Fluorene	350	U	73	%	73	%	350	U	350	U	350	U
4-Nitroaniline	870	U	90	%	95	%	880	U	870	U	870	U
4,6-Dinitro-2-methylphenol	870	U J	66	%	49	%	880	U J	870	U J	870	U J
N-Nitrosodiphenylamine (1)	350	U	66	%	66	%	350	U	350	U	350	U
4-Bromophenyl-phenylether	350	U	80	%	71	%	350	U	350	U	350	U
Hexachlorobenzene	350	U	94	%	89	%	350	U	350	U	350	U
Pentachlorophenol	870	U J	68	%	53	%	880	U J	870	U J	870	U J
Phenanthrene	350	U	85	%	78	%	350	U	350	U	350	U
Anthracene	350	U	82	%	77	%	350	U	350	U	350	U
Carbazole	350	U	90	%	86	%	350	U	350	U	350	U
Di-n-butylphthalate	350	U	88	%	80	%	350	U	350	U	350	U
Fluoranthene	350	U	90	%	86	%	350	U	350	U	350	U
Pyrene	350	U	80	%	78	%	350	U	350	U	350	U
Butylbenzylphthalate	350	U	85	%	82	%	350	U	350	U	350	U
3,3'-Dichlorobenzidine	350	U	67	%	74	%	350	U	350	U	350	U
Benzo(a)anthracene	350	U	82	%	78	%	350	U	350	U	350	U
Chrysene	350	U	81	%	80	%	350	U	350	U	350	U
bis(2-Ethylhexyl)phthalate	350	U	86	%	82	%	660 ~~28~~ 3/24 JB	U	660 ~~20~~ 3/24 JB	U	660 ~~200~~ 3/24 JB	U
Di-n-octyl phthalate	350	U	102	%	84	%	350	U	350	U	350	U
Benzo(b)fluoranthene	350	U	92	%	94	%	350	U	350	U	350	U
Benzo(k)fluoranthene	350	U	95	%	80	%	350	U	350	U	350	U
Benzo(a)pyrene	350	U	94	%	87	%	350	U	350	U	350	U
Indeno(1,2,3-cd)pyrene	350	U	84	%	74	%	350	U	350	U	350	U
Dibenz(a,h)anthracene	350	U	82	%	73	%	350	U	350	U	350	U
Benzo(g,h,i)perylene	350	U	80	%	72	%	350	U	350	U	350	U

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

JB 3/30/08

0000000009

0000000009

	Cust ID:	J16341		J16342		SBLKRF		SBLKRF BS	
Sample Information	RFW#:	005		006		07LE0721-MB1		07LE0721-MB1	
	Matrix:	SOIL		SOIL		SOIL		SOIL	
	D.F.:	1.00		1.00		1.00		1.00	
	Units:	ug/Kg		ug/Kg		ug/Kg		ug/Kg	
Surrogate Recovery	Nitrobenzene-d5	56	%	66	%	85	%	76	%
	2-Fluorobiphenyl	61	%	64	%	81	%	81	%
	Terphenyl-d14	97	%	120	%	110	%	96	%
	Phenol-d5	73	%	70	%	103	%	85	%
	2-Fluorophenol	75	%	78	%	109	%	95	%
	2,4,6-Tribromophenol	37	%	50	%	82	%	103	%
Phenol		360	U	370	U	330	U	85	%
bis(2-Chloroethyl)ether		360	U	370	U	330	U	69	%
2-Chlorophenol		360	U	370	U	330	U	87	%
1,3-Dichlorobenzene		360	U	370	U	330	U	74	%
1,4-Dichlorobenzene		360	U	370	U	330	U	72	%
1,2-Dichlorobenzene		360	U	370	U	330	U	72	%
2-Methylphenol		360	U	370	U	330	U	88	%
2,2'-oxybis(1-Chloropropane)		360	U J	370	U J	330	U	52	%
3/4 Methylphenol		360	U	370	U	330	U	79	%
N-Nitroso-di-n-propylamine		360	U	370	U	330	U	72	%
Hexachloroethane		360	U	370	U	330	U	59	%
Nitrobenzene		360	U	370	U	330	U	67	%
Isophorone		360	U	370	U	330	U	82	%
2-Nitrophenol		360	U	370	U	330	U	86	%
2,4-Dimethylphenol		360	U	370	U	330	U	69	%
bis(2-Chloroethoxy)methane		360	U	370	U	330	U	77	%
2,4-Dichlorophenol		360	U	370	U	330	U	84	%
1,2,4-Trichlorobenzene		360	U	370	U	330	U	74	%
Naphthalene		360	U	370	U	330	U	75	%
4-Chloroaniline		360	U	370	U	330	U	80	%
Hexachlorobutadiene		360	U	370	U	330	U	80	%
4-Chloro-3-methylphenol		360	U	370	U	330	U	101	%
2-Methylnaphthalene		360	U	370	U	330	U	82	%
Hexachlorocyclopentadiene		360	U	370	U	330	U	61	%
2,4,6-Trichlorophenol		360	U	370	U	330	U	93	%
2,4,5-Trichlorophenol		910	U	920	U	830	U	92	%

