SAF-RC-029
Remaining Sites Confirmation Sampling – Soil Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF FINAL VALIDATION PACKAGE TO:

Kathy Wendt (2) H4-21

COMMENTS:

SDG K3857 SAF-RC-029

Waste Site: 600-290:2

Date: 7 May 2012
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: Remaining Sites Confirmation Sampling – Soil Full Protocol – Waste Site 600-290:2
Subject: Semivolatile Organic - Data Package No. K3857-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K3857 prepared by Lionville Laboratories 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
J1N2V5	4/3/12	Soil	C	See note 1
J1N2V6	4/3/12	Soil	C	See note 1
J1N2V7	4/3/12	Soil	C	See note 1
J1N2V8	4/3/12	Soil	C	See note 1
J1N2V9	4/3/12	Soil	C	See note 1
J1N2W0	4/3/12	Soil	C	See note 1
J1N2W1	4/3/12	Soil	C	See note 1
J1N2W2	4/3/12	Soil	C	See note 1
J1N2W3	4/3/12	Soil	C	See note 1
J1N2W4	4/3/12	Soil	C	See note 1
J1N2W5	4/3/12	Soil	C	See note 1
J1N2W6	4/3/12	Soil	C	See note 1
J1N2W8	4/3/12	Soil	C	See note 1

1 - Semiolatile organics by 8270C.

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 Data Requested by Client

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 acceptable.

- **Method Blanks**

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

All method blank results were acceptable.

Field (equipment) 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 LCS recoveries outside QC limits, all 2,4-dinitrophenol (10%), 4,6-dinitro-2-methylphenol (33%), hexachlorocylcopentadiene (16%) and pentachlorophenol (43%) results were qualified as estimates and flagged "J".

Due to matrix spike recoveries outside QC limits, all 2,4,6-trichlorophenol (46%), hexachlorocyclopentadiene (26%) and pentachlorophenol (47%) results were qualified as estimates and flagged "J".

Due to matrix spike duplicate recoveries outside QC limits, all 2,4,5-trichlorophenol (44%), 2,4,6-trichlorophenol (25%), hexcachlorocyclopentadiene (21%) and pentachlorophenol (37%) 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".

Due to a surrogate recovery outside QC limits, the 2,4-dichlorophenol, 2,4,6-trichlorophenol, 2,4,5-trichlorophenol, pentachlorophenol, bis(2-chloroethyl)ether, bis(2-chloroisopropyl)ether, bis(2-chloroethoxy)methane, 4-chlorophenyl phenyl ether, 4-bromophenyl phenyl ether result in samples J1N2W1, J1N2W4 and J1N2W5 were qualified as estimates and flagged "J".

All other 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 RPDs outside QC limits, all 2,4,5-trichlorophenol (34%), 2,4,6-trichlorophenol (60%) and 4-nitrophenol (48%) results were qualified as estimates and flagged "J".

All other duplicate results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1N2W5/J1N2W6) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

Analytical Detection Levels

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

Completeness

Data package No. K3857 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 LCS recoveries outside QC limits, all 2,4-dinitrophenol (10%), 4,6-dinitro-2-methylphenol (33%), hexachlorocylcopentadiene (16%) and pentachlorophenol (43%) results were qualified as estimates and flagged "J".

- Due to matrix spike recoveries outside QC limits, all 2,4,6-trichlorophenol (46%), hexachlorocyclopentadiene (26%) and pentachlorophenol (47%) results were qualified as estimates and flagged "J".

- Due to matrix spike duplicate recoveries outside QC limits, all 2,4,5-trichlorophenol (44%), 2,4,6-trichlorophenol (25%), hexcachlorocyclopentadiene (21%) and pentachlorophenol (37%) results were qualified as estimates and flagged "J".

- Due to a surrogate recovery outside QC limits, the 2,4-dichlorophenol, 2,4,6-trichlorophenol, 2,4,5-trichlorophenol, pentachlorophenol, bis(2-chloroethyl)ether, bis(2-chloroisopropyl)ether, bis(2-chloroethoxy)methane, 4-chlorophenyl phenyl ether, 4-bromophenyl phenyl ether result in samples J1N2W1, J1N2W4 and J1N2W5 were qualified as estimates and flagged "J".

- Due to RPDs outside QC limits, all 2,4,5-trichlorophenol (34%), 2,4,6-trichlorophenol (60%) and 4-nitrophenol (48%) 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.

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

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-2001-48, Rev. 3, *300 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, May 2004.

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 ORGANIC DATA QUALIFICATION SUMMARY*

SDG: K3857	REVIEWER: ELR	Project: 600-290:2	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
2,4-dinitrophenol 4,6-dinitro-2-methylphenol hexachlorocylcopentadiene pentachlorophenol	J	All	LCS recovery
2,4,6-trichlorophenol hexachlorocyclopentadiene pentachlorophenol	J	All	MS recovery
2,4,5-trichlorophenol 2,4,6-trichlorophenol hexcachlorocyclopentadiene pentachlorophenol	J	All	MSD recovery
2,4-dichlorophenol 2,4,6-trichlorophenol 2,4,5-trichlorophenol pentachlorophenol bis(2-chloroethyl)ether bis(2-chloroisopropyl)ether bis(2-chloroethoxy)methane 4-chlorophenyl phenyl ether 4-bromophenyl phenyl ether	J	J1N2W1, J1N2W4 J1N2W5	Surrogate recovery
2,4,5-trichlorophenol 2,4,6-trichlorophenol 4-nitrophenol	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

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.
2620 Fermi Avenue
Richland WA, 99354

Project: RC-029
Project Number: K3857
Project Manager: Joan Kessner

Reported:
04/19/2012 13:23

J1N2V5
1204018-01 (Soil)

5/11/12

Lionville Laboratory

Semivolatile Organic Compounds by SW846 8270C

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,2,4-Trichlorobenzene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
1,2-Dichlorobenzene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
1,3-Dichlorobenzene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
1,4-Dichlorobenzene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4,5-Trichlorophenol	353	U J	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4,6-Trichlorophenol	353	U J	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dichlorophenol	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dimethylphenol	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dinitrophenol	1770	U J	1770	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dinitrotoluene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,6-Dinitrotoluene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Chloronaphthalene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Chlorophenol	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Methylnaphthalene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Methylphenol	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Nitroaniline	1770	U	1770	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Nitrophenol	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
3,3'-Dichlorobenzidine	706	U	706	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
3-Nitroaniline	1770	U	1770	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4,6-Dinitro-2-methylphenol	353	U J	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Bromophenyl Phenyl Ether	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Chloro-3-methylphenol	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Chloroaniline	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Chlorophenyl Phenyl Ether	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
3- and/or 4-Methylphenol	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Nitroaniline	1770	U	1770	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Nitrophenol	1770	U J	1770	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Acenaphthene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Acenaphthylene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Anthracene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benz[a]anthracene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[a] pyrene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[b] fluoranthene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[g,h,i] perylene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[k] fluoranthene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Bis(2-chloroethoxy) methane	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2V5
1204018-01 (Soil)

K 5/11/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
Bis(2-chloroethyl) ether	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Bis(2-chloroisopropyl) ether	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Bis(2-ethylhexyl) phthalate	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Butyl Benzyl Phthalate	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Carbazole	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Chrysene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Dibenz[a,h]anthracene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Dibenzofuran	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Diethyl Phthalate	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Dimethyl Phthalate	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Di-n-butyl Phthalate	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Di-n-octyl Phthalate	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Fluoranthene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Fluorene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachlorobenzene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachlorobutadiene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachlorocyclopentadiene	353	U J	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachloroethane	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Indeno[1,2,3-cd]pyrene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Isophorone	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Naphthalene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Nitrobenzene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
N-Nitrosodi-n-propylamine	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
N-Nitrosodiphenylamine	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Pentachlorophenol	1770	U J	1770	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Phenanthrene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Phenol	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Pyrene	353	U	353	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Trichloro-1-propene	**322**	B, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Aldol Condensate 3	**248**	A, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Aldol Condensate 4	**810**	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Aldol Condensate 2	**17800**	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Aldol Condensate 1	**229**	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Surrogate: 2-Fluorophenol	*55 %*		*25-121*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: Phenol-d5	*56 %*		*24-113*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*56 %*		*23-120*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*

000000018

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2V5

1204018-01 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: 2-Fluorobiphenyl	*57 %*	*30-115*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*40 %*	*19-122*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*63 %*	*18-137*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*

5/11/12

000000019

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2V6
1204018-02 (Soil)

5/11/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
1,2,4-Trichlorobenzene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
1,2-Dichlorobenzene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
1,3-Dichlorobenzene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
1,4-Dichlorobenzene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4,5-Trichlorophenol	346	U J	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4,6-Trichlorophenol	346	U J	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dichlorophenol	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dimethylphenol	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dinitrophenol	1730	U J	1730	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dinitrotoluene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,6-Dinitrotoluene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Chloronaphthalene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Chlorophenol	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Methylnaphthalene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Methylphenol	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Nitroaniline	1730	U	1730	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Nitrophenol	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
3,3'-Dichlorobenzidine	693	U	693	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
3-Nitroaniline	1730	U	1730	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4,6-Dinitro-2-methylphenol	346	U J	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Bromophenyl Phenyl Ether	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Chloro-3-methylphenol	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Chloroaniline	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Chlorophenyl Phenyl Ether	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
3- and/or 4-Methylphenol	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Nitroaniline	1730	U	1730	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Nitrophenol	1730	U J	1730	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Acenaphthene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Acenaphthylene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Anthracene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benz[a]anthracene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[a] pyrene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[b] fluoranthene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[g,h,i] perylene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[k] fluoranthene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Bis(2-chloroethoxy) methane	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C

000000020

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2V6
1204018-02 (Soil)

5/11/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
Bis(2-chloroethyl) ether	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Bis(2-chloroisopropyl) ether	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Bis(2-ethylhexyl) phthalate	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Butyl Benzyl Phthalate	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Carbazole	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Chrysene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Dibenz[a,h]anthracene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Dibenzofuran	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Diethyl Phthalate	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Dimethyl Phthalate	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Di-n-butyl Phthalate	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Di-n-octyl Phthalate	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Fluoranthene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Fluorene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachlorobenzene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachlorobutadiene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachlorocyclopentadiene	346	U J	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachloroethane	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Indeno[1,2,3-cd]pyrene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Isophorone	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Naphthalene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Nitrobenzene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
N-Nitrosodi-n-propylamine	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
N-Nitrosodiphenylamine	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Pentachlorophenol	1730	U J	1730	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Phenanthrene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Phenol	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Pyrene	346	U	346	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Unknown 1	**426**	J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Trichloro-1-propene	**113**	B, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Aldol Condensate 2	**84.6**	A, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Aldol Condensate 1	**15700**	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Aldol Condensate 3	**304**	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Surrogate: 2-Fluorophenol	*58 %*		*25-121*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: Phenol-d5	*57 %*		*24-113*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*63 %*		*23-120*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*

000000021

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2V6
1204018-02 (Soil)

V 5/11/12

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: 2-Fluorobiphenyl	*61 %*	*30-115*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*22 %*	*19-122*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*70 %*	*18-137*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*

000000022

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2V7
1204018-03 (Soil)

5/11/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
1,2,4-Trichlorobenzene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
1,2-Dichlorobenzene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
1,3-Dichlorobenzene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
1,4-Dichlorobenzene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4,5-Trichlorophenol	347	U J	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4,6-Trichlorophenol	347	U J	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dichlorophenol	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dimethylphenol	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dinitrophenol	1730	U J	1730	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dinitrotoluene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,6-Dinitrotoluene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Chloronaphthalene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Chlorophenol	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Methylnaphthalene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Methylphenol	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Nitroaniline	1730	U	1730	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Nitrophenol	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
3,3'-Dichlorobenzidine	694	U	694	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
3-Nitroaniline	1730	U	1730	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4,6-Dinitro-2-methylphenol	347	U J	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Bromophenyl Phenyl Ether	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Chloro-3-methylphenol	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Chloroaniline	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Chlorophenyl Phenyl Ether	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
3- and/or 4-Methylphenol	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Nitroaniline	1730	U	1730	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Nitrophenol	1730	U J	1730	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Acenaphthene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Acenaphthylene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Anthracene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benz[a]anthracene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[a] pyrene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[b] fluoranthene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[g,h,i] perylene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[k] fluoranthene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Bis(2-chloroethoxy) methane	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2V7
1204018-03 (Soil)

5/11/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
Bis(2-chloroethyl) ether	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Bis(2-chloroisopropyl) ether	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Bis(2-ethylhexyl) phthalate	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Butyl Benzyl Phthalate	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Carbazole	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Chrysene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Dibenz[a,h]anthracene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Dibenzofuran	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Diethyl Phthalate	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Dimethyl Phthalate	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Di-n-butyl Phthalate	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Di-n-octyl Phthalate	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Fluoranthene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Fluorene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachlorobenzene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachlorobutadiene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachlorocyclopentadiene	347	U J	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachloroethane	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Indeno[1,2,3-cd]pyrene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Isophorone	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Naphthalene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Nitrobenzene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
N-Nitrosodi-n-propylamine	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
N-Nitrosodiphenylamine	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Pentachlorophenol	1730	U J	1730	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Phenanthrene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Phenol	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Pyrene	347	U	347	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Unknown 1	107	J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Aldol Condensate 2	13200	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Aldol Condensate 3	218	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Aldol Condensate 1	90.4	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Surrogate: 2-Fluorophenol	*49 %*		*25-121*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: Phenol-d5	*50 %*		*24-113*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*50 %*		*23-120*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: 2-Fluorobiphenyl	*50 %*		*30-115*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*

000000024

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2V7
1204018-03 (Soil)

5/11/12

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: 2,4,6-Tribromophenol	*35 %*	*19-122*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*55 %*	*18-137*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*

000000025

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2V8
1204018-04 (Soil)

5/11/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
1,2,4-Trichlorobenzene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
1,2-Dichlorobenzene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
1,3-Dichlorobenzene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
1,4-Dichlorobenzene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4,5-Trichlorophenol	351	U J	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4,6-Trichlorophenol	351	U J	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dichlorophenol	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dimethylphenol	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dinitrophenol	1750	U J	1750	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dinitrotoluene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,6-Dinitrotoluene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Chloronaphthalene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Chlorophenol	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Methylnaphthalene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Methylphenol	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Nitroaniline	1750	U	1750	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Nitrophenol	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
3,3'-Dichlorobenzidine	702	U	702	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
3-Nitroaniline	1750	U	1750	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4,6-Dinitro-2-methylphenol	351	U J	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Bromophenyl Phenyl Ether	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Chloro-3-methylphenol	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Chloroaniline	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Chlorophenyl Phenyl Ether	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
3- and/or 4-Methylphenol	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Nitroaniline	1750	U	1750	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Nitrophenol	1750	U J	1750	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Acenaphthene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Acenaphthylene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Anthracene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benz[a]anthracene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[a] pyrene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[b] fluoranthene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[g,h,i] perylene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[k] fluoranthene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Bis(2-chloroethoxy) methane	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2V8
1204018-04 (Soil)

5/11/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
Bis(2-chloroethyl) ether	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Bis(2-chloroisopropyl) ether	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Bis(2-ethylhexyl) phthalate	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Butyl Benzyl Phthalate	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Carbazole	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Chrysene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Dibenz[a,h]anthracene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Dibenzofuran	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Diethyl Phthalate	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Dimethyl Phthalate	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Di-n-butyl Phthalate	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Di-n-octyl Phthalate	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Fluoranthene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Fluorene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachlorobenzene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachlorobutadiene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachlorocyclopentadiene	351	U J	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachloroethane	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Indeno[1,2,3-cd]pyrene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Isophorone	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Naphthalene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Nitrobenzene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
N-Nitrosodi-n-propylamine	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
N-Nitrosodiphenylamine	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Pentachlorophenol	1750	U J	1750	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Phenanthrene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Phenol	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Pyrene	351	U	351	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Unknown 1	**234**	J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Trichloro-1-propene	**72.3**	B, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Aldol Condensate 3	**295**	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Aldol Condensate 2	**14700**	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Aldol Condensate 1	**113**	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Surrogate: 2-Fluorophenol	*55 %*		*25-121*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: Phenol-d5	*53 %*		*24-113*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*57 %*		*23-120*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*

000000027

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3857	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	04/19/2012 13:23

J1N2V8
1204018-04 (Soil)

5/14/12

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: 2-Fluorobiphenyl	*57 %*	*30-115*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*30 %*	*19-122*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*67 %*	*18-137*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*

000000028

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2V9
1204018-05 (Soil)

5/11/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
1,2,4-Trichlorobenzene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
1,2-Dichlorobenzene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
1,3-Dichlorobenzene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
1,4-Dichlorobenzene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4,5-Trichlorophenol	354	U J	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4,6-Trichlorophenol	354	U J	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dichlorophenol	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dimethylphenol	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dinitrophenol	1770	U J	1770	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dinitrotoluene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,6-Dinitrotoluene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Chloronaphthalene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Chlorophenol	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Methylnaphthalene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Methylphenol	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Nitroaniline	1770	U	1770	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Nitrophenol	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
3,3'-Dichlorobenzidine	708	U	708	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
3-Nitroaniline	1770	U	1770	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4,6-Dinitro-2-methylphenol	354	U J	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Bromophenyl Phenyl Ether	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Chloro-3-methylphenol	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Chloroaniline	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Chlorophenyl Phenyl Ether	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
3- and/or 4-Methylphenol	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Nitroaniline	1770	U	1770	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Nitrophenol	1770	U J	1770	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Acenaphthene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Acenaphthylene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Anthracene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benz[a]anthracene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[a] pyrene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[b] fluoranthene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[g,h,i] perylene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[k] fluoranthene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Bis(2-chloroethoxy) methane	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C

000000029

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2V9
1204018-05 (Soil)

5/11/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Semivolatile Organic Compounds by SW846 8270C									
Bis(2-chloroethyl) ether	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Bis(2-chloroisopropyl) ether	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Bis(2-ethylhexyl) phthalate	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Butyl Benzyl Phthalate	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Carbazole	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Chrysene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Dibenz[a,h]anthracene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Dibenzofuran	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Diethyl Phthalate	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Dimethyl Phthalate	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Di-n-butyl Phthalate	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Di-n-octyl Phthalate	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Fluoranthene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Fluorene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachlorobenzene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachlorobutadiene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachlorocyclopentadiene	354	U J	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachloroethane	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Indeno[1,2,3-cd]pyrene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Isophorone	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Naphthalene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Nitrobenzene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
N-Nitrosodi-n-propylamine	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
N-Nitrosodiphenylamine	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Pentachlorophenol	1770	U J	1770	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Phenanthrene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Phenol	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Pyrene	354	U	354	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Bromacil	**165**	J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Unknown 1	**218**	J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Trichloro-1-propene	**95.3**	B, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Aldol Condensate 2	**326**	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Aldol Condensate 1	**17100**	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Surrogate: 2-Fluorophenol	*62 %*		*25-121*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: Phenol-d5	*61 %*		*24-113*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*63 %*		*23-120*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*

000000030

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2V9
1204018-05 (Soil)

5/11/12

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: 2-Fluorobiphenyl	*64 %*	*30-115*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*43 %*	*19-122*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*76 %*	*18-137*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*

000000031

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3857	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	04/19/2012 13:23

J1N2W0
1204018-06 (Soil)

5/11/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
1,2,4-Trichlorobenzene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
1,2-Dichlorobenzene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
1,3-Dichlorobenzene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
1,4-Dichlorobenzene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4,5-Trichlorophenol	335	U J	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4,6-Trichlorophenol	335	U J	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dichlorophenol	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dimethylphenol	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dinitrophenol	1670	U J	1670	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dinitrotoluene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,6-Dinitrotoluene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Chloronaphthalene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Chlorophenol	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Methylnaphthalene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Methylphenol	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Nitroaniline	1670	U	1670	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Nitrophenol	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
3,3'-Dichlorobenzidine	669	U	669	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
3-Nitroaniline	1670	U	1670	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4,6-Dinitro-2-methylphenol	335	U J	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Bromophenyl Phenyl Ether	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Chloro-3-methylphenol	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Chloroaniline	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Chlorophenyl Phenyl Ether	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
3- and/or 4-Methylphenol	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Nitroaniline	1670	U	1670	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Nitrophenol	1670	U J	1670	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Acenaphthene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Acenaphthylene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Anthracene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benz[a]anthracene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[a] pyrene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[b] fluoranthene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[g,h,i] perylene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[k] fluoranthene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Bis(2-chloroethoxy) methane	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2W0
1204018-06 (Soil)

5/11/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Semivolatile Organic Compounds by SW846 8270C									
Bis(2-chloroethyl) ether	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Bis(2-chloroisopropyl) ether	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Bis(2-ethylhexyl) phthalate	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Butyl Benzyl Phthalate	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Carbazole	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Chrysene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Dibenz[a,h]anthracene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Dibenzofuran	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Diethyl Phthalate	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Dimethyl Phthalate	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Di-n-butyl Phthalate	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Di-n-octyl Phthalate	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Fluoranthene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Fluorene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachlorobenzene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachlorobutadiene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachlorocyclopentadiene	335	U J	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachloroethane	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Indeno[1,2,3-cd]pyrene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Isophorone	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Naphthalene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Nitrobenzene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
N-Nitrosodi-n-propylamine	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
N-Nitrosodiphenylamine	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Pentachlorophenol	1670	U J	1670	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Phenanthrene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Phenol	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Pyrene	335	U	335	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Unknown 3	**126**	J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Aldol Condensate 2	**152**	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Unknown 2	**135**	J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Unknown 1	**279**	J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Aldol Condensate 1	**68400**	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Surrogate: 2-Fluorophenol	*44 %*		*25-121*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: Phenol-d5	*45 %*		*24-113*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*45 %*		*23-120*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*

000000033

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2W0
1204018-06 (Soil)

5/11/12

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: 2-Fluorobiphenyl	*48 %*	*30-115*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*44 %*	*19-122*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*64 %*	*18-137*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*

000000034

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

✓ 5/7/12

J1N2W1
1204018-07 (Soil)

Lionville Laboratory

Semivolatile Organic Compounds by SW846 8270C

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
1,2,4-Trichlorobenzene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
1,2-Dichlorobenzene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
1,3-Dichlorobenzene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
1,4-Dichlorobenzene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4,5-Trichlorophenol	343	U J	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4,6-Trichlorophenol	343	U J	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dichlorophenol	343	U J	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dimethylphenol	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dinitrophenol	1710	U J	1710	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,4-Dinitrotoluene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2,6-Dinitrotoluene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Chloronaphthalene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Chlorophenol	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Methylnaphthalene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Methylphenol	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Nitroaniline	1710	U	1710	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
2-Nitrophenol	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
3,3'-Dichlorobenzidine	685	U	685	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
3-Nitroaniline	1710	U	1710	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4,6-Dinitro-2-methylphenol	343	U J	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Bromophenyl Phenyl Ether	343	U J	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Chloro-3-methylphenol	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Chloroaniline	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Chlorophenyl Phenyl Ether	343	U J	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
3- and/or 4-Methylphenol	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Nitroaniline	1710	U	1710	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
4-Nitrophenol	1710	U J	1710	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Acenaphthene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Acenaphthylene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Anthracene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benz[a]anthracene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[a] pyrene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[b] fluoranthene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[g,h,i] perylene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Benzo[k] fluoranthene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Bis(2-chloroethoxy) methane	343	U J	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3857	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	04/19/2012 13:23

K 5/7/12

J1N2W1
1204018-07 (Soil)