*= Outside of EPA CLP QC limits.

3/30/08

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000013

Case ID:	016541		016542		SBLKRF		SBLKRF BS	
RFW#:	005		006		07LE0721-MB1		07LE0721-MB1	
2-Chloronaphthalene	360	U	370	U	330	U	79	%
2-Nitroaniline	910	U	920	U	830	U	85	%
Dimethylphthalate	360	U	370	U	330	U	84	%
Acenaphthylene	360	U	370	U	330	U	81	%
2,6-Dinitrotoluene	360	U	370	U	330	U	90	%
3-Nitroaniline	910	U	920	U	830	U	93	%
Acenaphthene	360	U	370	U	330	U	79	%
2,4-Dinitrophenol	910	U J	920	U J	830	U	28	%
4-Nitrophenol	910	U	920	U	830	U	59	%
Dibenzofuran	360	U	370	U	330	U	83	%
2,4-Dinitrotoluene	360	U	370	U	330	U	90	%
Diethylphthalate	360	U	370	U	330	U	81	%
4-Chlorophenyl-phenylether	360	U	370	U	330	U	81	%
Fluorene	360	U	370	U	330	U	78	%
4-Nitroaniline	910	U	920	U	830	U	91	%
4,6-Dinitro-2-methylphenol	910	U J	920	U J	830	U	47	%
N-Nitrosodiphenylamine (1)	360	U	370	U	330	U	72	%
4-Bromophenyl-phenylether	360	U	370	U	330	U	85	%
Hexachlorobenzene	360	U	370	U	330	U	103	%
Pentachlorophenol	910	U J	920	U J	830	U	48	%
Phenanthrene	360	U	370	U	330	U	91	%
Anthracene	360	U	370	U	330	U	86	%
Carbazole	360	U	370	U	330	U	84	%
Di-n-butylphthalate	360	U	370	U	330	U	87	%
Fluoranthene	360	U	370	U	330	U	83	%
Pyrene	360	U	370	U	330	U	81	%
Butylbenzylphthalate	360	U	370	U	330	U	90	%
3,3'-Dichlorobenzidine	360	U	370	U	330	U	86	%
Benzo(a)anthracene	360	U	370	U	330	U	89	%
Chrysene	360	U	370	U	330	U	93	%
bis(2-Ethylhexyl)phthalate	660 ~~27 JB~~	U	660 ~~25 JB~~	U	23	J	90	%
Di-n-octyl phthalate	360	U	370	U	330	U	91	%
Benzo(b)fluoranthene	360	U	370	U	330	U	84	%
Benzo(k)fluoranthene	360	U	370	U	330	U	95	%
Benzo(a)pyrene	360	U	370	U	330	U	93	%
Indeno(1,2,3-cd)pyrene	360	U	370	U	330	U	98	%
Dibenz(a,h)anthracene	360	U	370	U	330	U	98	%
Benzo(g,h,i)perylene	360	U	370	U	330	U	97	%

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

3/30/04

000000011

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY INC.

Case Narrative

Client: TNU-HANFORD RC-032
LVL #: 0712L342
SDG/SAF # K1066/RC-032

W.O. #: 11343-606-001-9999-00
Date Received: 12-19-2007

SEMIVOLATILE

Six (6) soil samples were collected on 12-17-2007.

The samples and their associated QC samples were extracted according to Lionville Laboratory SOPs based on SW 846 method 3540C on 12-26-2007 and analyzed according to criteria set forth in Lionville Laboratory SOPs based on SW 846 Method 8270C for TCL Semivolatile target compounds on 12-28,31-2007 and 01-02-2008.

All soil samples are reported on a dry weight basis unless requested by the client, required by the method, or noted otherwise. The following is a summary of QC results accompanying the sample results. Lionville Laboratory Inc (LvLI) certifies that all test results meet the requirements of NELAC except as noted below:

1. Samples were extracted and analyzed within required holding time.
2. Non-target compounds were detected in the samples.
3. All surrogate recoveries were within acceptance criteria.
4. Two (2) of one hundred and twenty-eight (128) matrix spike recoveries were outside acceptance criteria. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
5. All blank spike recoveries were within acceptance criteria.
6. The method blank was below the reporting limit for all target compounds.
7. All calibration criteria were met.
8. Internal standard area and retention time criteria were met.

r:\group\data\2007\bna\tnu-hanford\0712-342ks2.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 32 pages.

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

LIONVILLE LABORATORY INC.

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. LvLI is NELAP accredited by the State of Pennsylvania. For a complete listing of accrediting authorities and the corresponding analytes/methods, please contact your Project Manager.

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

1/4/08
Date

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

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 07MS275

Initiator: Sharon Sylk
Date: 1-2-08
Client: TMW RC032

Batch: 07LL342
Samples: 001ms, 001msd
Method: SW846MCAWW/CLP/

Parameter: 8270
Matrix: SOLID
Prep Batch: 07LG721

1. Reason for SDR

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

b. General Discrepancy

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

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

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

low recovery of bis(2-chloroisopropyl)ether in the ms + msd but BS is ok
(2,2'-oxybis(1-chloropropane))

2. Known or Probable Causes(s) sporadic all other spikes/surrogates ok
PLC 1/4/08

3. Discussion and Proposed Action Other Description: namate

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

4. Project Manager Instructions...signature/date: 1/4/08

__ 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: 1/4/08 Other Explanation:

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

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

Route	Distribution of Completed SDR	Route	Distribution of Completed SDR
__	X Initiator	__	__ Metals: Beegle
__	X Lab General Manager: M. Taylor	__	__ Inorganic: Perrone
1	X Project Mgr: Stone/Johnson	__	__ GC/LC: Kiger
__	__ Data Management: ~~Stilwell~~	2	X MS: Rychlak/Daley
__	__ Sample Prep: Beegle/Kiger	__	__ Log-in: Perry
		__	__ Admin: _____
		__	__ Other: _____

QA-105-A-0805

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-032-177 | Page 2 of 1

Collector: T. Welch-Koelling	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7DAY		
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 120-F-1 Glass Dump SE Verification		SAF No.: RC-032
Ice Chest No.: ERC-99-046	Field Logbook No.: EFL-1174-4	COA: R120F12000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES / LIONVILLE	Offsite Property No.: A080108		Bill of Lading/Air Bill No.: See OSIC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	P	aG	aG	P	aG	aG	aG				
No. of Container(s)	2	1	1	1	1	1	1				
Volume	125mL	60mL	120mL	125mL	120mL	120mL	120mL				
SAMPLE ANALYSIS	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	IC Anions - 300.0; pH (Soil) - 9045	Total Cyanide - 9010; Sulfides - 9030	Pesticides - 8081	TPH (Total) - 418.1				
Sample No. / Matrix * / Sample Date / Sample Time											
J16337 / SOIL / 12-17-07 / 0855	X	X	X	X	X	X	X				5
J16338 / SOIL / 12-17-07 / 1240	X	X	X	X	X	X	X				6
J16339 / SOIL / 12-17-07 / 0905	X	X	X	X	X	X	X				7
J16340 / SOIL / 12-17-07 / 0915	X	X	X	X	X	X	X				8
J16341 / SOIL / 12-17-07 / 0925	X	X	X	X	X	X	X				9