Lionville Laboratory

Semivolatile Organic Compounds by SW846 8270C

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Bis(2-chloroethyl) ether	343	U J	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Bis(2-chloroisopropyl) ether	343	U J	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Bis(2-ethylhexyl) phthalate	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Butyl Benzyl Phthalate	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Carbazole	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Chrysene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Dibenz[a,h]anthracene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Dibenzofuran	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Diethyl Phthalate	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Dimethyl Phthalate	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Di-n-butyl Phthalate	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Di-n-octyl Phthalate	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Fluoranthene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Fluorene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachlorobenzene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachlorobutadiene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachlorocyclopentadiene	343	U J	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Hexachloroethane	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Indeno[1,2,3-cd]pyrene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Isophorone	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Naphthalene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Nitrobenzene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
N-Nitrosodi-n-propylamine	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
N-Nitrosodiphenylamine	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Pentachlorophenol	1710	U J	1710	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Phenanthrene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Phenol	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Pyrene	343	U	343	ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Aldol Condensate 2	**54600**	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Unknown 1	**86.3**	J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Unknown 3	**391**	J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Unknown 2	**123**	J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
TIC:Aldol Condensate 1	**464**	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/11/2012	8270C
Surrogate: 2-Fluorophenol	*40 %*		*25-121*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: Phenol-d5	*40 %*		*24-113*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*41 %*		*23-120*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*

000000036

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

5/7/12

J1N2W1
1204018-07 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
		Lionville Laboratory						
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: 2-Fluorobiphenyl	*41 %*	*30-115*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*12 % **	*19-122*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*56 %*	*18-137*			*L204060*	*04/06/2012*	*04/11/2012*	*8270C*

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Permi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2W2
1204018-08 (Soil)

5/11/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
1,2,4-Trichlorobenzene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
1,2-Dichlorobenzene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
1,3-Dichlorobenzene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
1,4-Dichlorobenzene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4,5-Trichlorophenol	342	U J	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4,6-Trichlorophenol	342	U J	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dichlorophenol	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dimethylphenol	342	U 5/11/12	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dinitrophenol	1710	U J	1710	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dinitrotoluene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,6-Dinitrotoluene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Chloronaphthalene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Chlorophenol	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Methylnaphthalene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Methylphenol	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Nitroaniline	1710	U	1710	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Nitrophenol	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
3,3'-Dichlorobenzidine	684	U	684	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
3-Nitroaniline	1710	U	1710	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4,6-Dinitro-2-methylphenol	342	U J	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Bromophenyl Phenyl Ether	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Chloro-3-methylphenol	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Chloroaniline	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Chlorophenyl Phenyl Ether	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
3- and/or 4-Methylphenol	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Nitroaniline	1710	U	1710	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Nitrophenol	1710	U J	1710	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Acenaphthene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Acenaphthylene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Anthracene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benz[a]anthracene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[a] pyrene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[b] fluoranthene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[g,h,i] perylene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[k] fluoranthene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Bis(2-chloroethoxy) methane	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C

000000038

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2W2
1204018-08 (Soil)

5/11/12

Lionville Laboratory

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Semivolatile Organic Compounds by SW846 8270C									
Bis(2-chloroethyl) ether	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Bis(2-chloroisopropyl) ether	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Bis(2-ethylhexyl) phthalate	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Butyl Benzyl Phthalate	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Carbazole	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Chrysene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Dibenz[a,h]anthracene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Dibenzofuran	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Diethyl Phthalate	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Dimethyl Phthalate	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Di-n-butyl Phthalate	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Di-n-octyl Phthalate	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Fluoranthene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Fluorene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachlorobenzene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachlorobutadiene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachlorocyclopentadiene	342	U J	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachloroethane	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Indeno[1,2,3-cd]pyrene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Isophorone	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Naphthalene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Nitrobenzene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
N-Nitrosodi-n-propylamine	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
N-Nitrosodiphenylamine	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Pentachlorophenol	1710	U J	1710	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Phenanthrene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Phenol	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Pyrene	342	U	342	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
TIC:Unknown 2	**121**	J		ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
TIC:Unknown 1	**134**	J		ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
TIC:Aldol Condensate 2	**31600**	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
TIC:Aldol Condensate 1	**94.0**	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
TIC:Aldol Condensate 3	**245**	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Surrogate: 2-Fluorophenol	*51 %*		*25-121*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: Phenol-d5	*50 %*		*24-113*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*56 %*		*23-120*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*

000000039

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-288-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2W2
1204018-08 (Soil)

5/11/12

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: 2-Fluorobiphenyl	*54 %*	*30-115*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*32 %*	*19-122*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*66 %*	*18-137*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*

000000040

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2W3
1204018-09 (Soil)

5/11/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
1,2,4-Trichlorobenzene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
1,2-Dichlorobenzene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
1,3-Dichlorobenzene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
1,4-Dichlorobenzene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4,5-Trichlorophenol	341	U J	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4,6-Trichlorophenol	341	U J	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dichlorophenol	341	U J	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dimethylphenol	341	U slivka	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dinitrophenol	1710	U J	1710	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dinitrotoluene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,6-Dinitrotoluene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Chloronaphthalene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Chlorophenol	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Methylnaphthalene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Methylphenol	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Nitroaniline	1710	U	1710	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Nitrophenol	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
3,3'-Dichlorobenzidine	683	U	683	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
3-Nitroaniline	1710	U	1710	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4,6-Dinitro-2-methylphenol	341	U J	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Bromophenyl Phenyl Ether	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Chloro-3-methylphenol	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Chloroaniline	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Chlorophenyl Phenyl Ether	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
3- and/or 4-Methylphenol	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Nitroaniline	1710	U	1710	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Nitrophenol	1710	U J	1710	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Acenaphthene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Acenaphthylene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Anthracene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benz[a]anthracene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[a] pyrene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[b] fluoranthene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[g,h,i] perylene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[k] fluoranthene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Bis(2-chloroethoxy) methane	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C

000000041

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2W3
1204018-09 (Soil)

5/11/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Semivolatile Organic Compounds by SW846 8270C									
Bis(2-chloroethyl) ether	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Bis(2-chloroisopropyl) ether	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Bis(2-ethylhexyl) phthalate	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Butyl Benzyl Phthalate	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Carbazole	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Chrysene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Dibenz[a,h]anthracene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Dibenzofuran	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Diethyl Phthalate	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Dimethyl Phthalate	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Di-n-butyl Phthalate	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Di-n-octyl Phthalate	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Fluoranthene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Fluorene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachlorobenzene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachlorobutadiene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachlorocyclopentadiene	341	U J	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachloroethane	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Indeno[1,2,3-cd]pyrene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Isophorone	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Naphthalene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Nitrobenzene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
N-Nitrosodi-n-propylamine	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
N-Nitrosodiphenylamine	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Pentachlorophenol	1710	U J	1710	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Phenanthrene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Phenol	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Pyrene	341	U	341	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
TIC:Unknown 1	363	J		ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
TIC:Aldol Condensate 3	75.1	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
TIC:Aldol Condensate 2	30600	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
TIC:Aldol Condensate 1	135	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Surrogate: 2-Fluorophenol	*56 %*		*25-121*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: Phenol-d5	*52 %*		*24-113*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*59 %*		*23-120*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: 2-Fluorobiphenyl	*57 %*		*30-115*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*

000000042

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2W3
1204018-09 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: 2,4,6-Tribromophenol	*22 %*	*19-122*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*68 %*	*18-137*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*

5/11/12

000000043

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

r 5/7/12

J1N2W4
1204018-10 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
1,2,4-Trichlorobenzene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
1,2-Dichlorobenzene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
1,3-Dichlorobenzene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
1,4-Dichlorobenzene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4,5-Trichlorophenol	340	U J	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4,6-Trichlorophenol	340	U J	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dichlorophenol	340	U J	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dimethylphenol	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dinitrophenol	1700	U J	1700	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dinitrotoluene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,6-Dinitrotoluene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Chloronaphthalene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Chlorophenol	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Methylnaphthalene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Methylphenol	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Nitroaniline	1700	U	1700	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Nitrophenol	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
3,3'-Dichlorobenzidine	680	U	680	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
3-Nitroaniline	1700	U	1700	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4,6-Dinitro-2-methylphenol	340	U J	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Bromophenyl Phenyl Ether	340	U J	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Chloro-3-methylphenol	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Chloroaniline	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Chlorophenyl Phenyl Ether	340	U J	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
3- and/or 4-Methylphenol	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Nitroaniline	1700	U	1700	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Nitrophenol	1700	U J	1700	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Acenaphthene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Acenaphthylene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Anthracene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benz[a]anthracene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[a] pyrene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[b] fluoranthene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[g,h,i] perylene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[k] fluoranthene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Bis(2-chloroethoxy) methane	340	U J	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

5/7/12

J1N2W4
1204018-10 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
Bis(2-chloroethyl) ether	340	U J	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Bis(2-chloroisopropyl) ether	340	U J	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Bis(2-ethylhexyl) phthalate	**106**	J	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Butyl Benzyl Phthalate	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Carbazole	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Chrysene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Dibenz[a,h]anthracene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Dibenzofuran	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Diethyl Phthalate	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Dimethyl Phthalate	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Di-n-butyl Phthalate	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Di-n-octyl Phthalate	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Fluoranthene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Fluorene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachlorobenzene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachlorobutadiene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachlorocyclopentadiene	340	U J	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachloroethane	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Indeno[1,2,3-cd]pyrene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Isophorone	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Naphthalene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Nitrobenzene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
N-Nitrosodi-n-propylamine	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
N-Nitrosodiphenylamine	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Pentachlorophenol	1700	U J	1700	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Phenanthrene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Phenol	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Pyrene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
TIC:Unknown 1	**613**	J		ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
TIC:Aldol Condensate 1	**19800**	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Surrogate: 2-Fluorophenol	*58 %*		*25-121*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: Phenol-d5	*55 %*		*24-113*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*59 %*		*23-120*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: 2-Fluorobiphenyl	*59 %*		*30-115*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*13 % **		*19-122*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*72 %*		*18-137*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*

000000045

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

M 5/7/12

J1N2W5
1204018-11 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
1,2,4-Trichlorobenzene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
1,2-Dichlorobenzene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
1,3-Dichlorobenzene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
1,4-Dichlorobenzene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4,5-Trichlorophenol	339	U J	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4,6-Trichlorophenol	339	U J	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dichlorophenol	339	U J	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dimethylphenol	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dinitrophenol	1700	U J	1700	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dinitrotoluene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,6-Dinitrotoluene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Chloronaphthalene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Chlorophenol	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Methylnaphthalene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Methylphenol	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Nitroaniline	1700	U	1700	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Nitrophenol	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
3,3'-Dichlorobenzidine	678	U	678	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
3-Nitroaniline	1700	U	1700	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4,6-Dinitro-2-methylphenol	339	U J	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Bromophenyl Phenyl Ether	339	U J	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Chloro-3-methylphenol	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Chloroaniline	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Chlorophenyl Phenyl Ether	339	U J	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
3- and/or 4-Methylphenol	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Nitroaniline	1700	U	1700	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Nitrophenol	1700	U J	1700	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Acenaphthene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Acenaphthylene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Anthracene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benz[a]anthracene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[a] pyrene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[b] fluoranthene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[g,h,i] perylene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[k] fluoranthene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Bis(2-chloroethoxy) methane	339	U J	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C

LVL
LIONVILLE LABORATORY
A division of Fiberline Analytical Corporation

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

5/7/12

J1N2W5
1204018-11 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
Bis(2-chloroethyl) ether	339	U J	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Bis(2-chloroisopropyl) ether	339	U J	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Bis(2-ethylhexyl) phthalate	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Butyl Benzyl Phthalate	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Carbazole	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Chrysene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Dibenz[a,h]anthracene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Dibenzofuran	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Diethyl Phthalate	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Dimethyl Phthalate	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Di-n-butyl Phthalate	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Di-n-octyl Phthalate	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Fluoranthene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Fluorene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachlorobenzene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachlorobutadiene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachlorocyclopentadiene	339	U J	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachloroethane	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Indeno[1,2,3-cd]pyrene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Isophorone	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Naphthalene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Nitrobenzene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
N-Nitrosodi-n-propylamine	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
N-Nitrosodiphenylamine	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Pentachlorophenol	1700	U J	1700	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Phenanthrene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Phenol	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Pyrene	339	U	339	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
TIC:Unknown 1	**569**	J		ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
TIC:Aldol Condensate 2	**24100**	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
TIC:Aldol Condensate 1	**82.3**	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Surrogate: 2-Fluorophenol	*50 %*		*25-121*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: Phenol-d5	*55 %*		*24-113*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*56 %*		*23-120*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: 2-Fluorobiphenyl	*55 %*		*30-115*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*10 % **		*19-122*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

5/7/12

J1N2W5
1204018-11 (Soil)

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory					
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: p-Terphenyl-d14	*62 %*	*18-137*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*

000000048

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3857	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	04/19/2012 13:23

J1N2W6
1204018-12 (Soil)

5/11/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
1,2,4-Trichlorobenzene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
1,2-Dichlorobenzene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
1,3-Dichlorobenzene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
1,4-Dichlorobenzene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4,5-Trichlorophenol	337	U J	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4,6-Trichlorophenol	337	U J	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dichlorophenol	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dimethylphenol	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dinitrophenol	1690	U J	1690	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dinitrotoluene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,6-Dinitrotoluene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Chloronaphthalene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Chlorophenol	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Methylnaphthalene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Methylphenol	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Nitroaniline	1690	U	1690	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Nitrophenol	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
3,3'-Dichlorobenzidine	675	U	675	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
3-Nitroaniline	1690	U	1690	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4,6-Dinitro-2-methylphenol	337	U J	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Bromophenyl Phenyl Ether	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Chloro-3-methylphenol	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Chloroaniline	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Chlorophenyl Phenyl Ether	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
3- and/or 4-Methylphenol	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Nitroaniline	1690	U	1690	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Nitrophenol	1690	U J	1690	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Acenaphthene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Acenaphthylene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Anthracene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benz[a]anthracene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[a] pyrene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[b] fluoranthene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[g,h,i] perylene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[k] fluoranthene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Bis(2-chloroethoxy) methane	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2W6
1204018-12 (Soil)

5/11/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
Bis(2-chloroethyl) ether	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Bis(2-chloroisopropyl) ether	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Bis(2-ethylhexyl) phthalate	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Butyl Benzyl Phthalate	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Carbazole	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Chrysene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Dibenz[a,h]anthracene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Dibenzofuran	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Diethyl Phthalate	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Dimethyl Phthalate	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Di-n-butyl Phthalate	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Di-n-octyl Phthalate	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Fluoranthene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Fluorene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachlorobenzene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachlorobutadiene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachlorocyclopentadiene	337	U J	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachloroethane	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Indeno[1,2,3-cd]pyrene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Isophorone	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Naphthalene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Nitrobenzene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
N-Nitrosodi-n-propylamine	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
N-Nitrosodiphenylamine	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Pentachlorophenol	1690	U J	1690	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Phenanthrene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Phenol	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Pyrene	337	U	337	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
TIC:Unknown 1	**310**	J		ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
TIC:Aldol Condensate 1	**12500**	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Surrogate: 2-Fluorophenol	*53 %*		*25-121*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: Phenol-d5	*57 %*		*24-113*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*60 %*		*23-120*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: 2-Fluorobiphenyl	*60 %*		*30-115*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*30 %*		*19-122*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: p-Terphenyl-d14	*66 %*		*18-137*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*

000000050

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2W8
1204018-14 (Soil)

5/11/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
1,2,4-Trichlorobenzene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
1,2-Dichlorobenzene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
1,3-Dichlorobenzene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
1,4-Dichlorobenzene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4,5-Trichlorophenol	340	U J	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4,6-Trichlorophenol	340	U J	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dichlorophenol	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dimethylphenol	340	U 5/11/12	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dinitrophenol	1700	U J	1700	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,4-Dinitrotoluene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2,6-Dinitrotoluene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Chloronaphthalene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Chlorophenol	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Methylnaphthalene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Methylphenol	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Nitroaniline	1700	U	1700	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
2-Nitrophenol	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
3,3'-Dichlorobenzidine	680	U	680	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
3-Nitroaniline	1700	U	1700	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4,6-Dinitro-2-methylphenol	340	U J	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Bromophenyl Phenyl Ether	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Chloro-3-methylphenol	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Chloroaniline	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Chlorophenyl Phenyl Ether	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
3- and/or 4-Methylphenol	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Nitroaniline	1700	U	1700	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
4-Nitrophenol	1700	U J	1700	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Acenaphthene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Acenaphthylene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Anthracene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benz[a]anthracene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[a] pyrene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[b] fluoranthene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[g,h,i] perylene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Benzo[k] fluoranthene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Bis(2-chloroethoxy) methane	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2W8
1204018-14 (Soil)

5/11/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Semivolatile Organic Compounds by SW846 8270C									
Bis(2-chloroethyl) ether	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Bis(2-chloroisopropyl) ether	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Bis(2-ethylhexyl) phthalate	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Butyl Benzyl Phthalate	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Carbazole	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Chrysene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Dibenz[a,h]anthracene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Dibenzofuran	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Diethyl Phthalate	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Dimethyl Phthalate	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Di-n-butyl Phthalate	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Di-n-octyl Phthalate	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Fluoranthene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Fluorene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachlorobenzene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachlorobutadiene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachlorocyclopentadiene	340	U J	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Hexachloroethane	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Indeno[1,2,3-cd]pyrene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Isophorone	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Naphthalene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Nitrobenzene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
N-Nitrosodi-n-propylamine	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
N-Nitrosodiphenylamine	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Pentachlorophenol	1700	U J	1700	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Phenanthrene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Phenol	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Pyrene	340	U	340	ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
TIC:Unknown 1	**98.9**	J		ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
TIC:Unknown 2	**540**	J		ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
TIC:Aldol Condensate 1	**17200**	A, B, J		ug/kg dry	1	L204060	04/06/2012	04/12/2012	8270C
Surrogate: 2-Fluorophenol	*58 %*		*25-121*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: Phenol-d5	*59 %*		*24-113*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: Nitrobenzene-d5	*58 %*		*23-120*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: 2-Fluorobiphenyl	*58 %*		*30-115*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*
Surrogate: 2,4,6-Tribromophenol	*19 %*		*19-122*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*

000000052

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

J1N2W8
1204018-14 (Soil)

5/11/12

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory								
Semivolatile Organic Compounds by SW846 8270C								
Surrogate: p-Terphenyl-d14	*70 %*	*18-137*			*L204060*	*04/06/2012*	*04/12/2012*	*8270C*

000000053

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, Pennsylvania 19341
Phone (610) 280-3000
Fax (610) 280-3041

Case Narrative

Client: WC-HANFORD RC-029 K3857
LVL #: 1204018

W.O. #: 60049-001-001-0001-00
Date Received: 04-05-2012

SEMIVOLATILE

Thirteen (13) soil samples were collected on 04-13-2012.

The samples and associated QC samples were extracted 04-06-2012 and analyzed 04-11,12-2012 according to Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C, and the analysis procedure was based on SW846 Method 8270C for TCL Semivolatile target compounds.

Lionville Laboratory (LvL) 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. LvL certifies that all test results meet the requirements of NELAC with any exception noted in the following statements:

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

2. Samples were extracted and analyzed within holding time.

3. Non-target compounds were detected in these samples.

4. Three (3) of one hundred and two (102) surrogate recoveries were outside acceptance criteria. The loss of the surrogate 2,4,6-Tribromophenol in the samples J1N2W1, J1N2W4 and J1N2W5 appears to be due to a chemical reaction rather than to a problem with the extraction process. Peaks on the chromatogram indicate this reaction. The conversion compound has been reported as a non-target compound in sample J1N2W1 at a retention time of 18.143 minutes, in sample J1N2W4 at a retention time of 17.993 minutes and in sample J1N2W5 at a retention time of 18.000 minutes. This surrogate loss has been associated with the use of soxhlet extractions. All other surrogate recoveries were within QC acceptance criteria and samples were non detect for all target compounds. There is minimal impact on the data.

5. The method blank was below the reporting limit for all target compounds.

6. One (1) of sixty-four (64) blank spike recoveries were outside acceptance criteria. The recovery for 2,4-dinitrophenol was low in the BS. A copy of the Sample Discrepancy Report (SDR#12MS088) has been enclosed.

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 pages.

7. All matrix spike recoveries were within acceptance criteria.

8. The samples were reported on a dry weight basis.

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

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

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

12. 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").

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

Iain Daniels
LvL Laboratory Manager

4/20/12
Date

Lionville Laboratory Sample Discrepancy Report (SDR)

SDR #: 12MS08F

Initiator: Sharon Suglor
Date: 4-19-12
Client: WC Humbold RC-029 #3817

Batch: 1204018
Samples: L204060-051
Method: SW846/MCAWW/CLP/

Parameter: 8270C
Matrix: Soil
Prep Batch: L204060

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 2,4-dinitrophenol in L204060-051 10% (25-130%) MS/MSD within criteria

2. Known or Probable Causes(s) Acidic phenols subject to erratic chromatographic behavior

3. Discussion and Proposed Action

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

Other Description: narrate PGC 4/19/12

Sample results all nondetects for 2,4-dinitrophenol
minimal impact on the data

4. Project Manager Instructions...signature/date: 4/20/12

✓ 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: 4/20/12

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 for diposition.

Route
__ Lab Manager: Daniels
__ Project Mgr (circle): Johnson / Stone
__ Sample Prep (circle): ~~Ford~~
__ Log-in: King

Route
__ Metals: Welsh / _____
__ Inorganic: Perrone / _____
__ GC/LC: Carey / _____
__ MS VOA: Rubino / _____
__ MS BNA: Carden / _____
__ Other: _____

QA-139-A-0208

000000013

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-129	Page 1 of 1

Collector STOWE	Company Contact Joan Kessner	Telephone No. 375-4688	Project Coordinator KESSNER, JH
Price Code 8C	Data Turnaround 15 Days		
Project Designation Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location 600-290:2		SAF No. RC-029
Ice Chest No. ~~NA~~ AJ 4-3-12 RCC-08-023	Field Logbook No. EL-1601-06	COA C60290A000	Method of Shipment Fed Ex
Shipped To BH 1/23/12 ~~EBERLINE SERVICES~~ LIONVILLE	Offsite Property No. A 110 293		Bill of Lading/Air Bill No. ~~NA~~ AJ 4-3-12 See OSPC

000000005

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples may contain hazardous chemicals at levels that pose a risk to human health and/or the environment. Please handle accordingly.

Special Handling and/or Storage

Please keep cool (4 deg C) those requiring coolness, as shown on "Preservation" heading. Thank You.

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None						
Type of Container	G/P	G	aG	aG	G/P						
No. of Container(s)	1	1	1	1	1						
Volume	60mL	120mL	120mL	120mL	60mL						
SAMPLE ANALYSIS	See Item (1) in Special Instructions.	TPH-Diesel Range - WTPH-D +	Semi-VOA - 8270A (TCL)	PCBs - 8082	See Item (2) in Special Instructions.						
Sample No. / Matrix * / Sample Date / Sample Time											
J1N2V5 / SOIL / 4/3/12 / 1200	X	X	X	X							
J1N2V6 / SOIL / 4/3/12 / 1205	X	X	X	X							
J1N2V7 / SOIL / 4/3/12 / 1210	X	X	X	X							
J1N2V8 / SOIL / 4/3/12 / 1230	X	X	X	X							
J1N2V9 / SOIL / 4/3/12 / 1245	X	X	X	X							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	4/3/12 1405	B Hudson	4/3/12 1405
B Hudson	4/3/12 1440	A. Freier (1060#1)	4-3-12 1440
A. Freier (WCH) (1060#1)	4-4-12 1220	Fed Ex	
Fed Ex	4-5-12 1000	Victor Hernandez	4-5-12 1000

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out 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)
(2) Americium-241; Nickel-63; Isotopic Plutonium [Plutonium-238, Plutonium-239/240]; Strontium-89,90 -- Total Sr; Technetium-99 Low Level; Isotopic Uranium [Uranium-233/234, Uranium-235, Uranium-238]; Total Uranium

REVIEWED BY JR
DATE 4/4/12

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

5

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-129	Page 2 of 2
Collector: STOWE	Company Contact: Joan Kessner; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 8C; Data Turnaround: 15 Days
Project Designation: Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location: 600-290:2	SAF No.: RC-029	
Ice Chest No.: NA AJ 4-3-12 RCC-08-023	Field Logbook No.: EL-1601-06; COA: C60290A000	Method of Shipment: Fed Ex	
Shipped To: BH 1/17/12 ~~EBERLINE SERVICES~~ LIONVILLE	Offsite Property No.: A110293	Bill of Lading/Air Bill No.: NA AJ 4-3-12 See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples may contain hazardous chemicals at levels that pose a risk to human health and/or the environment. Please handle accordingly.

Special Handling and/or Storage

Please keep cool (4 deg C) those requiring coolness, as shown on "Preservation" heading. Thank You.

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None						
Type of Container	G/P	G	aG	aG	G/P						
No. of Container(s)	1	1	1	1	1						
Volume	60mL	120mL	120mL	120mL	60mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	TPH-Diesel Range - WTPH-D +	Semi-VOA - 8270A (TCL)	PCBs - 8082	See item (2) in Special Instructions.						
Sample No. / Matrix * / Sample Date / Sample Time											
J1N2W0 / SOIL / 4/3/12 / 1255	X	X	X	X							
J1N2W1 / SOIL / 4/3/12 / 1310	X	X	X	X							
J1N2W2 / SOIL / 4/3/12 / 1315	X	X	X	X							
J1N2W3 / SOIL / 4/3/12 / 1320	X	X	X	X							
J1N2W4 / SOIL / 4/3/12 / 1330	X	X	X	X							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	4/3/12 1405	BHudson BHudson	4/3/12 1405
BHUDSON BHudson	4/3/12 1440	1060M1 A. Freier A. Freier	4-3-12 1440
WCH 1060M1 A. Freier A. Freier	4-4-12 1220	Fed Ex	
Fed Ex	4-5-12 1000	Vitek Hernandez	4-5-12 1000

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out 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)
(2) Americium-241; Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 -- Total Sr; Technetium-99 Low Level; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium

REVIEWED BY JR DATE 4/4/12

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; Ve=Vegetation; X=Other

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

WCH-EE-011

53

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-129	Page 1 of 1

Collector: STOWE	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 Days		
Project Designation: Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location: 600-290:2		SAF No.: RC-029
Ice Chest No.: ~~NA~~ AJ 4-3-12 RCC-08-023	Field Logbook No.: BL-1601-06	COA: C60290A000	Method of Shipment: Fed Ex
Shipped To: ~~EBERLINE SERVICES~~ LIONVILLE	Offsite Property No.: A110293		Bill of Lading/Air Bill No.: ~~NK~~ AJ 4-3-12 See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples may contain hazardous chemicals at levels that pose a risk to human health and/or the environment. Please handle accordingly.

Special Handling and/or Storage

Please keep cool (4 deg C) those requiring coolness, as shown on "Preservation" heading. Thank You.

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None						
Type of Container	G/P	G	aG	aG	G/P						
No. of Container(s)	1	1	1	1	1						
Volume	60mL	120mL	120mL	120mL	60mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	TPH-Diesel Range - WTPH-D +	Semi-VOA - 8270A (TCL)	PCBs - 8082	See item (2) in Special Instructions.						
Sample No. / Matrix * / Sample Date / Sample Time											
J1N2W5 / SOIL / 4/3/12 / 1345	X	X	X	X							
J1N2W6 / SOIL / 4/3/12 / 1347	X	X	X	X							
J1N2W7 / SOIL / 4/3/12 / 1350	X										
J1N2W8 / SOIL / 4/3/12 / 1355	X	X	X	X							
~~J1N2W9~~ BH 4/3/12 / SOIL											

CHAIN OF POSSESSION	Date/Time	Sign/Print Names	Date/Time
Relinquished By/Removed From: Quincy Stowe	4/3/12 1405	Received By/Stored In: BHudson	4/3/12 1405
Relinquished By/Removed From: BHudson	4/3/12 1440	Received By/Stored In: 1060#1 A. Freier	4-3-12 1440
Relinquished By/Removed From: 1060#1 A. Freier	4-4-12 1220	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: Fed Ex	4-5-12 1000	Received By/Stored In: Vince Hernandez	4-5-12 1000
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out 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)
(2) Americium-241; Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 -- Total Sr; Technetium-99 Low Level; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium

REVIEWED BY JR
DATE 4/4/12

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

54

00000007

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 600-290:2			DATA PACKAGE: K3857		
VALIDATOR: ELR		LAB: LLI		DATE: 5/5/12	
			SDG: K3857		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J1N2V5	J1N2V6	J1N2V7	J1N2V8	J1N2V9	
J1N2W0	J1N2W1	J1N2W2	J1N2W3	J1N2W4	
J1N2W5	J1N2W6	J1N2W8			
					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: 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: W1, W4, W5 — surr J all assoc
LCS-1111 — J all MS-111 — J all
MSD-1111 — J all

no PAS

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

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

MS/MSD RPD values acceptable? ..... Yes No N/A

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

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

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

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

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

Comments: RPD - 111 - 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: 91 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:

Appendix 6

Additional Documentation Requested by Client

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L204060 - SW 3540C										
Blank (L204060-BLK1)				Prepared: 04/06/2012 Analyzed: 04/11/2012						
1,2,4-Trichlorobenzene	330	U	330	ug/kg wet						
1,2-Dichlorobenzene	330	U	330	ug/kg wet						
1,3-Dichlorobenzene	330	U	330	ug/kg wet						
1,4-Dichlorobenzene	330	U	330	ug/kg wet						
2,4,5-Trichlorophenol	330	U	330	ug/kg wet						
2,4,6-Trichlorophenol	330	U	330	ug/kg wet						
2,4-Dichlorophenol	330	U	330	ug/kg wet						
2,4-Dimethylphenol	330	U	330	ug/kg wet						
2,4-Dinitrophenol	1650	U	1650	ug/kg wet						
2,4-Dinitrotoluene	330	U	330	ug/kg wet						
2,6-Dinitrotoluene	330	U	330	ug/kg wet						
2-Chloronaphthalene	330	U	330	ug/kg wet						
2-Chlorophenol	330	U	330	ug/kg wet						
2-Methylnaphthalene	330	U	330	ug/kg wet						
2-Methylphenol	330	U	330	ug/kg wet						
2-Nitroaniline	1650	U	1650	ug/kg wet						
2-Nitrophenol	330	U	330	ug/kg wet						
3,3'-Dichlorobenzidine	660	U	660	ug/kg wet						
3-Nitroaniline	1650	U	1650	ug/kg wet						
4,6-Dinitro-2-methylphenol	330	U	330	ug/kg wet						
4-Bromophenyl Phenyl Ether	330	U	330	ug/kg wet						
4-Chloro-3-methylphenol	330	U	330	ug/kg wet						
4-Chloroaniline	330	U	330	ug/kg wet						
4-Chlorophenyl Phenyl Ether	330	U	330	ug/kg wet						
3- and/or 4-Methylphenol	330	U	330	ug/kg wet						
4-Nitroaniline	1650	U	1650	ug/kg wet						
4-Nitrophenol	1650	U	1650	ug/kg wet						
Acenaphthene	330	U	330	ug/kg wet						
Acenaphthylene	330	U	330	ug/kg wet						
Anthracene	330	U	330	ug/kg wet						
Benz[a]anthracene	330	U	330	ug/kg wet						
Benzo[a] pyrene	330	U	330	ug/kg wet						
Benzo[b] fluoranthene	330	U	330	ug/kg wet						
Benzo[g,h,i] perylene	330	U	330	ug/kg wet						
Benzo[k] fluoranthene	330	U	330	ug/kg wet						
Bis(2-chloroethoxy) methane	330	U	330	ug/kg wet						

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L204060 - SW 3540C										
Blank (L204060-BLK1)				Prepared: 04/06/2012 Analyzed: 04/11/2012						
Bis(2-chloroethyl) ether	330	U	330	ug/kg wet						
Bis(2-chloroisopropyl) ether	330	U	330	ug/kg wet						
Bis(2-ethylhexyl) phthalate	330	U	330	ug/kg wet						
Butyl Benzyl Phthalate	330	U	330	ug/kg wet						
Carbazole	330	U	330	ug/kg wet						
Chrysene	330	U	330	ug/kg wet						
Dibenz[a,h]anthracene	330	U	330	ug/kg wet						
Dibenzofuran	330	U	330	ug/kg wet						
Diethyl Phthalate	330	U	330	ug/kg wet						
Dimethyl Phthalate	330	U	330	ug/kg wet						
Di-n-butyl Phthalate	330	U	330	ug/kg wet						
Di-n-octyl Phthalate	330	U	330	ug/kg wet						
Fluoranthene	330	U	330	ug/kg wet						
Fluorene	330	U	330	ug/kg wet						
Hexachlorobenzene	330	U	330	ug/kg wet						
Hexachlorobutadiene	330	U	330	ug/kg wet						
Hexachlorocyclopentadiene	330	U	330	ug/kg wet						
Hexachloroethane	330	U	330	ug/kg wet						
Indeno[1,2,3-cd]pyrene	330	U	330	ug/kg wet						
Isophorone	330	U	330	ug/kg wet						
Naphthalene	330	U	330	ug/kg wet						
Nitrobenzene	330	U	330	ug/kg wet						
N-Nitrosodi-n-propylamine	330	U	330	ug/kg wet						
N-Nitrosodiphenylamine	330	U	330	ug/kg wet						
Pentachlorophenol	1650	U	1650	ug/kg wet						
Phenanthrene	330	U	330	ug/kg wet						
Phenol	330	U	330	ug/kg wet						
Pyrene	330	U	330	ug/kg wet						
Trichloro-1-propene TICS	71.7	J		ug/kg wet						
Aldol Condensate 2	18700	A, J		ug/kg wet						
Aldol Condensate 4	311	A, J		ug/kg wet						
Aldol Condensate 3	69.9	A, J		ug/kg wet						
Aldol Condensate 1	157	A, J		ug/kg wet						
Surrogate: 2-Fluorophenol	*1240*			*ug/kg wet*	*2500.0*		*50*	*25-121*		
Surrogate: Phenol-d5	*1270*			*ug/kg wet*	*2500.0*		*51*	*24-113*		
Surrogate: Nitrobenzene-d5	*872*			*ug/kg wet*	*1666.7*		*52*	*23-120*		

PBC 4/19/12

000000055

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L204060 - SW 3540C										
Blank (L204060-BLK1)				Prepared: 04/06/2012 Analyzed: 04/11/2012						
Surrogate: 2-Fluorobiphenyl	*897*			*ug/kg wet*	*1666.7*		*54*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*898*			*ug/kg wet*	*2500.0*		*36*	*19-122*		
Surrogate: p-Terphenyl-d14	*1020*			*ug/kg wet*	*1666.7*		*61*	*18-137*		
LCS (L204060-BS1)				Prepared: 04/06/2012 Analyzed: 04/11/2012						
1,2,4-Trichlorobenzene	1280		330	ug/kg wet	2000.0		64	45-110		
1,2-Dichlorobenzene	1300		330	ug/kg wet	2000.0		65	45-105		
1,3-Dichlorobenzene	1300		330	ug/kg wet	2000.0		65	40-100		
1,4-Dichlorobenzene	1280		330	ug/kg wet	2000.0		64	35-105		
2,4,5-Trichlorophenol	1410		330	ug/kg wet	2000.0		70	30-140		
2,4,6-Trichlorophenol	1340		330	ug/kg wet	2000.0		67	20-110		
2,4-Dichlorophenol	1330		330	ug/kg wet	2000.0		67	40-110		
2,4-Dimethylphenol	1000		330	ug/kg wet	2000.0		50	30-105		
2,4-Dinitrophenol	199	J	1650	ug/kg wet	2000.0		10*	25-130		
2,4-Dinitrotoluene	1450		330	ug/kg wet	2000.0		73	50-115		
2,6-Dinitrotoluene	1430		330	ug/kg wet	2000.0		72	40-120		
2-Chloronaphthalene	1330		330	ug/kg wet	2000.0		67	45-115		
2-Chlorophenol	1360		330	ug/kg wet	2000.0		68	45-105		
2-Methylnaphthalene	1330		330	ug/kg wet	2000.0		67	45-110		
2-Methylphenol	1350		330	ug/kg wet	2000.0		67	40-120		
2-Nitroaniline	1570	J	1650	ug/kg wet	2000.0		79	45-120		
2-Nitrophenol	1370		330	ug/kg wet	2000.0		68	40-110		
3,3'-Dichlorobenzidine	1100		660	ug/kg wet	2000.0		55	15-130		
3-Nitroaniline	1470	J	1650	ug/kg wet	2000.0		74	40-130		
4,6-Dinitro-2-methylphenol	660		330	ug/kg wet	2000.0		33	20-140		
4-Bromophenyl Phenyl Ether	1310		330	ug/kg wet	2000.0		65	45-115		
4-Chloro-3-methylphenol	1390		330	ug/kg wet	2000.0		69	35-115		
4-Chloroaniline	1000		330	ug/kg wet	2000.0		50	10-100		
4-Chlorophenyl Phenyl Ether	1360		330	ug/kg wet	2000.0		68	45-110		
3- and/or 4-Methylphenol	1400		330	ug/kg wet	2000.0		70	40-120		
4-Nitroaniline	1380	J	1650	ug/kg wet	2000.0		69	40-130		
4-Nitrophenol	1520	J	1650	ug/kg wet	2000.0		76	15-140		
Acenaphthene	1340		330	ug/kg wet	2000.0		67	45-110		
Acenaphthylene	1150		330	ug/kg wet	2000.0		58	45-115		
Anthracene	1380		330	ug/kg wet	2000.0		69	45-130		
Benz[a]anthracene	1470		330	ug/kg wet	2000.0		74	45-130		
Benzo[a] pyrene	1350		330	ug/kg wet	2000.0		68	45-130		

000000056

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L204060 - SW 3540C										
LCS (L204060-BS1)				Prepared: 04/06/2012 Analyzed: 04/11/2012						
Benzo[b] fluoranthene	1420		330	ug/kg wet	2000.0		71	40-130		
Benzo[g,h,i] perylene	1400		330	ug/kg wet	2000.0		70	45-125		
Benzo[k] fluoranthene	1440		330	ug/kg wet	2000.0		72	45-125		
Bis(2-chloroethoxy) methane	1370		330	ug/kg wet	2000.0		69	45-110		
Bis(2-chloroethyl) ether	1480		330	ug/kg wet	2000.0		74	40-110		
Bis(2-chloroisopropyl) ether	1400		330	ug/kg wet	2000.0		70	30-115		
Bis(2-ethylhexyl) phthalate	1670		330	ug/kg wet	2000.0		84	40-145		
Butyl Benzyl Phthalate	1590		330	ug/kg wet	2000.0		79	50-125		
Carbazole	1810		330	ug/kg wet	2000.0		91	40-140		
Chrysene	1530		330	ug/kg wet	2000.0		76	45-130		
Dibenz[a,h]anthracene	1260		330	ug/kg wet	2000.0		63	45-125		
Dibenzofuran	1420		330	ug/kg wet	2000.0		71	45-120		
Diethyl Phthalate	1410		330	ug/kg wet	2000.0		71	50-125		
Dimethyl Phthalate	1350		330	ug/kg wet	2000.0		68	45-130		
Di-n-butyl Phthalate	1410		330	ug/kg wet	2000.0		71	50-130		
Di-n-octyl Phthalate	1690		330	ug/kg wet	2000.0		85	40-150		
Fluoranthene	1450		330	ug/kg wet	2000.0		72	45-130		
Fluorene	1390		330	ug/kg wet	2000.0		69	45-120		
Hexachlorobenzene	1310		330	ug/kg wet	2000.0		66	45-130		
Hexachlorobutadiene	1350		330	ug/kg wet	2000.0		67	45-105		
Hexachlorocyclopentadiene	329	J	330	ug/kg wet	2000.0		16	10-100		
Hexachloroethane	1250		330	ug/kg wet	2000.0		62	35-110		
Indeno[1,2,3-cd]pyrene	1360		330	ug/kg wet	2000.0		68	45-130		
Isophorone	1290		330	ug/kg wet	2000.0		65	40-110		
Naphthalene	1490		330	ug/kg wet	2000.0		74	40-110		
Nitrobenzene	1360		330	ug/kg wet	2000.0		68	40-105		
N-Nitrosodi-n-propylamine	1410		330	ug/kg wet	2000.0		71	30-130		
N-Nitrosodiphenylamine	1400		330	ug/kg wet	2000.0		70	50-120		
Pentachlorophenol	868	J	1650	ug/kg wet	2000.0		43	25-120		
Phenanthrene	1450		330	ug/kg wet	2000.0		73	50-120		
Phenol	1320		330	ug/kg wet	2000.0		66	40-115		
Pyrene	1440		330	ug/kg wet	2000.0		72	45-125		
Surrogate: 2-Fluorophenol	*1760*			*ug/kg wet*	*2500.0*		*70*	*25-121*		
Surrogate: Phenol-d5	*1820*			*ug/kg wet*	*2500.0*		*73*	*24-113*		
Surrogate: Nitrobenzene-d5	*1210*			*ug/kg wet*	*1666.7*		*73*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1190*			*ug/kg wet*	*1666.7*		*72*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*1680*			*ug/kg wet*	*2500.0*		*67*	*19-122*		

000000057

LIONVILLE LABORATORY
A division of Pioneer Analytical Corporation

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L204060 - SW 3540C										
LCS (L204060-BS1)				Prepared: 04/06/2012 Analyzed: 04/11/2012						
Surrogate: p-Terphenyl-d14	*1280*			*ug/kg wet*	*1666.7*		*77*	*18-137*		
Matrix Spike (L204060-MS2)		Source: 1204018-01		Prepared: 04/06/2012 Analyzed: 04/11/2012						
1,2,4-Trichlorobenzene	1180		354	ug/kg dry	2144.7	353 U	55	45-110		
1,2-Dichlorobenzene	1190		354	ug/kg dry	2144.7	353 U	56	45-105		
1,3-Dichlorobenzene	1180		354	ug/kg dry	2144.7	353 U	55	40-100		
1,4-Dichlorobenzene	1170		354	ug/kg dry	2144.7	353 U	55	35-105		
2,4,5-Trichlorophenol	1320		354	ug/kg dry	2144.7	353 U	62	30-140		
2,4,6-Trichlorophenol	991		354	ug/kg dry	2144.7	353 U	46	20-110		
2,4-Dichlorophenol	1330		354	ug/kg dry	2144.7	353 U	62	40-110		
2,4-Dimethylphenol	1350		354	ug/kg dry	2144.7	353 U	63	30-105		
2,4-Dinitrophenol	1670	J	1770	ug/kg dry	2144.7	1770 U	78	25-130		
2,4-Dinitrotoluene	1430		354	ug/kg dry	2144.7	353 U	67	50-115		
2,6-Dinitrotoluene	1380		354	ug/kg dry	2144.7	353 U	64	40-120		
2-Chloronaphthalene	1270		354	ug/kg dry	2144.7	353 U	59	45-115		
2-Chlorophenol	1290		354	ug/kg dry	2144.7	353 U	60	45-105		
2-Methylnaphthalene	1320		354	ug/kg dry	2144.7	353 U	61	45-110		
2-Methylphenol	1370		354	ug/kg dry	2144.7	353 U	64	40-120		
2-Nitroaniline	1540	J	1770	ug/kg dry	2144.7	1770 U	72	45-120		
2-Nitrophenol	1340		354	ug/kg dry	2144.7	353 U	62	40-110		
3,3'-Dichlorobenzidine	1250		708	ug/kg dry	2144.7	706 U	59	15-130		
3-Nitroaniline	1530	J	1770	ug/kg dry	2144.7	1770 U	71	40-130		
4,6-Dinitro-2-methylphenol	1690		354	ug/kg dry	2144.7	353 U	79	20-140		
4-Bromophenyl Phenyl Ether	1320		354	ug/kg dry	2144.7	353 U	62	45-115		
4-Chloro-3-methylphenol	1390		354	ug/kg dry	2144.7	353 U	65	35-115		
4-Chloroaniline	1250		354	ug/kg dry	2144.7	353 U	58	10-100		
4-Chlorophenyl Phenyl Ether	1340		354	ug/kg dry	2144.7	353 U	62	45-110		
3- and/or 4-Methylphenol	1350		354	ug/kg dry	2144.7	353 U	63	40-120		
4-Nitroaniline	1650	J	1770	ug/kg dry	2144.7	1770 U	77	40-130		
4-Nitrophenol	1100	J	1770	ug/kg dry	2144.7	1770 U	51	15-140		
Acenaphthene	1310		354	ug/kg dry	2144.7	353 U	61	45-110		
Acenaphthylene	1160		354	ug/kg dry	2144.7	353 U	54	45-115		
Anthracene	1390		354	ug/kg dry	2144.7	353 U	65	45-130		
Benz[a]anthracene	1470		354	ug/kg dry	2144.7	353 U	69	45-130		
Benzo[a] pyrene	1360		354	ug/kg dry	2144.7	353 U	63	45-130		
Benzo[b] fluoranthene	1300		354	ug/kg dry	2144.7	353 U	61	40-130		
Benzo[g,h,i] perylene	1320		354	ug/kg dry	2144.7	353 U	62	45-125		

000000058

LVL LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L204060 - SW 3540C										
Matrix Spike (L204060-MS2)		**Source: 1204018-01**		Prepared: 04/06/2012 Analyzed: 04/11/2012						
Benzo[k] fluoranthene	1520		354	ug/kg dry	2144.7	353 U	71	45-125		
Bis(2-chloroethoxy) methane	1340		354	ug/kg dry	2144.7	353 U	62	45-110		
Bis(2-chloroethyl) ether	1330		354	ug/kg dry	2144.7	353 U	62	40-110		
Bis(2-chloroisopropyl) ether	1310		354	ug/kg dry	2144.7	353 U	61	30-115		
Bis(2-ethylhexyl) phthalate	1610		354	ug/kg dry	2144.7	353 U	75	40-145		
Butyl Benzyl Phthalate	1580		354	ug/kg dry	2144.7	353 U	74	50-125		
Carbazole	1760		354	ug/kg dry	2144.7	353 U	82	40-140		
Chrysene	1480		354	ug/kg dry	2144.7	353 U	69	45-130		
Dibenz[a,h]anthracene	1220		354	ug/kg dry	2144.7	353 U	57	45-125		
Dibenzofuran	1390		354	ug/kg dry	2144.7	353 U	65	45-120		
Diethyl Phthalate	1370		354	ug/kg dry	2144.7	353 U	64	50-125		
Dimethyl Phthalate	1290		354	ug/kg dry	2144.7	353 U	60	45-130		
Di-n-butyl Phthalate	1390		354	ug/kg dry	2144.7	353 U	65	50-130		
Di-n-octyl Phthalate	1700		354	ug/kg dry	2144.7	353 U	79	40-150		
Fluoranthene	1430		354	ug/kg dry	2144.7	353 U	67	45-130		
Fluorene	1350		354	ug/kg dry	2144.7	353 U	63	45-120		
Hexachlorobenzene	1320		354	ug/kg dry	2144.7	353 U	61	45-130		
Hexachlorobutadiene	1260		354	ug/kg dry	2144.7	353 U	59	45-105		
Hexachlorocyclopentadiene	563		354	ug/kg dry	2144.7	353 U	26	10-100		
Hexachloroethane	1130		354	ug/kg dry	2144.7	353 U	53	35-110		
Indeno[1,2,3-cd]pyrene	1310		354	ug/kg dry	2144.7	353 U	61	45-130		
Isophorone	1250		354	ug/kg dry	2144.7	353 U	58	40-110		
Naphthalene	1400		354	ug/kg dry	2144.7	353 U	65	40-110		
Nitrobenzene	1290		354	ug/kg dry	2144.7	353 U	60	40-105		
N-Nitrosodi-n-propylamine	1320		354	ug/kg dry	2144.7	353 U	61	30-130		
N-Nitrosodiphenylamine	1410		354	ug/kg dry	2144.7	353 U	66	50-120		
Pentachlorophenol	1020	J	1770	ug/kg dry	2144.7	1770 U	47	25-120		
Phenanthrene	1420		354	ug/kg dry	2144.7	353 U	66	50-120		
Phenol	1230		354	ug/kg dry	2144.7	353 U	57	40-115		
Pyrene	1400		354	ug/kg dry	2144.7	353 U	65	45-125		
Surrogate: 2-Fluorophenol	*1730*			*ug/kg dry*	*2680.8*		*64*	*25-121*		
Surrogate: Phenol-d5	*1760*			*ug/kg dry*	*2680.8*		*66*	*24-113*		
Surrogate: Nitrobenzene-d5	*1200*			*ug/kg dry*	*1787.2*		*67*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1170*			*ug/kg dry*	*1787.2*		*66*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*1170*			*ug/kg dry*	*2680.8*		*43*	*19-122*		
Surrogate: p-Terphenyl-d14	*1320*			*ug/kg dry*	*1787.2*		*74*	*18-137*		

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L204060 - SW 3540C										
Matrix Spike Dup (L204060-MSD2)		**Source: 1204018-01**		**Prepared: 04/06/2012 Analyzed: 04/11/2012**						
1,2,4-Trichlorobenzene	1290		365	ug/kg dry	2210.7	353 U	58	45-110	6	40
1,2-Dichlorobenzene	1270		365	ug/kg dry	2210.7	353 U	58	45-105	3	40
1,3-Dichlorobenzene	1270		365	ug/kg dry	2210.7	353 U	57	40-100	4	40
1,4-Dichlorobenzene	1250		365	ug/kg dry	2210.7	353 U	56	35-105	3	40
2,4,5-Trichlorophenol	971		365	ug/kg dry	2210.7	353 U	44	30-140	34	40
2,4,6-Trichlorophenol	548		365	ug/kg dry	2210.7	353 U	25	20-110	60*	40
2,4-Dichlorophenol	1380		365	ug/kg dry	2210.7	353 U	62	40-110	0.6	40
2,4-Dimethylphenol	1440		365	ug/kg dry	2210.7	353 U	65	30-105	4	40
2,4-Dinitrophenol	2210		1820	ug/kg dry	2210.7	1770 U	100	25-130	25	40
2,4-Dinitrotoluene	1620		365	ug/kg dry	2210.7	353 U	73	50-115	9	40
2,6-Dinitrotoluene	1590		365	ug/kg dry	2210.7	353 U	72	40-120	11	40
2-Chloronaphthalene	1410		365	ug/kg dry	2210.7	353 U	64	45-115	7	40
2-Chlorophenol	1370		365	ug/kg dry	2210.7	353 U	62	45-105	3	40
2-Methylnaphthalene	1420		365	ug/kg dry	2210.7	353 U	64	45-110	5	40
2-Methylphenol	1440		365	ug/kg dry	2210.7	353 U	65	40-120	2	40
2-Nitroaniline	1710	J	1820	ug/kg dry	2210.7	1770 U	77	45-120	7	40
2-Nitrophenol	1430		365	ug/kg dry	2210.7	353 U	65	40-110	4	40
3,3'-Dichlorobenzidine	1260		730	ug/kg dry	2210.7	706 U	57	15-130	3	40
3-Nitroaniline	1670	J	1820	ug/kg dry	2210.7	1770 U	76	40-130	6	40
4,6-Dinitro-2-methylphenol	2010		365	ug/kg dry	2210.7	353 U	91	20-140	14	40
4-Bromophenyl Phenyl Ether	1430		365	ug/kg dry	2210.7	353 U	64	45-115	5	40
4-Chloro-3-methylphenol	1540		365	ug/kg dry	2210.7	353 U	70	35-115	7	40
4-Chloroaniline	1250		365	ug/kg dry	2210.7	353 U	56	10-100	3	40
4-Chlorophenyl Phenyl Ether	1480		365	ug/kg dry	2210.7	353 U	67	45-110	7	40
3- and/or 4-Methylphenol	1500		365	ug/kg dry	2210.7	353 U	68	40-120	8	40
4-Nitroaniline	1680	J	1820	ug/kg dry	2210.7	1770 U	76	40-130	1	40
4-Nitrophenol	1850		1820	ug/kg dry	2210.7	1770 U	84	15-140	48*	40
Acenaphthene	1430		365	ug/kg dry	2210.7	353 U	65	45-110	6	40
Acenaphthylene	1270		365	ug/kg dry	2210.7	353 U	57	45-115	6	40
Anthracene	1500		365	ug/kg dry	2210.7	353 U	68	45-130	4	40
Benz[a]anthracene	1610		365	ug/kg dry	2210.7	353 U	73	45-130	6	40
Benzo[a] pyrene	1470		365	ug/kg dry	2210.7	353 U	66	45-130	5	40
Benzo[b] fluoranthene	1630		365	ug/kg dry	2210.7	353 U	74	40-130	19	40
Benzo[g,h,i] perylene	1480		365	ug/kg dry	2210.7	353 U	67	45-125	9	40
Benzo[k] fluoranthene	1360		365	ug/kg dry	2210.7	353 U	61	45-125	14	40
Bis(2-chloroethoxy) methane	1440		365	ug/kg dry	2210.7	353 U	65	45-110	5	40

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/19/2012 13:23

Semivolatile Organic Compounds by SW846 8270C - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L204060 - SW 3540C										
Matrix Spike Dup (L204060-MSD2)		**Source: 1204018-01**		Prepared: 04/06/2012 Analyzed: 04/11/2012						
Bis(2-chloroethyl) ether	1470		365	ug/kg dry	2210.7	353 U	66	40-110	7	40
Bis(2-chloroisopropyl) ether	1440		365	ug/kg dry	2210.7	353 U	65	30-115	7	40
Bis(2-ethylhexyl) phthalate	1820		365	ug/kg dry	2210.7	353 U	82	40-145	9	40
Butyl Benzyl Phthalate	1740		365	ug/kg dry	2210.7	353 U	79	50-125	7	40
Carbazole	1920		365	ug/kg dry	2210.7	353 U	87	40-140	5	40
Chrysene	1640		365	ug/kg dry	2210.7	353 U	74	45-130	7	40
Dibenz[a,h]anthracene	1440		365	ug/kg dry	2210.7	353 U	65	45-125	13	40
Dibenzofuran	1530		365	ug/kg dry	2210.7	353 U	69	45-120	7	40
Diethyl Phthalate	1580		365	ug/kg dry	2210.7	353 U	71	50-125	11	40
Dimethyl Phthalate	1450		365	ug/kg dry	2210.7	353 U	66	45-130	9	40
Di-n-butyl Phthalate	1560		365	ug/kg dry	2210.7	353 U	70	50-130	8	40
Di-n-octyl Phthalate	1870		365	ug/kg dry	2210.7	353 U	85	40-150	7	40
Fluoranthene	1600		365	ug/kg dry	2210.7	353 U	72	45-130	8	40
Fluorene	1540		365	ug/kg dry	2210.7	353 U	70	45-120	10	40
Hexachlorobenzene	1450		365	ug/kg dry	2210.7	353 U	66	45-130	7	40
Hexachlorobutadiene	1390		365	ug/kg dry	2210.7	353 U	63	45-105	7	40
Hexachlorocyclopentadiene	458		365	ug/kg dry	2210.7	353 U	21	10-100	24	40
Hexachloroethane	1240		365	ug/kg dry	2210.7	353 U	56	35-110	6	40
Indeno[1,2,3-cd]pyrene	1490		365	ug/kg dry	2210.7	353 U	67	45-130	10	40
Isophorone	1350		365	ug/kg dry	2210.7	353 U	61	40-110	5	40
Naphthalene	1540		365	ug/kg dry	2210.7	353 U	70	40-110	6	40
Nitrobenzene	1400		365	ug/kg dry	2210.7	353 U	63	40-105	5	40
N-Nitrosodi-n-propylamine	1400		365	ug/kg dry	2210.7	353 U	63	30-130	3	40
N-Nitrosodiphenylamine	1540		365	ug/kg dry	2210.7	353 U	69	50-120	6	40
Pentachlorophenol	814	J	1820	ug/kg dry	2210.7	1770 U	37	25-120	25	40
Phenanthrene	1560		365	ug/kg dry	2210.7	353 U	71	50-120	6	40
Phenol	1350		365	ug/kg dry	2210.7	353 U	61	40-115	7	40
Pyrene	1460		365	ug/kg dry	2210.7	353 U	66	45-125	1	40
Surrogate: 2-Fluorophenol	*1800*			*ug/kg dry*	*2763.4*		*65*	*25-121*		
Surrogate: Phenol-d5	*1890*			*ug/kg dry*	*2763.4*		*68*	*24-113*		
Surrogate: Nitrobenzene-d5	*1270*			*ug/kg dry*	*1842.3*		*69*	*23-120*		
Surrogate: 2-Fluorobiphenyl	*1240*			*ug/kg dry*	*1842.3*		*67*	*30-115*		
Surrogate: 2,4,6-Tribromophenol	*771*			*ug/kg dry*	*2763.4*		*28*	*19-122*		
Surrogate: p-Terphenyl-d14	*1360*			*ug/kg dry*	*1842.3*		*74*	*18-137*		

Date: 7 May 2012
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: Remaining Sites Confirmation Sampling – Soil Full Protocol – Waste Site 600-290:2
Subject: Diesel Range Organics - Data Package No. K3857-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K3857 prepared by Lionville Laboratories 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
J1N2V5	4/3/12	Soil	C	See note 1
J1N2V6	4/3/12	Soil	C	See note 1
J1N2V7	4/3/12	Soil	C	See note 1
J1N2V8	4/3/12	Soil	C	See note 1
J1N2V9	4/3/12	Soil	C	See note 1
J1N2W0	4/3/12	Soil	C	See note 1
J1N2W1	4/3/12	Soil	C	See note 1
J1N2W2	4/3/12	Soil	C	See note 1
J1N2W3	4/3/12	Soil	C	See note 1
J1N2W4	4/3/12	Soil	C	See note 1
J1N2W5	4/3/12	Soil	C	See note 1
J1N2W6	4/3/12	Soil	C	See note 1
J1N2W8	4/3/12	Soil	C	See note 1

1 – NWTPH-Dx.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 300 Area Remedial Action Sampling and Analysis Plan (DOE/RL-2001-48, Rev. 3). 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 Data Requested by Client

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 acceptable.

Method Blanks

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

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike 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 the lack of a matrix spike, matrix spike duplicate and LCS analysis, all motor oil 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

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

All other laboratory 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. All undetected motor oil results exceeded the RQL. Under the WCH statement of work, no qualification is required. All other RQL were met.

- **Completeness**

Data package No. K3857 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 the lack of a matrix spike, matrix spike duplicate and LCS analysis, all motor oil 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.

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

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-2001-48, Rev. 3, *300 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, May 2004.

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

DIESEL RANGE ORGANICS DATA QUALIFICATION SUMMARY*

SDG: K3857	REVIEWER: ELR	Project: 600-290:2	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Motor oil	J	All	No MS, MSD or LCS analysis

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

Appendix 3

Annotated Laboratory Reports

LIONVILLE LABORATORY
A Division of Fourline Analytical Corporation

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/11/2012 19:26

M 5/6/12

Extractable Petroleum Hydrocarbons by SW846 8015
Lionville Laboratory

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
J1N2V5 (1204018-01) Soil								
Surrogate: p-Terphenyl	*72 %*	*39-129*			*L204050*	*04/05/2012*	*04/07/2012*	*8015M*
Diesel Range Organics	3480 U	3480	ug/kg dry	1	L204050	04/05/2012	04/07/2012	8015M
Motor Oil	10400 U J	10400	ug/kg dry	1	L204050	04/05/2012	04/07/2012	8015M
J1N2V6 (1204018-02) Soil								
Surrogate: p-Terphenyl	*74 %*	*39-129*			*L204050*	*04/05/2012*	*04/07/2012*	*8015M*
Diesel Range Organics	3450 U	3450	ug/kg dry	1	L204050	04/05/2012	04/07/2012	8015M
Motor Oil	10400 U J	10400	ug/kg dry	1	L204050	04/05/2012	04/07/2012	8015M
J1N2V7 (1204018-03) Soil								
Surrogate: p-Terphenyl	*60 %*	*39-129*			*L204050*	*04/05/2012*	*04/07/2012*	*8015M*
Diesel Range Organics	3520 U	3520	ug/kg dry	1	L204050	04/05/2012	04/07/2012	8015M
Motor Oil	10600 U J	10600	ug/kg dry	1	L204050	04/05/2012	04/07/2012	8015M
J1N2V8 (1204018-04) Soil								
Surrogate: p-Terphenyl	*86 %*	*39-129*			*L204050*	*04/05/2012*	*04/08/2012*	*8015M*
Diesel Range Organics	3500 U	3500	ug/kg dry	1	L204050	04/05/2012	04/08/2012	8015M
Motor Oil	10500 U J	10500	ug/kg dry	1	L204050	04/05/2012	04/08/2012	8015M
J1N2V9 (1204018-05) Soil								
Surrogate: p-Terphenyl	*74 %*	*39-129*			*L204050*	*04/05/2012*	*04/08/2012*	*8015M*
Diesel Range Organics	3450 U	3450	ug/kg dry	1	L204050	04/05/2012	04/08/2012	8015M
Motor Oil	4780 J J	10400	ug/kg dry	1	L204050	04/05/2012	04/08/2012	8015M
J1N2W0 (1204018-06) Soil								
Surrogate: p-Terphenyl	*71 %*	*39-129*			*L204050*	*04/05/2012*	*04/08/2012*	*8015M*
Diesel Range Organics	3370 U	3370	ug/kg dry	1	L204050	04/05/2012	04/08/2012	8015M
Motor Oil	7440 J J	10100	ug/kg dry	1	L204050	04/05/2012	04/08/2012	8015M

LVL
LIONVILLE LABORATORY
A division of Phoenix Analytical Corporation

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

✓ 5/6/12

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	**Reported:** 04/11/2012 19:26

Extractable Petroleum Hydrocarbons by SW846 8015
Lionville Laboratory

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
J1N2W1 (1204018-07) Soil								
Surrogate: p-Terphenyl	*77 %*	*39-129*			*L204050*	*04/05/2012*	*04/08/2012*	*8015M*
Diesel Range Organics	3400 U	3400	ug/kg dry	1	L204050	04/05/2012	04/08/2012	8015M
Motor Oil	5000 J J	10200	ug/kg dry	1	L204050	04/05/2012	04/08/2012	8015M
J1N2W2 (1204018-08) Soil								
Surrogate: p-Terphenyl	*75 %*	*39-129*			*L204050*	*04/05/2012*	*04/08/2012*	*8015M*
Diesel Range Organics	3480 U	3480	ug/kg dry	1	L204050	04/05/2012	04/08/2012	8015M
Motor Oil	10500 U J	10500	ug/kg dry	1	L204050	04/05/2012	04/08/2012	8015M
J1N2W3 (1204018-09) Soil								
Surrogate: p-Terphenyl	*71 %*	*39-129*			*L204050*	*04/05/2012*	*04/08/2012*	*8015M*
Diesel Range Organics	3320 U	3320	ug/kg dry	1	L204050	04/05/2012	04/08/2012	8015M
Motor Oil	9950 U J	9950	ug/kg dry	1	L204050	04/05/2012	04/08/2012	8015M
J1N2W4 (1204018-10) Soil								
Surrogate: p-Terphenyl	*75 %*	*39-129*			*L204050*	*04/05/2012*	*04/08/2012*	*8015M*
Diesel Range Organics	3390 U	3390	ug/kg dry	1	L204050	04/05/2012	04/08/2012	8015M
Motor Oil	10200 U J	10200	ug/kg dry	1	L204050	04/05/2012	04/08/2012	8015M
J1N2W5 (1204018-11) Soil								
Surrogate: p-Terphenyl	*80 %*	*39-129*			*L204050*	*04/05/2012*	*04/08/2012*	*8015M*
Diesel Range Organics	3370 U	3370	ug/kg dry	1	L204050	04/05/2012	04/08/2012	8015M
Motor Oil	16600 J	10100	ug/kg dry	1	L204050	04/05/2012	04/08/2012	8015M
J1N2W6 (1204018-12) Soil								
Surrogate: p-Terphenyl	*82 %*	*39-129*			*L204050*	*04/05/2012*	*04/08/2012*	*8015M*
Diesel Range Organics	3410 U	3410	ug/kg dry	1	L204050	04/05/2012	04/08/2012	8015M
Motor Oil	25800 J	10200	ug/kg dry	1	L204050	04/05/2012	04/08/2012	8015M

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/11/2012 19:26

Extractable Petroleum Hydrocarbons by SW846 8015
Lionville Laboratory

Analyte	Result and Qualifier	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
J1N2W8 (1204018-14) Soil								
Surrogate: p-Terphenyl	*82 %*	*39-129*			*L204050*	*04/05/2012*	*04/08/2012*	*8015M*
Diesel Range Organics	3420 U	3420	ug/kg dry	1	L204050	04/05/2012	04/08/2012	8015M
Motor Oil	10300 U J	10300	ug/kg dry	1	L204050	04/05/2012	04/08/2012	8015M

5/4/12

000000090

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, Pennsylvania 19341
Phone (610) 280-3000
Fax (610) 280-3041

Case Narrative

Client: WC-HANFORD RC-029 K3857
LVL #: 1204018

W.O. #: 60049-001-001-0001-00
Date Received: 04-05-2012

DIESEL RANGE ORGANICS

Thirteen (13) soil samples were collected on 04-03-2012.

The samples and associated QC samples were extracted 04-05-2012 and analyzed 04-07,08-2012 according to criteria set forth in Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C and the analysis procedure was based on SW846 Method 8015B for Diesel Range Organics.

Lionville Laboratory (LvL) 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. LvL certifies that all test results meet the requirements of NELAC with any exception noted in the following statements:

1. The results presented in this report are derived from samples that met LvL's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. All obtainable surrogate recoveries were within acceptance criteria.
4. The method blank was below the reporting limits for all target compounds.
5. All blank spike recoveries were within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
7. All initial calibrations associated with this data set were within acceptance criteria.
8. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
9. The samples were 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 hardcopy data package has been authorized by the laboratory manager or a designee as verified by the following signature.

Iain Daniels
LvL Laboratory Manager

4/12/12
Date

r:\group\data\2012\dro\wc hanford\1204018jes.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 pages.

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-129	Page 1 of 3

Collector STOWE	Company Contact Joan Kessner	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 8C	Data Turnaround 15 Days
Project Designation Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location 600-290:2		SAF No. RC-029		
Ice Chest No. NK AJ 4-3-12 RCC-08-023	Field Logbook No. EL-1601-06	COA C60290A000	Method of Shipment Fed Ex		
Shipped To EK 1/22/12 ~~EBERLINE SERVICES~~ LIONVILLE	Offsite Property No. A 110 293		Bill of Lading/Air Bill No. NK AJ 4-3-12 See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples may contain hazardous chemicals at levels that pose a risk to human health and/or the environment. Please handle accordingly.

Special Handling and/or Storage

Please keep cool (4 deg C) those requiring coolness, as shown on "Preservation" heading. Thank You.

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None					
Type of Container	G/P	G	aG	aG	G/P					
No. of Container(s)	1	1	1	1	1					
Volume	60mL	120mL	120mL	120mL	60mL					
SAMPLE ANALYSIS	See item (1) in Special Instructions.	TPH-Diesel Range - WTPH-D +	Semi-VOA - 8270A (TCL)	PCBs - 8082	See item (2) in Special Instructions.					
Sample No. / Matrix * / Sample Date / Sample Time										
J1N2V5 / SOIL / 4/3/12 / 1200	X	X	X	X						
J1N2V6 / SOIL / 4/3/12 / 1205	X	X	X	X						
J1N2V7 / SOIL / 4/3/12 / 1210	X	X	X	X						
J1N2V8 / SOIL / 4/3/12 / 1230	X	X	X	X						
J1N2V9 / SOIL / 4/3/12 / 1245	X	X	X	X						

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quinley Stowe	1405 4/3/12	B Hudson B Hudson	1405 4/3/12
B Hudson B Hudson	1440 4/3/12	A. Freier A. Freier	1060#1 4-3-12 1440
A. Freier A. Freier	1220 1060#1 4-4-12	Fed Ex	
Fed Ex	4-5-12 1000	Victor Hernandez	4-5-12 1000

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out 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)
(2) Americium-241; Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 -- Total Sr; Technetium-99 Low Level; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium

REVIEWED BY JR
DATE 4/4/12

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
Ve=Vegetation
X=Other

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

WCH-EE-011

50000000

16

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-129	Page 2 of 2

Collector: STOWE	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 Days		
Project Designation: Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location: 600-290:2		SAF No.: RC-029
Ice Chest No.: NA A3-4-12 RCC-08-023	Field Logbook No.: EL-1601-06	COA: C60290A000	Method of Shipment: Fed Ex
Shipped To: BH 1/17/12 ~~EBERLINE SERVICES~~ (LIONVILLE)	Offsite Property No.: A-110293		Bill of Lading/Air Bill No.: NA A3-4-3-12 See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples may contain hazardous chemicals at levels that pose a risk to human health and/or the environment. Please handle accordingly.

Special Handling and/or Storage

Please keep cool (4 deg C) those requiring coolness, as shown on "Preservation" heading. Thank You.

SAMPLE ANALYSIS													
Preservation				Cool 4C	Cool 4C	Cool 4C	Cool 4C	None					
Type of Container				G/P	G	aG	aG	G/P					
No. of Container(s)				1	1	1	1	1					
Volume				60mL	120mL	120mL	120mL	60mL					
				See item (1) in Special Instructions.	TPH-Diesel Range - WTPH-D +	Semi-VOA - 8270A (TCL)	PCBs - 8082	See item (2) in Special Instructions.					
Sample No.	Matrix *	Sample Date	Sample Time										
J1N2W0	SOIL	4/3/12	1255	X	X	X	X						
J1N2W1	SOIL	4/3/12	1310	X	X	X	X						
J1N2W2	SOIL	4/3/12	1315	X	X	X	X						
J1N2W3	SOIL	4/3/12	1320	X	X	X	X						
J1N2W4	SOIL	4/3/12	1330	X	X	X	X						

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Chasey Stowe	4/3/12 1405	BHudson BHudson	4/3/12 1405
BHUDSON BHudson	4/3/12 1440	A. Freier A. Freier (106041)	4-3-12 1440
A. Freier A. Freier (WCH 106041)	4-4-12 1220	Fed Ex	
Fed Ex	4-5-12 1000	VICTOR HERNANDEZ	4-5-12 1000

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out 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)
(2) Americium-241; Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 -- Total Sr; Technetium-99 Low Level; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium

REVIEWED BY JP DATE 4/4/12

Matrix *: S=Soil; SS=Sediment; SO=Solid; Sl=Sludge; W = Water; O=Oil; A=Air; DS=Drum Solids; DL=Drum Liquids; T=Tissue; WI=Wipe; L=Liquid; Ve=Vegetation; X=Other

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

WCH-EE-011

17

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-129	Page 3 of 3
Collector: STOWE	Company Contact: Joan Kessner; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 8C; Data Turnaround: 15 Days
Project Designation: Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location: 600-290:2	SAF No.: RC-029	
Ice Chest No.: ~~NA~~ A4 4-3-12 RCC-08-023	Field Logbook No.: EL-1601-06; COA: C60290A000	Method of Shipment: Fed Ex	
Shipped To: ~~EBERLINE SERVICES~~ (LIONVILLE)	Offsite Property No.: A110293	Bill of Lading/Air Bill No.: ~~NA~~ A4 4-3-12 See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples may contain hazardous chemicals at levels that pose a risk to human health and/or the environment. Please handle accordingly.

Special Handling and/or Storage

Please keep cool (4 deg C) those requiring coolness, as shown on "Preservation" heading. Thank You.

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None						
Type of Container	G/P	G	aG	aG	G/P						
No. of Container(s)	1	1	1	1							
Volume	60mL	120mL	120mL	120mL	60mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	TPH-Diesel Range - WTPH-D +	Semi-VOA - 8270A (TCL)	PCBs - 8082	See item (2) in Special Instructions.						
Sample No. / Matrix * / Sample Date / Sample Time											
J1N2W5 / SOIL / 4/3/12 / 1345	X	X	X	X							
J1N2W6 / SOIL / 4/3/12 / 1347	X	X	X	X							
J1N2W7 / SOIL / 4/3/12 / 1350	X										
J1N2W8 / SOIL / 4/3/12 / 1355	X	X	X	X							
~~J1N2W9~~ BH 4/3/12 / SOIL											

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From: Quincy Stowe		1405 4/3/12
Received By/Stored In: BHUDSON Bhudson		4/3/12 1405
Relinquished By/Removed From: BHUDSON Bhudson		4/3/12 1440
Received By/Stored In: 1060#1 A. Freier A. Freier		4-3-12 1440
Relinquished By/Removed From: WCH 1060#1 A. Freier A. Freier		4-4-12 1220
Received By/Stored In: Fed Ex		
Relinquished By/Removed From: Fed Ex		4-5-12 1000
Received By/Stored In: Victor Hernandez		4-5-12 1000
Relinquished By/Removed From		
Received By/Stored In		
Relinquished By/Removed From		
Received By/Stored In		

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out 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)
(2) Americium-241; Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 -- Total Sr; Technetium-99 Low Level; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium

REVIEWED BY JR
DATE 4/4/12

Matrix *
S=Soil
SS=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

00000007

18

Appendix 5

Data Validation Supporting Documentation

GENERAL ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 600-270:2			DATA PACKAGE: K3857		
VALIDATOR: ELR		LAB: LLI		DATE: 5/5/12	
			SDG: K3857		

ANALYSES PERFORMED					
8015	8021	8141	8151	8315	
		WTPH-HCID	WTPH-G	WTPH-D	

SAMPLES/MATRIX:				
J1N2V5	J1N2V6	J1N2V7	J1N2V8	J1N2V9
J1N2W0	J1N2W1	J1N2W2	J1N2W3	J1N2W4
J1N2W5	J1N2W6	J1N2W8		
				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)

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:

GENERAL 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: 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 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

NO Motor oil MS/MSD/LCS - Jall

GENERAL ORGANIC DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: _____

6. HOLDING TIMES (all levels)

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

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

Comments: _____

GENERAL ORGANIC DATA VALIDATION CHECKLIST

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

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

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

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

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

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

Comments: all undect M/O cru

9. SAMPLE CLEANUP (Levels D and E)

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

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

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

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

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

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

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

Comments:

Appendix 6

Additional Documentation Requested by Client

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/11/2012 19:26

Extractable Petroleum Hydrocarbons by SW846 8015 - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L204050 - SW 3540C									
Blank (L204050-BLK1)			Prepared: 04/05/2012 Analyzed: 04/07/2012						
Diesel Range Organics	3330 U	3330	ug/kg wet						
Motor Oil	10000 U	10000	ug/kg wet						
Surrogate: p-Terphenyl	*4290*		*ug/kg wet*	*6666.7*		*64*	*39-129*		
LCS (L204050-BS1)			Prepared: 04/05/2012 Analyzed: 04/07/2012						
Diesel Range Organics	42200	3330	ug/kg wet	66667		63	42-133		40
Surrogate: p-Terphenyl	*4770*		*ug/kg wet*	*6666.7*		*71*	*39-129*		
Matrix Spike (L204050-MS2)		**Source: 1204018-02**	Prepared: 04/05/2012 Analyzed: 04/07/2012						
Diesel Range Organics	43800	3520	ug/kg dry	70431	3450 U	62	42-133		40
Surrogate: p-Terphenyl	*5040*		*ug/kg dry*	*7043.1*		*72*	*39-129*		
Matrix Spike Dup (L204050-MSD2)		**Source: 1204018-02**	Prepared: 04/05/2012 Analyzed: 04/07/2012						
Diesel Range Organics	44100	3570	ug/kg dry	71329	3450 U	62	42-133	0.5	40
Surrogate: p-Terphenyl	*5100*		*ug/kg dry*	*7132.9*		*72*	*39-129*		

Date: 7 May 2012
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: Remaining Sites Confirmation Sampling – Soil Full Protocol – Waste Site 600-290:2
Subject: Inorganics - Data Package No. K3857-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K3857 prepared by Lionville Laboratories 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
J1N2V5	4/3/12	Soil	C	See note 1
J1N2V6	4/3/12	Soil	C	See note 1
J1N2V7	4/3/12	Soil	C	See note 1
J1N2V8	4/3/12	Soil	C	See note 1
J1N2V9	4/3/12	Soil	C	See note 1
J1N2W0	4/3/12	Soil	C	See note 1
J1N2W1	4/3/12	Soil	C	See note 1
J1N2W2	4/3/12	Soil	C	See note 1
J1N2W3	4/3/12	Soil	C	See note 1
J1N2W4	4/3/12	Soil	C	See note 1
J1N2W5	4/3/12	Soil	C	See note 1
J1N2W6	4/3/12	Soil	C	See note 1
J1N2W7	4/3/12	Soil	C	See note 1
J1N2W8	4/3/12	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 300 Area Remedial Action Sampling and Analysis Plan (DOE/RL-2001-48, Rev. 3). 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.

All preparation blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

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

required.

Due to matrix spike recoveries outside QC limits, all antimony (27.2%) boron (68.5%), chromium (68.9%), magnesium (64.9%), nickel (68.9%) and silicon (131%) results were qualified as estimates and flagged "J".

Due to LCS recoveries outside QC limits, all antimony (61.4%) and silicon (40%) results 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.

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J1N2W5/J1N2W6) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the 300 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data package No. K3857 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 matrix spike recoveries outside QC limits, all antimony (27.2%) boron (68.5%), chromium (68.9%), magnesium (64.9%), nickel (68.9%) and silicon (131%) results were qualified as estimates and flagged "J".

- Due to LCS recoveries outside QC limits, all antimony (61.4%) and silicon (40%) 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

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-2001-48, Rev. 3, *300 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, May 2004.

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

INORGANICS DATA QUALIFICATION SUMMARY*

SDG: K3857	**REVIEWER: ELR**	**Project: 600-290:2**	**PAGE_1_OF_1**
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Antimony boron chromium magnesium nickel silicon	J	All	MS recovery
Antimony Silicon	J	All	LCS recovery

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

Appendix 3

Annotated Laboratory Reports

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/11/2012 14:28

J1N2V5
1204018-01 (Soil)

5/6/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Metals by SW846 6000/7000 series									
Aluminum	**7050**		5.04	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Antimony	0.604	U J	0.604	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Arsenic	**2.27**		1.01	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Barium	**65.8**		0.504	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Beryllium	**0.281**		0.201	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Boron	**1.23**	B J	2.01	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cadmium	**0.107**	B	0.201	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Calcium	**3040**		101	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Chromium	**8.23**	J	0.201	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cobalt	**5.70**		2.01	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Copper	**9.95**		1.01	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Iron	**17700**		20.1	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Lead	**3.72**		0.504	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Magnesium	**3500**	J	75.6	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Manganese	**281**		5.04	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Molybdenum	**0.286**	B	2.01	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Nickel	**8.32**	J	4.03	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Potassium	**1370**		403	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Selenium	0.302	U	0.302	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silicon	**174**	J	2.01	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silver	0.201	U	0.201	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Sodium	**145**		50.4	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Vanadium	**43.3**		2.52	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Zinc	**38.5**		10.1	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Mercury	0.0297	U	0.0297	mg/kg dry	1	L204068	04/09/2012	04/10/2012	7471A

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/11/2012 14:28

J1N2V6 V 5/6/12

1204018-02 (Soil)

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	6470		4.29	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Antimony	0.514	U J	0.514	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Arsenic	2.46		0.857	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Barium	69.4		0.429	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Beryllium	0.261		0.171	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Boron	1.08	B J	1.71	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cadmium	0.107	B	0.171	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Calcium	2940		85.7	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Chromium	8.88	J	0.171	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cobalt	5.35		1.71	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Copper	10.4		0.857	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Iron	17300		17.1	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Lead	3.50		0.429	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Magnesium	3880	J	64.3	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Manganese	298		4.29	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Molybdenum	0.408	B	1.71	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Nickel	8.88	J	3.43	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Potassium	1260		343	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Selenium	0.257	U	0.257	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silicon	447	J	1.71	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silver	0.171	U	0.171	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Sodium	144		42.9	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Vanadium	43.1		2.14	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Zinc	34.1		8.57	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Mercury	0.0281	U	0.0281	mg/kg dry	1	L204068	04/09/2012	04/10/2012	7471A

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/11/2012 14:28

J1N2V7
1204018-03 (Soil)

5/6/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Metals by SW846 6000/7000 series									
Aluminum	**7100**		4.60	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Antimony	0.553	U J	0.553	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Arsenic	**2.33**		0.921	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Barium	**80.6**		0.460	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Beryllium	**0.283**		0.184	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Boron	**1.10**	B J	1.84	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cadmium	**0.105**	B	0.184	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Calcium	**2790**		92.1	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Chromium	**8.91**	J	0.184	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cobalt	**6.04**		1.84	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Copper	**10.4**		0.921	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Iron	**18300**		18.4	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Lead	**3.72**		0.460	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Magnesium	**3780**	J	69.1	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Manganese	**336**		4.60	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Molybdenum	**0.323**	B	1.84	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Nickel	**10.1**	J	3.68	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Potassium	**1440**		368	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Selenium	0.276	U	0.276	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silicon	**195**	J	1.84	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silver	0.184	U	0.184	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Sodium	**132**		46.0	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Vanadium	**45.5**		2.30	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Zinc	**37.6**		9.21	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Mercury	0.0267	U	0.0267	mg/kg dry	1	L204068	04/09/2012	04/10/2012	7471A

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/11/2012 14:28

J1N2V8
1204018-04 (Soil)

5/4/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Metals by SW846 6000/7000 series									
Aluminum	**6510**		4.54	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Antimony	0.545	U J	0.545	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Arsenic	**2.11**		0.908	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Barium	**67.8**		0.454	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Beryllium	**0.253**		0.182	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Boron	**1.08**	B J	1.82	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cadmium	**0.105**	B	0.182	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Calcium	**2760**		90.8	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Chromium	**8.19**	J	0.182	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cobalt	**5.62**		1.82	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Copper	**8.64**		0.908	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Iron	**16800**		18.2	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Lead	**3.40**		0.454	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Magnesium	**3350**	J	68.1	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Manganese	**287**		4.54	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Molybdenum	**0.278**	B	1.82	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Nickel	**8.09**	J	3.63	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Potassium	**1330**		363	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Selenium	0.273	U	0.273	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silicon	**171**	J	1.82	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silver	0.182	U	0.182	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Sodium	**138**		45.4	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Vanadium	**41.8**		2.27	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Zinc	**34.5**		9.08	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Mercury	0.0276	U	0.0276	mg/kg dry	1	L204068	04/09/2012	04/10/2012	7471A

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/11/2012 14:28

J1N2V9
1204018-05 (Soil)

5/6/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Metals by SW846 6000/7000 series									
Aluminum	**6060**		4.92	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Antimony	0.591	U J	0.591	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Arsenic	**2.44**		0.985	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Barium	**58.8**		0.492	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Beryllium	**0.237**		0.197	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Boron	**1.04**	B J	1.97	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cadmium	**0.0989**	B	0.197	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Calcium	**2920**		98.5	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Chromium	**7.88**	J	0.197	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cobalt	**4.81**		1.97	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Copper	**8.71**		0.985	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Iron	**16100**		19.7	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Lead	**4.25**		0.492	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Magnesium	**3060**	J	73.9	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Manganese	**249**		4.92	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Molybdenum	**0.324**	B	1.97	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Nickel	**7.33**	J	3.94	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Potassium	**1160**		394	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Selenium	0.295	U	0.295	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silicon	**184**	J	1.97	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silver	0.197	U	0.197	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Sodium	**132**		49.2	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Vanadium	**39.5**		2.46	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Zinc	**32.8**		9.85	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Mercury	0.0252	U	0.0252	mg/kg dry	1	L204068	04/09/2012	04/10/2012	7471A

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/11/2012 14:28

J1N2W0
1204018-06 (Soil)

5/4/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Metals by SW846 6000/7000 series									
Aluminum	**5350**		4.54	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Antimony	0.545	U J	0.545	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Arsenic	**2.11**		0.908	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Barium	**51.6**		0.454	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Beryllium	**0.208**		0.182	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Boron	**1.20**	B J	1.82	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cadmium	**0.103**	B	0.182	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Calcium	**3630**		90.8	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Chromium	**8.26**	J	0.182	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cobalt	**4.59**		1.82	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Copper	**8.21**		0.908	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Iron	**15300**		18.2	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Lead	**3.69**		0.454	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Magnesium	**3290**	J	68.1	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Manganese	**236**		4.54	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Molybdenum	**0.282**	B	1.82	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Nickel	**9.12**	J	3.63	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Potassium	**1040**		363	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Selenium	0.272	U J	0.272	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silicon	**182**		1.82	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silver	0.182	U	0.182	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Sodium	**137**		45.4	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Vanadium	**40.3**		2.27	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Zinc	**32.1**		9.08	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Mercury	0.0259	U	0.0259	mg/kg dry	1	L204068	04/09/2012	04/10/2012	7471A

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/11/2012 14:28

J1N2W1
1204018-07 (Soil)

5/6/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	5500		3.84	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Antimony	0.460	U J	0.460	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Arsenic	1.95		0.767	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Barium	51.0		0.384	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Beryllium	0.214		0.153	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Boron	1.04	B J	1.53	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cadmium	0.0920	B	0.153	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Calcium	2910		76.7	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Chromium	7.69	J	0.153	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cobalt	4.71		1.53	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Copper	7.99		0.767	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Iron	15500		15.3	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Lead	3.19		0.384	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Magnesium	3280	J	57.5	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Manganese	247		3.84	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Molybdenum	0.274	B	1.53	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Nickel	7.88	J	3.07	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Potassium	1050		307	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Selenium	0.230	U	0.230	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silicon	149	J	1.53	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silver	0.153	U	0.153	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Sodium	126		38.4	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Vanadium	40.4		1.92	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Zinc	33.9		7.67	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Mercury	0.0276	U	0.0276	mg/kg dry	1	L204068	04/09/2012	04/10/2012	7471A

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/11/2012 14:28

J1N2W2
1204018-08 (Soil)

5/c/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Metals by SW846 6000/7000 series									
Aluminum	**5660**		3.79	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Antimony	0.455	U J	0.455	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Arsenic	**2.03**		0.758	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Barium	**54.5**		0.379	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Beryllium	**0.219**		0.152	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Boron	**0.902**	B J	1.52	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cadmium	**0.0812**	B	0.152	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Calcium	**3110**		75.8	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Chromium	**7.12**	J	0.152	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cobalt	**4.52**		1.52	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Copper	**7.72**		0.758	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Iron	**15300**		15.2	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Lead	**2.81**		0.379	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Magnesium	**3140**	J	56.8	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Manganese	**247**		3.79	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Molybdenum	**0.260**	B	1.52	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Nickel	**6.69**	J	3.03	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Potassium	**1030**		303	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Selenium	0.227	U	0.227	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silicon	**141**	J	1.52	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silver	0.152	U	0.152	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Sodium	**132**		37.9	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Vanadium	**39.0**		1.89	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Zinc	**30.0**		7.58	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Mercury	0.0248	U	0.0248	mg/kg dry	1	L204068	04/09/2012	04/10/2012	7471A

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	**Reported:** 04/11/2012 14:28

J1N2W3
1204018-09 (Soil)

5/c/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	**5150**		4.01	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Antimony	0.482	U J	0.482	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Arsenic	**2.17**		0.803	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Barium	**62.9**		0.401	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Beryllium	**0.209**		0.161	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Boron	**0.747**	B J	1.61	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cadmium	**0.0869**	B	0.161	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Calcium	**2890**		80.3	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Chromium	**7.41**	J	0.161	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cobalt	**4.79**		1.61	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Copper	**8.66**		0.803	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Iron	**15600**		16.1	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Lead	**2.99**		0.401	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Magnesium	**3550**	J	60.2	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Manganese	**237**		4.01	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Molybdenum	**0.266**	B	1.61	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Nickel	**8.44**	J	3.21	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Potassium	**933**		321	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Selenium	0.241	U J	0.241	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silicon	**132**		1.61	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silver	0.161	U	0.161	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Sodium	**120**		40.1	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Vanadium	**38.1**		2.01	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Zinc	**30.3**		8.03	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Mercury	0.0276	U	0.0276	mg/kg dry	1	L204068	04/09/2012	04/10/2012	7471A

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/11/2012 14:28

J1N2W4
1204018-10 (Soil)

5/6/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	**5670**		3.96	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Antimony	0.475	U J	0.475	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Arsenic	**2.52**		0.792	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Barium	**57.4**		0.396	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Beryllium	**0.232**		0.158	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Boron	**0.868**	B J	1.58	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cadmium	**0.0874**	B	0.158	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Calcium	**5250**		79.2	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Chromium	**8.33**	J	0.158	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cobalt	**5.00**		1.58	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Copper	**9.29**		0.792	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Iron	**16900**		15.8	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Lead	**3.26**		0.396	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Magnesium	**3750**	J	59.4	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Manganese	**244**		3.96	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Molybdenum	**0.270**	B	1.58	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Nickel	**7.69**	J	3.17	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Potassium	**947**		317	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Selenium	0.237	U	0.237	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silicon	**241**	J	1.58	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silver	0.158	U	0.158	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Sodium	**152**		39.6	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Vanadium	**44.9**		1.98	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Zinc	**34.8**		7.92	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Mercury	0.0254	U	0.0254	mg/kg dry	1	L204068	04/09/2012	04/10/2012	7471A

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/11/2012 14:28

J1N2W5
1204018-11 (Soil)

5/6/12

Lionville Laboratory

Metals by SW846 6000/7000 series

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Aluminum	**4690**		3.68	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Antimony	0.441	U J	0.441	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Arsenic	**2.35**		0.736	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Barium	**48.7**		0.368	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Beryllium	**0.191**		0.147	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Boron	**0.676**	B J	1.47	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cadmium	**0.0862**	B	0.147	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Calcium	**5140**		73.6	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Chromium	**8.23**	J	0.147	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cobalt	**5.07**		1.47	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Copper	**8.62**		0.736	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Iron	**14700**		14.7	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Lead	**2.88**		0.368	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Magnesium	**3250**	J	55.2	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Manganese	**259**		3.68	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Molybdenum	**0.252**	B	1.47	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Nickel	**8.42**	J	2.94	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Potassium	**747**		294	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Selenium	0.221	U	0.221	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silicon	**174**	J	1.47	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silver	0.147	U	0.147	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Sodium	**139**		36.8	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Vanadium	**37.7**		1.84	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Zinc	**29.2**		7.36	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Mercury	0.0257	U	0.0257	mg/kg dry	1	L204068	04/09/2012	04/10/2012	7471A

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/11/2012 14:28

J1N2W6
1204018-12 (Soil)

5/6/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	**5700**		4.66	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Antimony	0.560	U J	0.560	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Arsenic	**3.55**		0.933	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Barium	**58.5**		0.466	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Beryllium	**0.240**		0.187	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Boron	**1.00**	B J	1.87	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cadmium	**0.0930**	B	0.187	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Calcium	**5820**		93.3	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Chromium	**8.31**	J	0.187	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cobalt	**5.35**		1.87	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Copper	**8.83**		0.933	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Iron	**18000**		18.7	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Lead	**3.31**		0.466	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Magnesium	**3550**	J	70.0	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Manganese	**284**		4.66	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Molybdenum	**0.292**	B	1.87	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Nickel	**7.56**	J	3.73	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Potassium	**999**		373	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Selenium	0.280	U	0.280	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silicon	**195**	J	1.87	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silver	0.187	U	0.187	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Sodium	**147**		46.6	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Vanadium	**49.0**		2.33	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Zinc	**33.9**		9.33	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Mercury	0.0247	U	0.0247	mg/kg dry	1	L204068	04/09/2012	04/10/2012	7471A

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	**Reported:** 04/11/2012 14:28

J1N2W7
1204018-13 (Soil)

5/c/7

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Metals by SW846 6000/7000 series									
Aluminum	**196**		3.47	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Antimony	0.417	U J	0.417	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Arsenic	**0.351**	B	0.695	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Barium	**10.7**		0.347	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Beryllium	**0.0377**	B	0.139	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Boron	1.39	U J	1.39	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cadmium	0.139	U	0.139	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Calcium	**36.9**	B	69.5	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Chromium	0.139	U J	0.139	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cobalt	1.39	U	1.39	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Copper	0.695	U	0.695	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Iron	**1050**		13.9	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Lead	**3.11**		0.347	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Magnesium	**20.9**	B J	52.1	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Manganese	**7.54**		3.47	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Molybdenum	**0.689**	B	1.39	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Nickel	2.78	U J	2.78	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Potassium	**155**	B	278	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Selenium	0.208	U	0.208	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silicon	**88.4**	J	1.39	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silver	0.139	U	0.139	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Sodium	**11.9**	B	34.7	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Vanadium	**0.487**	B	1.74	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Zinc	**2.04**	B	6.95	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Mercury	0.0243	U	0.0243	mg/kg dry	1	L204068	04/09/2012	04/10/2012	7471A

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/11/2012 14:28

J1N2W8
1204018-14 (Soil)

5/6/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Metals by SW846 6000/7000 series									
Aluminum	**5030**		4.19	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Antimony	0.503	U J	0.503	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Arsenic	**2.31**		0.838	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Barium	**46.2**		0.419	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Beryllium	**0.201**		0.168	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Boron	**0.773**	B J	1.68	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cadmium	**0.0748**	B	0.168	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Calcium	**4620**		83.8	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Chromium	**7.76**	J	0.168	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Cobalt	**4.56**		1.68	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Copper	**8.21**		0.838	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Iron	**14600**		16.8	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Lead	**3.02**		0.419	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Magnesium	**3350**	J	62.8	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Manganese	**218**		4.19	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Molybdenum	**0.260**	B	1.68	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Nickel	**7.66**	J	3.35	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Potassium	**783**		335	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Selenium	0.251	U	0.251	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silicon	**147**	J	1.68	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Silver	0.168	U	0.168	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Sodium	**130**		41.9	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Vanadium	**37.5**		2.09	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Zinc	**29.2**		8.38	mg/kg dry	1	L204056	04/06/2012	04/09/2012	6010B
Mercury	0.0271	U	0.0271	mg/kg dry	1	L204068	04/09/2012	04/10/2012	7471A

000000111

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, Pennsylvania 19341
Phone (610) 280-3000
Fax (610) 280-3041

Case Narrative

Client: WC-HANFORD RC-029
LVL#: 1204018
SDG/SAF#: K3857/RC-029

W.O.#: 60049-001-001-0001-00
Date Received: 04-05-12

METALS

The following is a summary of the QC results accompanying the sample results. Lionville Laboratory (LvL) 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 analyses of 14 soil samples.

2. The samples were prepared and analyzed in accordance with methods listed on the data report forms.

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

4. Please refer to the Sample Receipt Check List for any sample discrepancies in LvL's sample acceptance policy.

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

6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the LOQ) with the exception of CCB2 and CCB3 for Iron (63.32µg/L and 78.8µg/L, RDL=50µg/L) in file ICP040912B. The method blank L204056-MB1 was below the 50µg/L RDL and the sample results for Iron were well above the reporting limit. CCB2 for Chromium in file ICP041012C was slightly above the client RDL, however the post matrix spike was the only sample reported from this file.

7. All preparation/method blanks (MB) were within method criteria {less than the Limit of Quantitation, samples were greater than 20X MB value}.

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

9. All Standard Reference Material (SRM) analytes were within the Prediction Interval control limits supplied by the manufacturer.

10. The matrix spike (MS) recoveries for 18 analytes were outside the 75-125% control limits.

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 pages.

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

Sample ID	Element	PDS Concentration (ppb)	PDS % Recovery
J1N2V5	Antimony	100	91.5
	Arsenic	100	90.9
	Barium	1,100	89.6
	Beryllium	100	89.7
	Boron	100	87.1
	Chromium	100	93.1
	Cobalt	100	89.3
	Copper	100	93.6
	Iron	42,000	97.3
	Lead	100	85.5
	Magnesium	21,600	90.7
	Molybdenum	100	90.2
	Nickel	100	92.3
	Potassium	2,000	157.0
	Selenium	100	90.1
	Silicon	2,100	135.1
	Vanadium	1,000	86.6
	Zinc	100	98.8

12. All duplicate analyses were within the 20% Relative Percent Difference (RPD) control limit critieria. The ± 20% RPD control limit applies to sample results greater than ten times the MDL.

13. For the purposes of this report, the data have 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.

14. LvL 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.

15. 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

4/12/12
Date

alm/04-018ccbhg%.doc

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-129	Page 1 of 3

Collector STOWE	Company Contact Joan Kessner	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 8C	Data Turnaround 15 Days
Project Designation Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location 600-290:2		SAF No. RC-029		
Ice Chest No. ~~NA~~ AJ 4-3-12 RCC-08-023	Field Logbook No. EL-1601-06	COA C60290A000	Method of Shipment Fed Ex		
Shipped To ~~BA~~ 1/22/12 ~~EBERLINE SERVICES~~ LIONVILLE	Offsite Property No. A 110 293		Bill of Lading/Air Bill No. ~~NA~~ AJ 4-3-12 See OSPC		

00000005

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples may contain hazardous chemicals at levels that pose a risk to human health and/or the environment. Please handle accordingly.

Special Handling and/or Storage

Please keep cool (4 deg C) those requiring coolness, as shown on "Preservation" heading. Thank You.

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	
Type of Container	G/P	G	aG	aG	G/P	
No. of Container(s)	1	1	1	1	~~1~~	
Volume	60mL	120mL	120mL	120mL	60mL	
SAMPLE ANALYSIS	See item (1) in Special Instructions.	TPH-Diesel Range - WTPH-D +	Semi-VOA - 8270A (TCL)	PCBs - 8082	See item (2) in Special Instructions.	

Sample No.	Matrix *	Sample Date	Sample Time										
J1N2V5	SOIL	4/3/12	1200	X	X	X	X						
J1N2V6	SOIL	4/3/12	1205	X	X	X	X						
J1N2V7	SOIL	4/3/12	1210	X	X	X	X						
J1N2V8	SOIL	4/3/12	1230	X	X	X	X						
J1N2V9	SOIL	4/3/12	1245	X	X	X	X						

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1405 4/3/12	B HUDSON B Hudson	1405 4/3/12
B HUDSON B Hudson	1440 4/3/12	1060#1 A. Freier A. Freier	4-3-12 1440
WCH A. Freier A. Freier	1220 1060#1 4-4-12	Fed Ex	
Fed Ex	4-5-12 1000	VICTOR HERNANDEZ	4-5-12 1000

Sign/Print Names

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out 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)
(2) Americium-241; Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 -- Total Sr; Technetium-99 Low Level; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium

REVIEWED BY JR
DATE 4/4/12

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
Ve=Vegetation
X=Other

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

WCH-EE-011

27

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-129	Page 2 of 2
Collector: STOWE	Company Contact: Joan Kessner; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 8C; Data Turnaround: 15 Days
Project Designation: Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location: 600-290:2	SAF No.: RC-029	
Ice Chest No.: NA AJ 4-3-12 RCC-08-023	Field Logbook No.: EL-1601-06; COA: C60290A000	Method of Shipment: Fed Ex	
Shipped To: BH 1/17/12 ~~EBERLINE SERVICES~~ LIONVILLE	Offsite Property No.: A-110293	Bill of Lading/Air Bill No.: NA AJ 4-3-12 See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples may contain hazardous chemicals at levels that pose a risk to human health and/or the environment. Please handle accordingly.

Special Handling and/or Storage

Please keep cool (4 deg C) those requiring coolness, as shown on "Preservation" heading. Thank You.

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None						
Type of Container	G/P	G	aG	aG	G/P						
No. of Container(s)	1	1	1	1	1						
Volume	60mL	120mL	120mL	120mL	60mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	TPH-Diesel Range - WTPH-D +	Semi-VOA - 8270A (TCL)	PCBs - 8082	See item (2) in Special Instructions.						
Sample No. / Matrix * / Sample Date / Sample Time											
J1N2W0 / SOIL / 4/3/12 / 1255	X	X	X	X							
J1N2W1 / SOIL / 4/3/12 / 1310	X	X	X	X							
J1N2W2 / SOIL / 4/3/12 / 1315	X	X	X	X							
J1N2W3 / SOIL / 4/3/12 / 1320	X	X	X	X							
J1N2W4 / SOIL / 4/3/12 / 1330	X	X	X	X							

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: Quincy Stowe	Date/Time: 4/3/12 1405	Received By/Stored In: BHUDSON BHudson	Date/Time: 4/3/12 1405
Relinquished By/Removed From: BHUDSON BHudson	Date/Time: 4/3/12 1440	Received By/Stored In: 1060#1 A. Freier A. Freier	Date/Time: 4-3-12 1440
Relinquished By/Removed From: WCH 1060#1 A. Freier A. Freier	Date/Time: 4-4-12 1220	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 4-5-12 1000	Received By/Stored In: Victor Hernandez	Date/Time: 4-5-12 1000
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:
Relinquished By/Removed From:	Date/Time:	Received By/Stored In:	Date/Time:

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out 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)
(2) Americium-241; Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 -- Total Sr; Technetium-99 Low Level; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium

REVIEWED BY JP DATE 4/4/12

Matrix *: S=Soil; SS=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

28

9000000000

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-129	Page 2 of 2

Collector STOWE	Company Contact Joan Kessner	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 8C	Data Turnaround 15 Days
Project Designation Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location 600-290:2		SAF No. RC-029		
Ice Chest No. ~~NK~~ AA 4-3-12 RCC-08-023	Field Logbook No. EL-1601-06	COA C60290A000	Method of Shipment Fed Ex		
Shipped To ~~EBERLINE SERVICES~~ LIONVILLE	Offsite Property No. A110293		Bill of Lading/Air Bill No. ~~NK~~ AA 4-3-12 See OSPC		

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples may contain hazardous chemicals at levels that pose a risk to human health and/or the environment. Please handle accordingly.

Special Handling and/or Storage

Please keep cool (4 deg C) those requiring coolness, as shown on "Preservation" heading. Thank You.

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None						
Type of Container	G/P	G	aG	aG	G/P						
No. of Container(s)	1	1	1	1	1						
Volume	60mL	120mL	120mL	120mL	60mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	TPH-Diesel Range - WTPH-D +	Semi-VOA - 8270A (TCL)	PCBs - 8082	See item (2) in Special Instructions.						
Sample No. / Matrix * / Sample Date / Sample Time											
J1N2W5 / SOIL / 4/3/12 / 1345	X	X	X	X							
J1N2W6 / SOIL / 4/3/12 / 1347	X	X	X	X							
J1N2W7 / SOIL / 4/3/12 / 1350	X										
J1N2W8 / SOIL / 4/3/12 / 1355	X	X	X	X							
~~J1N2W9~~ BH 4/3/12 / SOIL											

CHAIN OF POSSESSION	Date/Time	Sign/Print Names: Received By/Stored In	Date/Time
Relinquished By/Removed From: Quincy Stowe	4/3/12 1405	Received By/Stored In: BHUDSON	4/3/12 1405
Relinquished By/Removed From: BHUDSON	4/3/12 1440	Received By/Stored In: A. Freier (1060#1)	4-3-12 1440
Relinquished By/Removed From: A. Freier (WCH 1060#1)	4-4-12 1220	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: Fed Ex	4-5-12 1000	Received By/Stored In: Vince Hernandez	4-5-12 1000
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out 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)
(2) Americium-241; Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 – Total Sr; Technetium-99 Low Level; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium

REVIEWED BY JR
DATE 4/4/12

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
Ve=Vegetation
X=Other

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

WCH-EE-011

29

0000007

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	600-290=2		DATA PACKAGE:	K3857	
VALIDATOR:	ELR	LAB:	LLI	DATE:	5/5/12
			SDG:	K3857	

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

SAMPLES/MATRIX				
J1N2V5	J1N2V6	J1N2V7	J1N2V8	J1N2V9
J1N2W0	J1N2W1	J1N2W2	J1N2W3	J1N2W4
J1N2W5	J1N2W6	J1N2W7	J1N2W8	
				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:

W7 - 15 detect

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:

MS - antimony, Boron, chromium, magnesium, nickel, silicon - J all

LCS - antimony silicon - J all

no PA

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

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/11/2012 14:28

Metals by SW846 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L204056 - SW 3050B										
Blank (L204056-BLK1)				Prepared: 04/06/2012 Analyzed: 04/09/2012						
Aluminum	4.46	U	4.46	mg/kg wet						
Antimony	0.536	U	0.536	mg/kg wet						
Arsenic	0.893	U	0.893	mg/kg wet						
Barium	0.446	U	0.446	mg/kg wet						
Beryllium	0.179	U	0.179	mg/kg wet						
Boron	1.79	U	1.79	mg/kg wet						
Cadmium	0.179	U	0.179	mg/kg wet						
Calcium	89.3	U	89.3	mg/kg wet						
Chromium	0.179	U	0.179	mg/kg wet						
Cobalt	1.79	U	1.79	mg/kg wet						
Copper	0.893	U	0.893	mg/kg wet						
Iron	17.9	U	17.9	mg/kg wet						
Lead	0.446	U	0.446	mg/kg wet						
Magnesium	67.0	U	67.0	mg/kg wet						
Manganese	4.46	U	4.46	mg/kg wet						
Molybdenum	1.79	U	1.79	mg/kg wet						
Nickel	3.57	U	3.57	mg/kg wet						
Potassium	357	U	357	mg/kg wet						
Selenium	0.268	U	0.268	mg/kg wet						
Silicon	1.79	U	1.79	mg/kg wet						
Silver	0.179	U	0.179	mg/kg wet						
Sodium	44.6	U	44.6	mg/kg wet						
Vanadium	2.23	U	2.23	mg/kg wet						
Zinc	8.93	U	8.93	mg/kg wet						
Duplicate (L204056-DUP2)		Source: 1204018-01		Prepared: 04/06/2012 Analyzed: 04/09/2012						
Aluminum	6890		3.94	mg/kg dry		7050			2.32	20
Antimony	0.473	U	0.473	mg/kg dry		0.604 U				20
Arsenic	2.18		0.788	mg/kg dry		2.27			4.20	20
Barium	68.9		0.394	mg/kg dry		65.8			4.53	20
Beryllium	0.275		0.158	mg/kg dry		0.281			2.18	20
Boron	1.13	B	1.58	mg/kg dry		1.23			8.48	20
Cadmium	0.0893	B	0.158	mg/kg dry		0.107			18.2	20
Calcium	2960		78.8	mg/kg dry		3040			2.95	20
Chromium	8.35		0.158	mg/kg dry		8.23			1.49	20
Cobalt	5.69		1.58	mg/kg dry		5.70			0.130	20
Copper	9.90		0.788	mg/kg dry		9.95			0.481	20

000000112

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	**Reported:** 04/11/2012 14:28

Metals by SW846 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L204056 - SW 3050B										
Duplicate (L204056-DUP2)		**Source: 1204018-01**		Prepared: 04/06/2012 Analyzed: 04/09/2012						
Iron	17200		15.8	mg/kg dry		17700			2.92	20
Lead	3.67		0.394	mg/kg dry		3.72			1.21	20
Magnesium	3410		59.1	mg/kg dry		3500			2.76	20
Manganese	294		3.94	mg/kg dry		281			4.34	20
Molybdenum	0.241	B	1.58	mg/kg dry		0.286			17.2	20
Nickel	8.36		3.15	mg/kg dry		8.32			0.394	20
Potassium	1360		315	mg/kg dry		1370			1.12	20
Selenium	0.237	U	0.237	mg/kg dry		0.302 U				20
Silicon	167		1.58	mg/kg dry		174			4.22	20
Silver	0.158	U	0.158	mg/kg dry		0.201 U				20
Sodium	145		39.4	mg/kg dry		145			0.115	20
Vanadium	43.7		1.97	mg/kg dry		43.3			0.820	20
Zinc	38.7		7.88	mg/kg dry		38.5			0.651	20
Matrix Spike (L204056-MS2)		**Source: 1204018-01**		Prepared: 04/06/2012 Analyzed: 04/09/2012						
Aluminum	7240		4.77	mg/kg dry	190.89	7050	100	75-125		20
Antimony	13.0		0.573	mg/kg dry	47.722	0.604 U	27.2*	75-125		20
Arsenic	144		0.954	mg/kg dry	190.89	2.27	74.1*	75-125		20
Barium	207		0.477	mg/kg dry	190.89	65.8	74.2*	75-125		20
Beryllium	3.72		0.191	mg/kg dry	4.7722	0.281	72.0*	75-125		20
Boron	66.6		1.91	mg/kg dry	95.444	1.23	68.5*	75-125		20
Cadmium	3.78		0.191	mg/kg dry	4.7722	0.107	77.1	75-125		20
Calcium	4910		95.4	mg/kg dry	2386.1	3040	78.3	75-125		20
Chromium	21.4		0.191	mg/kg dry	19.089	8.23	68.9*	75-125		20
Cobalt	39.2		1.91	mg/kg dry	47.722	5.70	70.2*	75-125		20
Copper	27.1		0.954	mg/kg dry	23.861	9.95	71.7*	75-125		20
Iron	17500		19.1	mg/kg dry	95.444	17700	-235*	75-125		20
Lead	37.2		0.477	mg/kg dry	47.722	3.72	70.2*	75-125		20
Magnesium	5050		71.6	mg/kg dry	2386.1	3500	64.9*	75-125		20
Manganese	318		4.77	mg/kg dry	47.722	281	77.0	75-125		20
Molybdenum	69.8		1.91	mg/kg dry	95.444	0.286	72.9*	75-125		20
Nickel	41.2		3.82	mg/kg dry	47.722	8.32	68.9*	75-125		20
Potassium	3040		382	mg/kg dry	2386.1	1370	70.1*	75-125		20
Selenium	136		0.286	mg/kg dry	190.89	0.302 U	71.1*	75-125		20
Silicon	299		1.91	mg/kg dry	95.444	174	131*	75-125		20
Silver	3.66		0.191	mg/kg dry	4.7722	0.201 U	76.6	75-125		20
Sodium	1940		47.7	mg/kg dry	2386.1	145	75.3	75-125		20

LIONVILLE LABORATORY
A division of Eurofins Analytical Corporation

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/11/2012 14:28

Metals by SW846 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L204056 - SW 3050B									
Matrix Spike (L204056-MS2)		**Source: 1204018-01**	Prepared: 04/06/2012 Analyzed: 04/09/2012						
Vanadium	77.0	2.39	mg/kg dry	47.722	43.3	70.6*	75-125		20
Zinc	72.0	9.54	mg/kg dry	47.722	38.5	70.3*	75-125		20
Reference (L204056-SRM1)			Prepared: 04/06/2012 Analyzed: 04/09/2012						
Aluminum	8300	13.6	mg/kg wet	6670.0		125	0-200.89		
Antimony	32.5	1.64	mg/kg wet	53.000		61.4	0-235.8		
Arsenic	113	2.73	mg/kg wet	114.00		99.0	82.8-117.54		
Barium	294	1.36	mg/kg wet	307.00		95.7	79.8-120.2		
Beryllium	102	0.545	mg/kg wet	108.00		94.5	82.8-117.6		
Boron	75.6	5.45	mg/kg wet	85.100		88.9	67.5-132.8		
Cadmium	222	0.545	mg/kg wet	225.00		98.8	83.6-116.4		
Calcium	3130	273	mg/kg wet	3360.0		93.2	83.3-116.9		
Chromium	79.7	0.545	mg/kg wet	77.200		103	73.3-126.4		
Cobalt	161	5.45	mg/kg wet	166.00		97.3	80.7-118.7		
Copper	259	2.73	mg/kg wet	271.00		95.7	80.8-119.2		
Iron	8050	54.5	mg/kg wet	8420.0		95.6	78.6-121.1		
Lead	185	1.36	mg/kg wet	190.00		97.6	81.6-118.4		
Magnesium	7420	205	mg/kg wet	8570.0		86.6	83.2-116.7		
Manganese	797	13.6	mg/kg wet	965.00		82.6	69.3-130.5		
Molybdenum	230	5.45	mg/kg wet	235.00		98.0	76.2-123.8		
Nickel	218	10.9	mg/kg wet	221.00		98.7	79.6-120.8		
Potassium	13700	1090	mg/kg wet	14400		95.3	81.9-118.1		
Selenium	185	0.818	mg/kg wet	187.00		98.8	75.9-124.6		
Silicon	323	5.45	mg/kg wet	807.00		40.0	0-219.3		
Silver	82.2	0.545	mg/kg wet	83.500		98.5	82.7-117.1		
Sodium	8920	136	mg/kg wet	9730.0		91.7	82.5-117.2		
Vanadium	97.6	6.82	mg/kg wet	98.700		98.8	75.9-123.6		
Zinc	192	27.3	mg/kg wet	199.00		96.5	78.4-121.6		

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3857	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	04/11/2012 14:28

Metals by SW846 6000/7000 series - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L204068 - SW 7471A Prep										
Blank (L204068-BLK1)				Prepared: 04/09/2012 Analyzed: 04/10/2012						
Mercury	0.0290	U	0.0290	mg/kg wet						
Duplicate (L204068-DUP2)		Source: 1204018-01		Prepared: 04/09/2012 Analyzed: 04/10/2012						
Mercury	0.0280	U	0.0280	mg/kg dry		0.0297 U				20
Matrix Spike (L204068-MS2)		Source: 1204018-01		Prepared: 04/09/2012 Analyzed: 04/10/2012						
Mercury	0.163		0.0288	mg/kg dry	0.16001	0.0297 U	102	75-125		20
Reference (L204068-SRM1)				Prepared: 04/09/2012 Analyzed: 04/10/2012						
Mercury	1.24		0.0281	mg/kg wet	1.2900		95.9	62.6-138		

Date: 7 May 2012
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: Remaining Sites Confirmation Sampling – Soil Full Protocol – Waste Site 600-290:2
Subject: PCB - Data Package No. K3857-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K3857 prepared by Lionville Laboratories 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
J1N2V5	4/3/12	Soil	C	See note 1
J1N2V6	4/3/12	Soil	C	See note 1
J1N2V7	4/3/12	Soil	C	See note 1
J1N2V8	4/3/12	Soil	C	See note 1
J1N2V9	4/3/12	Soil	C	See note 1
J1N2W0	4/3/12	Soil	C	See note 1
J1N2W1	4/3/12	Soil	C	See note 1
J1N2W2	4/3/12	Soil	C	See note 1
J1N2W3	4/3/12	Soil	C	See note 1
J1N2W4	4/3/12	Soil	C	See note 1
J1N2W5	4/3/12	Soil	C	See note 1
J1N2W6	4/3/12	Soil	C	See note 1
J1N2W8	4/3/12	Soil	C	See note 1

1 - PCBs by 8082.

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 300 Area Remedial Action Sampling and Analysis Plan (DOE/RL-2001-48, Rev. 3). 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 Data Requested by Client

DATA QUALITY OBJECTIVES

- **Holding Times**

Holding times are not applicable to PCB analytes.

- **Method Blanks**

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

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike/Matrix Spike Duplicate & Blank Spike 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.

All 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.

All laboratory results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1N2W5/J1N2W6) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Analytical Detection Levels**

Reported analytical detection levels are compared against the required quantitation limits (RQL's) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package No. K3857 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services*, March 2008.

DOE/RL-2001-48, Rev. 3, *300 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, May 2004.

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

PCB DATA QUALIFICATION SUMMARY*

SDG: K3857	REVIEWER: ELR	Project: 600-290:2	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

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

Appendix 3

Annotated Laboratory Reports

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/18/2012 21:29

J1N2V5
1204018-01 (Soil)

✓ 5/6/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	13.9	U	13.9	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1221	13.9	U	13.9	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1232	13.9	U	13.9	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1242	13.9	U	13.9	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1248	13.9	U	13.9	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1254	13.9	U	13.9	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1260	13.9	U	13.9	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1262	13.9	U	13.9	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1268	13.9	U	13.9	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Surrogate: Decachlorobiphenyl	*139 %*		*43-144*			*L204131*	*04/11/2012*	*04/17/2012*	*8082*
Surrogate: Tetrachloro-meta-xylene	*122 %*		*52-141*			*L204131*	*04/11/2012*	*04/17/2012*	*8082*

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/18/2012 21:29

J1N2V6
1204018-02 (Soil)

✓ 5/4/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1221	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1232	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1242	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1248	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1254	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1260	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1262	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1268	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Surrogate: Decachlorobiphenyl	*127 %*		*43-144*			*L204131*	*04/11/2012*	*04/17/2012*	*8082*
Surrogate: Tetrachloro-meta-xylene	*113 %*		*52-141*			*L204131*	*04/11/2012*	*04/17/2012*	*8082*

000000069

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/18/2012 21:29

J1N2V7
1204018-03 (Soil)

5/6/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1221	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1232	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1242	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1248	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1254	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1260	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1262	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1268	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Surrogate: Decachlorobiphenyl	*128 %*		*43-144*			*L204131*	*04/11/2012*	*04/17/2012*	*8082*
Surrogate: Tetrachloro-meta-xylene	*115 %*		*52-141*			*L204131*	*04/11/2012*	*04/17/2012*	*8082*

000000070

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	**Reported:** 04/18/2012 21:29

J1N2V8
1204018-04 (Soil)

5/6/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1221	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1232	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1242	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1248	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1254	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1260	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1262	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1268	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Surrogate: Decachlorobiphenyl	*124 %*		*43-144*			*L204131*	*04/11/2012*	*04/17/2012*	*8082*
Surrogate: Tetrachloro-meta-xylene	*103 %*		*52-141*			*L204131*	*04/11/2012*	*04/17/2012*	*8082*

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/18/2012 21:29

J1N2V9
1204018-05 (Soil)

5/6/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1221	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1232	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1242	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1248	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1254	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1260	**3.59**	J	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1262	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1268	14.0	U	14.0	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Surrogate: Decachlorobiphenyl	*125 %*		*43-144*			*L204131*	*04/11/2012*	*04/17/2012*	*8082*
Surrogate: Tetrachloro-meta-xylene	*108 %*		*52-141*			*L204131*	*04/11/2012*	*04/17/2012*	*8082*

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3857	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	04/18/2012 21:29

J1N2W0
1204018-06 (Soil)

5/6/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	13.6	U	13.6	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1221	13.6	U	13.6	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1232	13.6	U	13.6	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1242	13.6	U	13.6	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1248	13.6	U	13.6	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1254	**33.8**		13.6	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1260	**12.1**	J	13.6	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1262	13.6	U	13.6	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1268	13.6	U	13.6	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Surrogate: Decachlorobiphenyl	*132 %*		*43-144*			*L204131*	*04/11/2012*	*04/17/2012*	*8082*
Surrogate: Tetrachloro-meta-xylene	*114 %*		*52-141*			*L204131*	*04/11/2012*	*04/17/2012*	*8082*

LIONVILLE LABORATORY
A division of Fibertine Analytical Corporation

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	**Reported:** 04/18/2012 21:29

J1N2W1
1204018-07 (Soil)

5/6/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1221	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1232	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1242	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1248	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1254	**11.5**	J	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1260	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1262	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1268	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Surrogate: Decachlorobiphenyl	*111 %*		*43-144*			*L204131*	*04/11/2012*	*04/17/2012*	*8082*
Surrogate: Tetrachloro-meta-xylene	*102 %*		*52-141*			*L204131*	*04/11/2012*	*04/17/2012*	*8082*

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/18/2012 21:29

J1N2W2
1204018-08 (Soil)

5/6/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	13.8	U	13.8	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1221	13.8	U	13.8	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1232	13.8	U	13.8	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1242	13.8	U	13.8	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1248	13.8	U	13.8	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1254	13.8	U	13.8	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1260	13.8	U	13.8	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1262	13.8	U	13.8	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1268	13.8	U	13.8	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Surrogate: Decachlorobiphenyl	*120 %*		*43-144*			*L204131*	*04/11/2012*	*04/17/2012*	*8082*
Surrogate: Tetrachloro-meta-xylene	*104 %*		*52-141*			*L204131*	*04/11/2012*	*04/17/2012*	*8082*

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	**Reported:** 04/18/2012 21:29

J1N2W3
1204018-09 (Soil)

5/4/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1221	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1232	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1242	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1248	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1254	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1260	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1262	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Aroclor 1268	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/17/2012	8082
Surrogate: Decachlorobiphenyl	*111 %*		*43-144*			*L204131*	*04/11/2012*	*04/17/2012*	*8082*
Surrogate: Tetrachloro-meta-xylene	*102 %*		*52-141*			*L204131*	*04/11/2012*	*04/17/2012*	*8082*

000000076

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	**Reported:** 04/18/2012 21:29

J1N2W4
1204018-10 (Soil)

5/4/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1221	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1232	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1242	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1248	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1254	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1260	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1262	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1268	13.7	U	13.7	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Surrogate: Decachlorobiphenyl	*107 %*		*43-144*			*L204131*	*04/11/2012*	*04/18/2012*	*8082*
Surrogate: Tetrachloro-meta-xylene	*97 %*		*52-141*			*L204131*	*04/11/2012*	*04/18/2012*	*8082*

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/18/2012 21:29

J1N2W5
1204018-11 (Soil)

5/6/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	13.3	U	13.3	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1221	13.3	U	13.3	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1232	13.3	U	13.3	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1242	13.3	U	13.3	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1248	13.3	U	13.3	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1254	13.3	U	13.3	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1260	13.3	U	13.3	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1262	13.3	U	13.3	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1268	13.3	U	13.3	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Surrogate: Decachlorobiphenyl	*109 %*		*43-144*			*L204131*	*04/11/2012*	*04/18/2012*	*8082*
Surrogate: Tetrachloro-meta-xylene	*105 %*		*52-141*			*L204131*	*04/11/2012*	*04/18/2012*	*8082*

000000078

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc.	Project: RC-029	
2620 Fermi Avenue	Project Number: K3857	Reported:
Richland WA, 99354	Project Manager: Joan Kessner	04/18/2012 21:29

J1N2W6
1204018-12 (Soil)

5/4/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
			Lionville Laboratory						
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	13.4	U	13.4	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1221	13.4	U	13.4	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1232	13.4	U	13.4	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1242	13.4	U	13.4	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1248	13.4	U	13.4	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1254	13.4	U	13.4	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1260	13.4	U	13.4	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1262	13.4	U	13.4	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1268	13.4	U	13.4	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Surrogate: Decachlorobiphenyl	*99 %*		*43-144*			*L204131*	*04/11/2012*	*04/18/2012*	*8082*
Surrogate: Tetrachloro-meta-xylene	*96 %*		*52-141*			*L204131*	*04/11/2012*	*04/18/2012*	*8082*

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/18/2012 21:29

J1N2W8
1204018-14 (Soil)

5/6/12

Analyte	Result and Qualifier		Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method
Lionville Laboratory									
Polychlorinated Biphenyls by SW846 8082									
Aroclor 1016	13.4	U	13.4	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1221	13.4	U	13.4	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1232	13.4	U	13.4	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1242	13.4	U	13.4	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1248	13.4	U	13.4	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1254	13.4	U	13.4	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1260	13.4	U	13.4	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1262	13.4	U	13.4	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Aroclor 1268	13.4	U	13.4	ug/kg dry	1	L204131	04/11/2012	04/18/2012	8082
Surrogate: Decachlorobiphenyl	*109 %*		*43-144*			*L204131*	*04/11/2012*	*04/18/2012*	*8082*
Surrogate: Tetrachloro-meta-xylene	*106 %*		*52-141*			*L204131*	*04/11/2012*	*04/18/2012*	*8082*

000000080

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, Pennsylvania 19341
Phone (610) 280-3000
Fax (610) 280-3041

Case Narrative

Client: WC-HANFORD RC-029 K3857
LVL #: 1204018

W.O. #: 60049-001-001-0001-00
Received: 04-05-2012

PCBs

Thirteen (13) soil samples were collected on 04-03-2012.

The samples and associated QC samples were extracted 04-11-2012 and analyzed 04-17,18-2012 according to criteria set forth in Lionville Laboratory SOPs. The extraction procedure was based on SW846 Method 3540C and the analysis procedure was based on SW846 Method 8082. All samples received Copper-Sulfur and Sulfuric Acid cleanups based on SW846 methods 3660A and 3665A.

Lionville Laboratory (LvL) 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. LvL certifies that all test results meet the requirements of NELAC with any exception noted in the following statements:

1. The results presented in this report are derived from samples that met LvL's sample acceptance policy.
2. All required holding times for extraction and analysis have been met.
3. All obtainable surrogate recoveries were within acceptance criteria.
4. The method blank was below the reporting limits for all target compounds.
5. All blank spike recoveries were within acceptance criteria.
6. All matrix spike recoveries were within acceptance criteria.
7. The samples are reported on a dry weight basis.
8. All initial calibrations associated with this data set were within acceptance criteria.
9. All continuing calibration standards analyzed prior to sample extracts were within acceptance criteria.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory manager or a designee as verified by the following signature.

Iain Daniels
LvL Laboratory Manager

4/20/12
Date

r:\group\data\2012\pcb\wc hanford\1204018jes.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 pages.

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-129	Page 1 of 3

Collector STOWE	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code 8C	Data Turnaround: 15 Days		
Project Designation: Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location: 600-290:2		SAF No.: RC-029
Ice Chest No. NA A4 4-3-12 RCC-08-023	Field Logbook No.: EL-1601-06	COA: C60290A000	Method of Shipment: Fed Ex
Shipped To BA 1/22/12 ~~EDERLINE SERVICES~~ LIONVILLE	Offsite Property No.: A 110 293		Bill of Lading/Air Bill No. NA A4 4-3-12 See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples may contain hazardous chemicals at levels that pose a risk to human health and/or the environment. Please handle accordingly.

Special Handling and/or Storage

Please keep cool (4 deg C) those requiring coolness, as shown on "Preservation" heading. Thank You.

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None						
Type of Container	G/P	G	aG	aG	G/P						
No. of Container(s)	1	1	1	1	1						
Volume	60mL	120mL	120mL	120mL	60mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	TPH-Diesel Range - WTPH-D +	Semi-VOA - 8270A (TCL)	PCBs - 8082	See item (2) in Special Instructions.						
Sample No. / Matrix * / Sample Date / Sample Time											
J1N2V5 / SOIL / 4/3/12 / 1200	X	X	X	X							
J1N2V6 / SOIL / 4/3/12 / 1205	X	X	X	X							
J1N2V7 / SOIL / 4/3/12 / 1210	X	X	X	X							
J1N2V8 / SOIL / 4/3/12 / 1230	X	X	X	X							
J1N2V9 / SOIL / 4/3/12 / 1245	X	X	X	X							

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	4/3/12 1405	BHUDSON	4/3/12 1405
BHUDSON	4/3/12 1440	A. Freier (1060#1)	4-3-12 1440
A. Freier (1060#1)	4-4-12 1220	Fed Ex	
Fed Ex	4-5-12 1000	VICTOR HERNANDEZ	4-5-12 1000

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out 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)
(2) Americium-241; Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90 -- Total Sr; Technetium-99 Low Level; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}; Total Uranium

REVIEWED BY JR
DATE 4/4/12

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
Ve=Vegetation
X=Other

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

WCH-EE-011

25

5000000005

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-129	Page 2 of 3
Collector: STOWE	Company Contact: Joan Kessner; Telephone No.: 375-4688	Project Coordinator: KESSNER, JH	Price Code: 8C; Data Turnaround: 15 Days
Project Designation: Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location: 600-290:2	SAF No.: RC-029	
Ice Chest No.: NA AJ 4-3-12 RCC-08-023	Field Logbook No.: EL-1601-06; COA: C60290A000	Method of Shipment: Fed Ex	
Shipped To: ~~EBERLINE SERVICES~~ LIONVILLE 1/17/12	Offsite Property No.: A-110293	Bill of Lading/Air Bill No.: NA AJ 4-3-12 See OSPC	

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples may contain hazardous chemicals at levels that pose a risk to human health and/or the environment. Please handle accordingly.

Special Handling and/or Storage

Please keep cool (4 deg C) those requiring coolness, as shown on "Preservation" heading. Thank You.

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None					
Type of Container	G/P	G	sG	sG	G/P					
No. of Container(s)	1	1	1	1	1					
Volume	60mL	120mL	120mL	120mL	60mL					
SAMPLE ANALYSIS	See Item (1) in Special Instructions.	TPH-Diesel Range - WTPH-D+	Semi-VOA - 8270A (TCL)	PCBs - 8082	See Item (2) in Special Instructions.					
Sample No. / Matrix * / Sample Date / Sample Time										
J1N2W0 / SOIL / 4/3/12 / 1255	X	X	X	X						
J1N2W1 / SOIL / 4/3/12 / 1310	X	X	X	X						
J1N2W2 / SOIL / 4/3/12 / 1315	X	X	X	X						
J1N2W3 / SOIL / 4/3/12 / 1320	X	X	X	X						
J1N2W4 / SOIL / 4/3/12 / 1330	X	X	X	X						

CHAIN OF POSSESSION (Sign/Print Names)	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From: Quincy Stowe	4/3/12 1405	Received By/Stored In: BHudson BHudson	4/3/12 1405
Relinquished By/Removed From: BHUDSON BHudson	4/3/12 1440	Received By/Stored In: 1060H1 A. Freier A. Freier	4-3-12 1440
Relinquished By/Removed From: WCH 1060H1 A. Freier A. Freier	4-4-12 1220	Received By/Stored In: Fed Ex	
Relinquished By/Removed From: Fed Ex	4-5-12 1000	Received By/Stored In: Victor Hernandez	4-5-12 1000
Relinquished By/Removed From		Received By/Stored In	
Relinquished By/Removed From		Received By/Stored In	

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out 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)
(2) Americium-241; Nickel-63; Isotopic Plutonium [Plutonium-238, Plutonium-239/240]; Strontium-89,90 -- Total Sr; Technetium-99 Low Level; Isotopic Uranium [Uranium-233/234, Uranium-235, Uranium-238]; Total Uranium

REVIEWED BY JR DATE 4/4/12

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; Li=Liquid; Ve=Vegetation; X=Other

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

WCH-EE-011

26

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-129	Page 1 of 1

Collector: STOWE	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 Days		
Project Designation: Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location: 600-290:2		SAF No.: RC-029
Ice Chest No.: ~~NK~~ AA 4-3-12 RCC-08-023	Field Logbook No.: EL-1601-06	COA: C60290A000	Method of Shipment: Fed Ex
Shipped To: ~~EBERLINE SERVICES~~ LIONVILLE	Offsite Property No.: A110293		Bill of Lading/Air Bill No.: ~~NK~~ AA 4-3-12 See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples may contain hazardous chemicals at levels that pose a risk to human health and/or the environment. Please handle accordingly.

Special Handling and/or Storage

Please keep cool (4 deg C) those requiring coolness, as shown on "Preservation" heading. Thank You.

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None	
Type of Container	G/P	G	aG	aG	G/P	
No. of Container(s)	1	1	1	1	1	
Volume	60mL	120mL	120mL	120mL	60mL	
SAMPLE ANALYSIS	See item (1) in Special Instructions.	TPH-Diesel Range - WTPH-D +	Semi-VOA - 8270A (TCL)	PCBs - 8082	See item (2) in Special Instructions.	

Sample No.	Matrix *	Sample Date	Sample Time										
J1N2W5	SOIL	4/3/12	1345	X	X	X	X						
J1N2W6	SOIL	4/3/12	1347	X	X	X	X						
J1N2W7	SOIL	4/3/12	1350	X									
J1N2W8	SOIL	4/3/12	1355	X	X	X	X						
~~J1N2W9~~ B 4/3/12	SOIL												

CHAIN OF POSSESSION	Sign/Print Names		
Relinquished By/Removed From: Quincy Stowe	Date/Time: 4/3/12 1405	Received By/Stored In: BHUDSON BHudson	Date/Time: 4/3/12 1405
Relinquished By/Removed From: BHUDSON BHudson	Date/Time: 4/3/12 1440	Received By/Stored In: 1060#1 A. Freier A. Freier	Date/Time: 4-3-12 1440
Relinquished By/Removed From: WCH 1060#1 A. Freier A. Freier	Date/Time: 4-4-12 1220	Received By/Stored In: Fed Ex	Date/Time:
Relinquished By/Removed From: Fed Ex	Date/Time: 4-5-12 1000	Received By/Stored In: Victor Hernandez	Date/Time: 4-5-12 1000
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out 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)
(2) Americium-241; Nickel-63; Isotopic Plutonium [Plutonium-238, Plutonium-239/240]; Strontium-89,90 -- Total Sr; Technetium-99 Low Level; Isotopic Uranium [Uranium-233/234, Uranium-235, Uranium-238]; Total Uranium

REVIEWED BY JR
DATE 4/4/12

Matrix *
S=Soil
SS=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

27

00000007

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 600-2901.2			DATA PACKAGE: K3857		
VALIDATOR: ELR		LAB: LLI		DATE: 5/5/12	
			SDG: K3857		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J1N2V5	J1N2V6	J1N2V7	J1N2V8	J1N2V9	
J1N2W0	J1N2W1	J1N2W2	J1N2W3	J1N2W4	
J1N2W5	J1N2W6	J1N2W8			
					soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

Comments:

PCB DATA VALIDATION CHECKLIST

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

Calibration blanks analyzed? (Levels D, E) ..... Yes No N/A
Calibration blank results acceptable? (Levels D, E) ..... Yes No N/A
Laboratory blanks analyzed? ..... Yes No N/A
Laboratory blank results acceptable? ..... Yes No N/A
Field/trip blanks analyzed? (Levels C, D, E) ..... Yes No N/A
Field/trip blank results acceptable? (Levels C, D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: no PB

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

Surrogates analyzed? ..... Yes No N/A
Surrogate recoveries acceptable? ..... Yes No N/A
Surrogates traceable? (Levels D, E) ..... Yes No N/A
Surrogates expired? (Levels D, E) ..... Yes No N/A
MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD results acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
LCS/BSS samples analyzed? ..... Yes No N/A
LCS/BSS results acceptable? ..... Yes No N/A
Standards traceable? (Levels D, E) ..... Yes No N/A
Standards expired? (Levels D, E) ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Performance audit sample(s) analyzed? ..... Yes No N/A
Performance audit sample results acceptable? ..... Yes No N/A
Comments: no PAS

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments:

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:

Appendix 6

Additional Documentation Requested by Client

LIONVILLE LABORATORY
A division of Eberline Analytical Corporation

264 Welsh Pool Road
Exton, PA 19341
Phone: 610-280-3000
Fax: 610-280-3041

WC-Hanford, Inc. 2620 Fermi Avenue Richland WA, 99354	Project: RC-029 Project Number: K3857 Project Manager: Joan Kessner	Reported: 04/18/2012 21:29

Polychlorinated Biphenyls by SW846 8082 - Quality Control

Lionville Laboratory

Analyte	Result and Qualifiers		Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch L204131 - SW 3540C										
Blank (L204131-BLK1)				Prepared: 04/11/2012 Analyzed: 04/17/2012						
Aroclor 1016	13.3	U	13.3	ug/kg wet						
Aroclor 1221	13.3	U	13.3	ug/kg wet						
Aroclor 1232	13.3	U	13.3	ug/kg wet						
Aroclor 1242	13.3	U	13.3	ug/kg wet						
Aroclor 1248	13.3	U	13.3	ug/kg wet						
Aroclor 1254	13.3	U	13.3	ug/kg wet						
Aroclor 1260	13.3	U	13.3	ug/kg wet						
Aroclor 1262	13.3	U	13.3	ug/kg wet						
Aroclor 1268	13.3	U	13.3	ug/kg wet						
Surrogate: Decachlorobiphenyl	*40.0*			*ug/kg wet*	*33.333*		*120*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*36.6*			*ug/kg wet*	*33.337*		*110*	*52-141*		
LCS (L204131-BS1)				Prepared: 04/11/2012 Analyzed: 04/17/2012						
Aroclor 1016	137		13.3	ug/kg wet	166.67		82	50-138		40
Aroclor 1260	158		13.3	ug/kg wet	166.67		95	50-148		40
Surrogate: Decachlorobiphenyl	*41.2*			*ug/kg wet*	*33.333*		*124*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*34.3*			*ug/kg wet*	*33.337*		*103*	*52-141*		
Matrix Spike (L204131-MS1)		**Source: 1204018-01**		Prepared: 04/11/2012 Analyzed: 04/17/2012						
Aroclor 1016	175		13.6	ug/kg dry	170.70	13.9 U	103	50-138		40
Aroclor 1260	186		13.6	ug/kg dry	170.70	13.9 U	109	50-148		40
Surrogate: Decachlorobiphenyl	*42.5*			*ug/kg dry*	*34.140*		*124*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*36.1*			*ug/kg dry*	*34.144*		*106*	*52-141*		
Matrix Spike Dup (L204131-MSD1)		**Source: 1204018-01**		Prepared: 04/11/2012 Analyzed: 04/17/2012						
Aroclor 1016	195		14.2	ug/kg dry	177.55	13.9 U	110	50-138	7	40
Aroclor 1260	204		14.2	ug/kg dry	177.55	13.9 U	115	50-148	5	40
Surrogate: Decachlorobiphenyl	*45.6*			*ug/kg dry*	*35.511*		*128*	*43-144*		
Surrogate: Tetrachloro-meta-xylene	*36.8*			*ug/kg dry*	*35.515*		*104*	*52-141*		

Date: 7 May 2012
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: Remaining Sites Confirmation Sampling – Soil Full Protocol – Waste Site 600-290:2
Subject: Radiochemistry - Data Package No. K3857-LLI

INTRODUCTION

This memo presents the results of data validation on Data Package No. K3857 prepared by Lionville Laboratories 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
J1N2V5	4/3/12	Soil	C	See note 1
J1N2V6	4/3/12	Soil	C	See note 1
J1N2V7	4/3/12	Soil	C	See note 1
J1N2V8	4/3/12	Soil	C	See note 1
J1N2V9	4/3/12	Soil	C	See note 1
J1N2W0	4/3/12	Soil	C	See note 1
J1N2W1	4/3/12	Soil	C	See note 1
J1N2W2	4/3/12	Soil	C	See note 1
J1N2W3	4/3/12	Soil	C	See note 1
J1N2W4	4/3/12	Soil	C	See note 1
J1N2W5	4/3/12	Soil	C	See note 1
J1N2W6	4/3/12	Soil	C	See note 1
J1N2W8	4/3/12	Soil	C	See note 1

1.– Total uranium.

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 300 Area Remedial Action Sampling and Analysis Plan (DOE/RL-2001-48, Rev. 3). 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 Data Requested by Client

DATA QUALITY PARAMETERS

· Holding Times

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

All holding times were acceptable.

· Preparation (Method) Blanks

Laboratory Blanks

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

All laboratory blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

· Accuracy

Accuracy is evaluated from laboratory control sample (LCS) or blank spike sample (BSS) batch samples and spiked samples from the analytical batch. Measured activities are compared to the known added amounts. The acceptable LCS or BSS and matrix spike (MS) recovery range is 70-130%. In addition, samples may be spiked with a radiochemical tracer to assist in isolating the radioisotope of interest with the yield of the tracer being used in calculating sample activity. The acceptable range for tracer recovery is 20% to 105%. Spike sample results outside the above ranges result in associated sample results being qualified as estimates, or not qualified, depending on the activity of the individual sample. Results are rejected for LCS/BSS recoveries of less than 30% and tracer recoveries of less than 20%, and tracer recoveries of greater than 115% for detected results.

All accuracy results were acceptable.

- **Laboratory Duplicates**

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

All duplicate results were acceptable.

Field Duplicates

One set of field duplicates (J1N2W5/J1N2W6) were submitted for analysis. Field duplicates are compared using the same criteria as for laboratory duplicates. All field duplicate results were acceptable.

- **Detection Levels**

Reported analytical detection levels for undetected analytes are compared against the remaining waste sites RQLs to ensure that laboratory detection levels meet the required criteria. No RQLs were specified.

- **Completeness**

Data package No. K3857 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

Washington Closure Hanford Contract #S00W307A00 (March 2008), *Data Validation Services.*

DOE/RL-2001-48, Rev. 3, *300 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, May 2004.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

RADIOCHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: K3857	REVIEWER: ELR	Project: 600-290:2	PAGE 1 OF 1
COMMENTS: No qualifiers assigned			

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

Appendix 3

Annotated Laboratory Reports

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3857

7700-001 J1N2V5

DATA SHEET

SDG	7700	Client/Case no	Hanford SDG K3857
Contact	N.Joseph Verville	Contract	No. S00W235A01
Lab sample id	S204022-01	Client sample id	J1N2V5
Dept sample id	7700-001	Location/Matrix	600-290:2 SOIL
Received	04/05/12	Collected/Weight	04/03/12 12:00 62.24 g
		Custody/SAF No	RC-029-129 RC-029

ANALYTE	CAS NO	RESULT ug/g	2σ ERR (COUNT)	MDA ug/g	RDL ug/g	QUALI-FIERS	TEST
Total Uranium	7440-61-1	1.43	0.17	0.114	1.00		U_T

Remaining Sites Confirmation Sampling - Soil
In-Protocol

5/6/12

DATA SHEETS
Page 1
SUMMARY DATA SECTION
Page 11

Lab id	EBRLNE
Protocol	RC-029
Version	Ver 10.0
Form	DVD-DS
Version	3.06
Report date	04/19/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3857

7700-002 J1N2V6

DATA SHEET

SDG	7700	Client/Case no	Hanford SDG K3857
Contact	N.Joseph Verville	Contract	No. S00W235A01
Lab sample id	S204022-02	Client sample id	J1N2V6
Dept sample id	7700-002	Location/Matrix	600-290:2 SOIL
Received	04/05/12	Collected/Weight	04/03/12 12:05 75.58 g
		Custody/SAF No	RC-029-129 RC-029

ANALYTE	CAS NO	RESULT ug/g	2σ ERR (COUNT)	MDA ug/g	RDL ug/g	QUALI-FIERS	TEST
Total Uranium	7440-61-1	1.24	0.15	0.114	1.00		U_T

Remaining Sites Confirmation Sampling - Soil
In-Protocol

5/4/12

Lab id	EBRLNE
Protocol	RC-029
Version	Ver 10.0
Form	DVD-DS
Version	3.06
Report date	04/19/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3857

7700-003 J1N2V7

DATA SHEET

SDG	7700	Client/Case no	Hanford SDG K3857
Contact	N.Joseph Verville	Contract	No. S00W235A01
Lab sample id	S204022-03	Client sample id	J1N2V7
Dept sample id	7700-003	Location/Matrix	600-290:2 SOIL
Received	04/05/12	Collected/Weight	04/03/12 12:10 66.83 g
		Custody/SAF No	RC-029-129 RC-029

ANALYTE	CAS NO	RESULT ug/g	2σ ERR (COUNT)	MDA ug/g	RDL ug/g	QUALI-FIERS	TEST
Total Uranium	7440-61-1	1.35	0.16	0.114	1.00		U_T

Remaining Sites Confirmation Sampling - Soil
In-Protocol

5/6/12

DATA SHEETS
Page 3
SUMMARY DATA SECTION
Page 13

Lab id	EBRLNE
Protocol	RC-029
Version	Ver 10.0
Form	DVD-DS
Version	3.06
Report date	04/19/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3857

7700-004 J1N2V8

DATA SHEET

SDG	7700	Client/Case no	Hanford SDG K3857
Contact	N.Joseph Verville	Contract	No. S00W235A01
Lab sample id	S204022-04	Client sample id	J1N2V8
Dept sample id	7700-004	Location/Matrix	600-290:2 SOIL
Received	04/05/12	Collected/Weight	04/03/12 12:30 69.52 g
		Custody/SAF No	RC-029-129 RC-029

ANALYTE	CAS NO	RESULT ug/g	2σ ERR (COUNT)	MDA ug/g	RDL ug/g	QUALI-FIERS	TEST
Total Uranium	7440-61-1	2.18	0.26	0.114	1.00		U_T

Remaining Sites Confirmation Sampling - Soil
In-Protocol

5/6/12

DATA SHEETS
Page 4
SUMMARY DATA SECTION
Page 14

Lab id	EBRLNE
Protocol	RC-029
Version	Ver 10.0
Form	DVD-DS
Version	3.06
Report date	04/19/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3857

7700-005

J1N2V9

DATA SHEET

SDG	7700	Client/Case no	Hanford SDG K3857
Contact	N.Joseph Verville	Contract	No. S00W235A01
Lab sample id	S204022-05	Client sample id	J1N2V9
Dept sample id	7700-005	Location/Matrix	600-290:2 SOIL
Received	04/05/12	Collected/Weight	04/03/12 12:45 61.71 g
		Custody/SAF No	RC-029-129 RC-029

ANALYTE	CAS NO	RESULT ug/g	2σ ERR (COUNT)	MDA ug/g	RDL ug/g	QUALI-FIERS	TEST
Total Uranium	7440-61-1	2.59	0.31	0.114	1.00		U_T

Remaining Sites Confirmation Sampling - Soil
In-Protocol

5/6/12

DATA SHEETS
Page 5
SUMMARY DATA SECTION
Page 15

Lab id	EBRLNE
Protocol	RC-029
Version	Ver 10.0
Form	DVD-DS
Version	3.06
Report date	04/19/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3857

7700-006 J1N2W0

DATA SHEET

SDG	7700	Client/Case no	Hanford SDG K3857
Contact	N.Joseph Verville	Contract	No. S00W235A01
Lab sample id	S204022-06	Client sample id	J1N2W0
Dept sample id	7700-006	Location/Matrix	600-290:2 SOIL
Received	04/05/12	Collected/Weight	04/03/12 12:55 79.87 g
		Custody/SAF No	RC-029-129 RC-029

ANALYTE	CAS NO	RESULT ug/g	2σ ERR (COUNT)	MDA ug/g	RDL ug/g	QUALI-FIERS	TEST
Total Uranium	7440-61-1	2.55	0.30	0.114	1.00		U_T

Remaining Sites Confirmation Sampling - Soil
In-Protocol

5/6/12

Lab id	EBRLNE
Protocol	RC-029
Version	Ver 10.0
Form	DVD-DS
Version	3.06
Report date	04/19/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3857

7700-007 J1N2W1

DATA SHEET

SDG	7700	Client/Case no	Hanford SDG_K3857
Contact	N.Joseph Verville	Contract	No. S00W235A01
Lab sample id	S204022-07	Client sample id	J1N2W1
Dept sample id	7700-007	Location/Matrix	600-290:2 SOIL
Received	04/05/12	Collected/Weight	04/03/12 13:10 72.19 g
		Custody/SAF No	RC-029-129 RC-029

ANALYTE	CAS NO	RESULT ug/g	2σ ERR (COUNT)	MDA ug/g	RDL ug/g	QUALI-FIERS	TEST
Total Uranium	7440-61-1	1.62	0.19	0.114	1.00		U_T

Remaining Sites Confirmation Sampling - Soil
In-Protocol

R 5/6/12

Lab id	EBRLNE
Protocol	RC-029
Version	Ver 10.0
Form	DVD-DS
Version	3.06
Report date	04/19/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3857

7700-008 J1N2W2

DATA SHEET

SDG	7700	Client/Case no	Hanford SDG K3857
Contact	N.Joseph Verville	Contract	No. S00W235A01
Lab sample id	S204022-08	Client sample id	J1N2W2
Dept sample id	7700-008	Location/Matrix	600-290:2 SOIL
Received	04/05/12	Collected/Weight	04/03/12 13:15 74.79 g
		Custody/SAF No	RC-029-129 RC-029

ANALYTE	CAS NO	RESULT ug/g	2σ ERR (COUNT)	MDA ug/g	RDL ug/g	QUALI-FIERS	TEST
Total Uranium	7440-61-1	1.45	0.17	0.114	1.00		U_T

Remaining Sites Confirmation Sampling - Soil
In-Protocol

5/6/12

Lab id	EBRLNE
Protocol	RC-029
Version	Ver 10.0
Form	DVD-DS
Version	3.06
Report date	04/19/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3857

7700-009 J1N2W3

DATA SHEET

SDG	7700	Client/Case no	Hanford SDG K3857
Contact	N.Joseph Verville	Contract	No. S00W235A01
Lab sample id	S204022-09	Client sample id	J1N2W3
Dept sample id	7700-009	Location/Matrix	600-290:2 SOIL
Received	04/05/12	Collected/Weight	04/03/12 13:20 67.83 g
		Custody/SAF No	RC-029-129 RC-029

ANALYTE	CAS NO	RESULT ug/g	2σ ERR (COUNT)	MDA ug/g	RDL ug/g	QUALI-FIERS	TEST
Total Uranium	7440-61-1	1.19	0.15	0.114	1.00		U_T

Remaining Sites Confirmation Sampling - Soil
In-Protocol

5/4/12

Lab id	EBRLNE
Protocol	RC-029
Version	Ver 10.0
Form	DVD-DS
Version	3.06
Report date	04/19/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3857

7700-010

J1N2W4

DATA SHEET

SDG	7700	Client/Case no	Hanford	SDG K3857	
Contact	N.Joseph Verville	Contract	No. S00W235A01		
Lab sample id	S204022-10	Client sample id	J1N2W4		
Dept sample id	7700-010	Location/Matrix	600-290:2	SOIL	
Received	04/05/12	Collected/Weight	04/03/12 13:30	75.69 g	
		Custody/SAF No	RC-029-129	RC-029	

ANALYTE	CAS NO	RESULT ug/g	2σ ERR (COUNT)	MDA ug/g	RDL ug/g	QUALI-FIERS	TEST
Total Uranium	7440-61-1	1.55	0.19	0.114	1.00		U_T

Remaining Sites Confirmation Sampling - Soil
In-Protocol

5/4/12

DATA SHEETS
Page 10
SUMMARY DATA SECTION
Page 20

Lab id	EBRLNE
Protocol	RC-029
Version	Ver 10.0
Form	DVD-DS
Version	3.06
Report date	04/19/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3857

7700-011 J1N2W5

DATA SHEET

SDG	7700	Client/Case no	Hanford SDG K3857
Contact	N.Joseph Verville	Contract	No. S00W235A01
Lab sample id	S204022-11	Client sample id	J1N2W5
Dept sample id	7700-011	Location/Matrix	600-290:2 SOIL
Received	04/05/12	Collected/Weight	04/03/12 13:45 68.11 g
		Custody/SAF No	RC-029-129 RC-029

ANALYTE	CAS NO	RESULT ug/g	2σ ERR (COUNT)	MDA ug/g	RDL ug/g	QUALI-FIERS	TEST
Total Uranium	7440-61-1	1.84	0.22	0.114	1.00		U_T

Remaining Sites Confirmation Sampling - Soil
In-Protocol

5/4/12

Lab id	EBRLNE
Protocol	RC-029
Version	Ver 10.0
Form	DVD-DS
Version	3.06
Report date	04/19/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3857

7700-012 J1N2W6

DATA SHEET

SDG	7700	Client/Case no	Hanford SDG K3857
Contact	N.Joseph Verville	Contract	No. S00W235A01
Lab sample id	S204022-12	Client sample id	J1N2W6
Dept sample id	7700-012	Location/Matrix	600-290:2 SOIL
Received	04/05/12	Collected/Weight	04/03/12 13:47 74.22 g
		Custody/SAF No	RC-029-129 RC-029

ANALYTE	CAS NO	RESULT ug/g	2σ ERR (COUNT)	MDA ug/g	RDL ug/g	QUALI-FIERS	TEST
Total Uranium	7440-61-1	1.70	0.20	0.114	1.00		U_T

Remaining Sites Confirmation Sampling - Soil
In-Protocol

5/2/12

Lab id	EBRLNE
Protocol	RC-029
Version	Ver 10.0
Form	DVD-DS
Version	3.06
Report date	04/19/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3857

7700-013

J1N2W8

DATA SHEET

SDG	7700	Client/Case no	Hanford SDG K3857
Contact	N.Joseph Verville	Contract	No. S00W235A01
Lab sample id	S204022-13	Client sample id	J1N2W8
Dept sample id	7700-013	Location/Matrix	600-290:2 SOIL
Received	04/05/12	Collected/Weight	04/03/12 13:55 66.40 g
		Custody/SAF No	RC-029-129 RC-029

ANALYTE	CAS NO	RESULT ug/g	2σ ERR (COUNT)	MDA ug/g	RDL ug/g	QUALI-FIERS	TEST
Total Uranium	7440-61-1	1.53	0.18	0.114	1.00		U_T

Remaining Sites Confirmation Sampling - Soil
In-Protocol

5/6/12

DATA SHEETS
Page 13
SUMMARY DATA SECTION
Page 23

Lab id	EBRLNE
Protocol	RC-029
Version	Ver 10.0
Form	DVD-DS
Version	3.06
Report date	04/19/12

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

1.0 GENERAL

Washington Closure Hanford (WCH) Sample Delivery Group K3857 was composed of thirteen soil samples designated under SAF No. RC-029 with a Project Designation of: Remaining Sites Confirmation Sampling – Soil Full Protocol.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Analytical Sample Receipt Checklist. The results were transmitted to WCH via e-mail on April 19, 2012.

2.0 ANALYSIS NOTES

2.1 Total Uranium Analysis

No problems were encountered during the course of the analyses.

3.0 Case Narrative Certification Statement

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

4/19/12

Joseph Verville
Client Services Manager

Date

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-029-129	Page 1 of 3

Collector: STOWE	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: 15 Days		
Project Designation: Remaining Sites Confirmation Sampling - Soil Full Protocol	Sampling Location: 600-290:2 K3857 (7700)		SAF No.: RC-029
Ice Chest No.: ~~NA~~ AJ 4-3-12 RCC-07-013	Field Logbook No.: EL-1601-06	COA: C60290A000	Method of Shipment: Fed Ex
Shipped To: (EBERLINE SERVICES) ~~LIONVILLE~~ BH 1/17/12	Offsite Property No.: A110315		Bill of Lading/Air Bill No.: ~~NA~~ AJ 4-3-12 See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples may contain hazardous chemicals at levels that pose a risk to human health and/or the environment. Please handle accordingly.

Special Handling and/or Storage

Please keep cool (4 deg C) those requiring coolness, as shown on "Preservation" heading. Thank You.

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None						
Type of Container	G/P	G	aG	aG	G/P						
No. of Container(s)	1	1	1	1	1						
Volume	60mL	120mL	120mL	120mL	60mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	~~TPH-Diesel Range - WTPH-D +~~ BH 1/17/12	Semi-VOA - 8270A (TCL)	PCBs - 8082	See item (2) in Special Instructions.						
Sample No.	Matrix *	Sample Date	Sample Time								
J1N2V5	SOIL	4/3/12	1200					X			
J1N2V6	SOIL	4/3/12	1205					X			
J1N2V7	SOIL	4/3/12	1210					X			
J1N2V8	SOIL	4/3/12	1230					X			
J1N2V9	SOIL	4/3/12	1245					X			

25

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	4/3/12 1405	BHUDSON BHudson	4/3/12 1405
BHUDSON BHudson	4/3/12 1440	1060#1 A. Freier A. Freier	1440 4-3-12
WCH A. Freier A. Freier	1060#1 4-4-12 1220	Fed Ex	
FEDEX		Alex Kelenson KELENSON	4/5/12 10:00

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out 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)
(2) ~~Americium-241; Nickel-63; Isotopic Plutonium (Plutonium-238, Plutonium-239/240); Strontium-89,90 - Total Sr; Technetium-99 Low Level; Isotopic Uranium (Uranium-233/234, Uranium-235, Uranium-238)~~ Total Uranium

BH 1/17/12

REVIEWED BY JR DATE 4/4/12

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, Li=Liquid, Ve=Vegetation, X=Other

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

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-029-129 | Page 2 of 3

Collector: STOWE

Company Contact: Joan Kessner | Telephone No.: 375-4688

Project Coordinator: KESSNER, JH

Price Code: 8C | Data Turnaround: 15 Days

Project Designation: Remaining Sites Confirmation Sampling - Soil Full Protocol

Sampling Location: 600-290:2 K3857 (7700)

SAF No.: RC-029

Ice Chest No.: NA AJ 4-3-12 RCC-07-013

Field Logbook No.: EL-1601-06 | COA: C60290A000

Method of Shipment: Fed Ex

Shipped To: (EBERLINE SERVICES) ~~LIONVILLE~~ BH 1/23/12

Offsite Property No.: A-110 315

Bill of Lading/Air Bill No.: NA AJ 4-3-12 See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples may contain hazardous chemicals at levels that pose a risk to human health and/or the environment. Please handle accordingly.

Special Handling and/or Storage

Please keep cool (4 deg C) those requiring coolness, as shown on "Preservation" heading. Thank You.

26

SAMPLE ANALYSIS

Preservation			Cool 4C	Cool 4C	Cool 4C	Cool 4C	None					
Type of Container			G/P	G	aG	aG	G/P					
No. of Container(s)			1	1	1	1	1					
Volume			60mL	120mL	120mL	120mL	60mL					
			See item (1) in Special Instructions.	TPH-Diesel Range - WTPH-D +	Semi-VOA - 8270A (TCL)	PCBs - 8082	See item (2) in Special Instructions.					
Sample No.	Matrix *	Sample Date	Sample Time									
J1N2W0	SOIL	4/3/12	1255									
J1N2W1	SOIL	4/3/12	1310					X				
J1N2W2	SOIL	4/3/12	1315					X				
J1N2W3	SOIL	4/3/12	1320					X				
J1N2W4	SOIL	4/3/12	1330					X				

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	4/3/12 1405	BHUDSON	4/3/12 1405
BHUDSON	4/3/12 1440	A. Freier (1060#1)	4-3-12 - 1440
A. Freier (LOCH 1060#1)	4-4-12 1220	Fed Ex	
FED EX		Alex Kelenhof	KELENHOF 4/5/12 10:00

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out 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)
(2) ~~Americium 241; Nickel 63; Isotopic Plutonium {Plutonium 238, Plutonium 239/240}; Strontium 89,90 + Total Sr, Technetium 99 Low Level; Isotopic Uranium {Uranium 233/234, Uranium 235, Uranium 238}~~ Total Uranium

BH 1/23/12

REVIEWED BY JR DATE 4/4/12

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, Vs=Vegetation, X=Other

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

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-029-129 | Page 3 of 3

Collector: STOWE

Company Contact: Joan Kessner | Telephone No.: 375-4688 | Project Coordinator: KESSNER, JH

Price Code: 8C | Data Turnaround: 15 Days

Project Designation: Remaining Sites Confirmation Sampling - Soil Full Protocol

Sampling Location: 600-290:2 K3857 (7700) | SAF No.: RC-029

Ice Chest No.: ~~NA~~ AJ 4-3-12 RCC-07-013 | Field Logbook No.: EL-1601-06 | COA: C60290A000 | Method of Shipment: Fed Ex

Shipped To: EBERLINE SERVICES ~~LIONVILLE~~ BH 1/23/12 | Offsite Property No.: A110315 | Bill of Lading/Air Bill No.: ~~NA~~ AJ 4-3-12 See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Samples may contain hazardous chemicals at levels that pose a risk to human health and/or the environment. Please handle accordingly.

Special Handling and/or Storage

Please keep cool (4 deg C) those requiring coolness, as shown on "Preservation" heading. Thank You.

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	None						
Type of Container	G/P	G	aG	aG	G/P						
No. of Container(s)	1	1	1	1	1						
Volume	60mL	120mL BH 1/23/12	120mL	120mL	60mL						
SAMPLE ANALYSIS	See item (1) in Special Instructions.	TPH-Diesel Range - WTPH-D +	Semi-VOA - 8270A (TCL)	PCBs - 8082	See Item (2) in Special Instructions.						
Sample No.	Matrix *	Sample Date	Sample Time								
J1N2W5	SOIL	4/3/12	1345					X			
J1N2W6	SOIL	4/3/12	1347					X			
~~J1N2W7~~ BH 4/3/12	SOIL		~~1350~~	BH 4/3/12							
J1N2W8	SOIL	4/3/12	1355					X			
~~J1N2W9~~ BH 4/3/12	SOIL										

27

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	4/3/12 1405	BHUDSON BHudson	4/3/12 1405
BHUDSON BHudson	4/3/12 1440	1060#1 A. Freier A. Freier	4-3-12 1440
WCH 1060#1 A. Freier A. Freier	4-4-12 1220	Fed Ex	
FED EX		Alex Kelenson KELENSON	4/5/12 10:00

SPECIAL INSTRUCTIONS

(1) ICP Metals - 6010TR (Close-out 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)
(2) ~~Americium-241; Nickel-63; Isotopic Plutonium {Plutonium-238, Plutonium-239/240}; Strontium-89,90; Total Sr, Technetium-99 Low Level; Isotopic Uranium {Uranium-233/234, Uranium-235, Uranium-238}~~; Total Uranium

BH 1/23/12

REVIEWED BY JR DATE 4/4/12

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
Ve=Vegetation
X=Other

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

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	600-290-2		DATA PACKAGE:	KJ857	
VALIDATOR:	ELR	LAB:	EB	DATE:	5/5/12
			SDG:	KJ857	

ANALYSES PERFORMED					
☐ Gross Alpha/Beta	☐ Strontium-90	☐ Technetium-99	☐ Alpha Spectroscopy	☐ Gamma Spectroscopy	
☒ Total Uranium	☐ Radium-22	☐ Tritium			

SAMPLES/MATRIX				
JIN2V5	JIN2V6	JIN2V7	JIN2V8	JIN2V9
JIN2W0	JIN2W1	JIN2W2	JIN2W3	JIN2W4
JIN2W5	JIN2W6	JIN2W8		
				soil

1. Completeness ..... ☐ N/A

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

Comments: _____

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

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

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

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

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

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

Comments: _____

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

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

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

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

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

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

Comments: _____

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

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

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

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

Comments: _____

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

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

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

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

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

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

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

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

Comments: no FB

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

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

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

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

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

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

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

Comments:

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

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

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

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

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

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

Comments: _____

_____

_____

_____

_____

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

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

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

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

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

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

Comments: _____

_____

_____

_____

_____

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

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

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

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

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

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

Comments: _____

_____

_____

_____

_____

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

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

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

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

Comments: _____

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

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

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

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

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

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

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

Comments: WG/WS no PS or PAS

12. Holding Times (All levels)

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

Comments: _____

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

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

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

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

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

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

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

Comments:

Appendix 6

Additional Documentation Requested by Client

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3857

7700-015 Method Blank

METHOD BLANK

SDG	7700	Client/Case no	Hanford SDG K3857
Contact	N.Joseph Verville	Contract	No. S00W235A01
Lab sample id	S204022-15	Client sample id	Method Blank
Dept sample id	7700-015	Material/Matrix	SOIL
		SAF No	RC-029

ANALYTE	CAS NO	RESULT ug/g	2σ ERR (COUNT)	MDA ug/g	RDL ug/g	QUALI-FIERS	TEST
Total Uranium	7440-61-1	0	0.005	0.011	1.00	U	U_T

QC-BLANK #81486

Lab id	EBRLNE
Protocol	RC-029
Version	Ver 10.0
Form	DVD-DS
Version	3.06
Report date	04/19/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3857

7700-014

Lab Control Sample

LAB CONTROL SAMPLE

SDG 7700

Contact N.Joseph Verville

Client/Case no Hanford SDG K3857

Contract No. S00W235A01

Lab sample id S204022-14

Dept sample id 7700-014

Client sample id Lab Control Sample

Material/Matrix SOIL

SAF No RC-029

ANALYTE	RESULT ug/g	2σ ERR (COUNT)	MDA ug/g	RDL ug/g	QUALI-FIERS	TEST	ADDED ug/g	2σ ERR ug/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Total Uranium	39.8	4.6	0.114	1.00		U_T	36.2	1.4	110	80-120	80-120

QC-LCS #81485

Lab id EBRLNE

Protocol RC-029

Version Ver 10.0

Form DVD-LCS

Version 3.06

Report date 04/19/12

EBERLINE ANALYTICAL/RICHMOND

SAMPLE DELIVERY GROUP K3857

7700-016

J1N2V5

DUPLICATE

SDG	7700			Client/Case no	Hanford SDG K3857
Contact	N.Joseph Verville			Contract	No. S00W235A01
	DUPLICATE		ORIGINAL		
Lab sample id	S204022-16	Lab sample id	S204022-01	Client sample id	J1N2V5
Dept sample id	7700-016	Dept sample id	7700-001	Location/Matrix	600-290:2 SOIL
		Received	04/05/12	Collected/Weight	04/03/12 12:00 62.24 g
				Custody/SAF No	RC-029-129 RC-029

ANALYTE	DUPLICATE ug/g	2σ ERR (COUNT)	MDA ug/g	RDL ug/g	QUALI-FIERS	TEST	ORIGINAL ug/g	2σ ERR (COUNT)	MDA ug/g	QUALI-FIERS	RPD %	3σ TOT	DER σ
Total Uranium	1.48	0.18	0.114	1.00		U_T	1.43	0.17	0.114		3	26	0.4

QC-DUP#1 81487

Remaining Sites Confirmation Sampling - Soil
In-Protocol

Lab id	EBRLNE
Protocol	RC-029
Version	Ver 10.0
Form	DVD-DUP
Version	3.06
Report date	04/19/12