000019

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From	Date/Time 12-17-07 1354	Received By/Stored In	Date/Time 1354 12-17-07
Relinquished By/Removed From	Date/Time 1445 12-17-07	Received By/Stored In 3728/2C	Date/Time 1446 12-17-07
Relinquished By/Removed From 3728/2C 12-18-07	Date/Time 0900	Received By/Stored In 12-18-07	Date/Time 0900
Relinquished By/Removed From	Date/Time LOCH 12-18-07 1500	Received By/Stored In FED EX	Date/Time
Relinquished By/Removed From Fed Ex	Date/Time 12-18-07	Received By/Stored In 12-19-07	Date/Time 1500
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

samples from 3728 Ref # 2C
3728 Custodian removed samples for shipping on 12/18/07.
Sampler unavailable to relinquish

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

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

WCH-EE-011

000000020

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-032-177 | Page 2 of 2

Collector: T. Welch-Koelling	Company Contact: R.T. Coffman	Telephone No.: 528-6409	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7DAY		
Project Designation: 100-F Remaining Sites Burial Grounds - Soil Full Protocol	Sampling Location: 120-F-1 Glass Dump SE Verification		SAF No.: RC-032
Ice Chest No.: EBC-99-046	Field Logbook No.: EFL-1174-4	COA: R120F12000	Method of Shipment: FED EX
Shipped To: EBERLINE SERVICES (LIONVILLE)	Offsite Property No.: A080108		Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

NA

Special Handling and/or Storage

NA

SAMPLE ANALYSIS												
Preservation	None	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C				
Type of Container	P	aG	aG	P	aG	aG	aG				
No. of Container(s)	2	1	1	1	1	1	1				
Volume	125mL	60mL	120mL	125mL	120mL	120mL	120mL				
	See item (1) in Special Instructions.	PCBs - 8082	Semi-VOA - 8270A (TCL)	IC Anions - 300.0; pH (Soil) - 9045	Total Cyanide - 9010; Sulfides - 9030	Pesticides - 8081	TPH (Total) - 418.1				
Sample No.	Matrix *	Sample Date	Sample Time									
J16342	SOIL	12-17-07	0930	X	X	X	X	X	X	X		10
J16354	SOIL	12-17-07	0940	X								EB

020000

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
T. Welch-Koelling	12-17-07 1354	JR DeBusque JR DeBusque	1354 12-17-07
JR DeBusque JR DeBusque	12-17-07 1445	3728/2C	1445 12-17-07
3728/2C	12-18-07 0900	K.M. Singleton	12-18-07 0900
K.M. Singleton	12-18-07 1500	FED EX	
FED EX	12-19-07	Victor Hernandez	12-19-07 1500
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010 (Client List) (Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7471 - (CV)

samples from 3728 Ref # 2C
3728 Custodian removed samples for shipping on 12/18/07.
Sampler unavailable to relinquish

Matrix *
S=Soil
SE=Sediment
SD=Solid
Sl=Sludge
W = Water
O=Oil
A=Air
DS=Drum Solids
DL=Drum Liquids
T=Tissue
Wi=Wipe
L=Liquid
V=Vegetation
X=Other

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

NCH-EE-011

000000021

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 120-F-1			DATA PACKAGE: K1066		
VALIDATOR: ELR		LAB: LCT		DATE: 3/28/08	
			SDG: K1066		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J16337 J16338 J16339 J16340 J16341					
J16342					
					Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments: _____

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

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

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

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

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

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

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

Comments: _____

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: bis(2-ethylhexyl)phthalate — all detect — U at RQL

no FB

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

Surrogates/system monitoring compounds analyzed? ..... Yes No N/A

Surrogate/system monitoring compound recoveries acceptable? ..... Yes No N/A

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

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

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

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

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

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

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

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

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

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

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

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

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

Comments: MS/MSD 2,2-oxybis(1-chloropropane) — J all

LCS — 2,4-dinitrophenol, 4,6-dinitro-2-methylphenol + pentachlorophenol — J all

no PATS

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: RPD - 2,4-dinitrophenol - 56% - J all

6. SYSTEM PERFORMANCE (Levels D and E)

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

Iinternal standard areas acceptable? ..... Yes No N/A

Internal standard retention times acceptable? ..... Yes No N/A

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

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

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

Comments:

7. HOLDING TIMES (all levels)

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

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

Comments:

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: 48 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: