SAF-RC-075
100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF FINAL VALIDATION PACKAGE TO:

Kathy Wendt H4-21

COMMENTS:

SDG JP0891 SAF-RC-075

Waste Site: 100-D-86:1

Date: 16 February 2015
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 100-D-86:1
Subject: Diesel Range Organic - Data Package No. JP0891-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0891 prepared by TestAmerica Laboratories (TAL). 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
J1V2K3	1/7/15	Soil	C	See note 1
J1V2K4	1/7/15	Soil	C	See note 1
J1V2K5	1/7/15	Soil	C	See note 1
J1V2K6	1/7/15	Soil	C	See note 1
J1V2K7	1/7/15	Soil	C	See note 1
J1V2K8	1/7/15	Soil	C	See note 1
J1V2K9	1/7/15	Soil	C	See note 1
J1V2L0	1/7/15	Soil	C	See note 1
J1V2L1	1/7/15	Soil	C	See note 1
J1V2L2	1/7/15	Soil	C	See note 1
J1V2L3	1/7/15	Soil	C	See note 1
J1V2L4	1/7/15	Soil	C	See note 1
J1V2L5	1/7/15	Soil	C	See note 1

1 – Diesel range organics by 8015B.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). 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 blank was 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 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.

All duplicate results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1V2K7/J1V2L5) were submitted for analysis. Laboratory 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. JP0891 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-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

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 ORGANIC DATA QUALIFICATION SUMMARY*

SDG: JP0891	REVIEWER: ELR	Project: 100-D-86:1	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

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K3**

Lab Sample ID: 280-64290-1
Client Matrix: Solid
% Moisture: 5.2

Date Sampled: 01/07/2015 1215
Date Received: 01/12/2015 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-260182	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-259996	Lab File ID:	01140009.D
Dilution:	1.0			Initial Weight/Volume:	30.4 g
Analysis Date:	01/14/2015 1713			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1121			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1000	U	1000	4200
C10-C28		710	U	710	4200

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	77		49 - 115

✓ 2/16/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K4**

Lab Sample ID: 280-64290-2
Client Matrix: Solid

% Moisture: 4.3

Date Sampled: 01/07/2015 0926
Date Received: 01/12/2015 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-260182	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-259996	Lab File ID:	01140010.D
Dilution:	1.0			Initial Weight/Volume:	30.9 g
Analysis Date:	01/14/2015 1737			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1121			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1000	U	1000	4100
C10-C28		690	U	690	4100

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	75		49 - 115

2/16/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K5**

Lab Sample ID: 280-64290-3
Client Matrix: Solid

% Moisture: 4.7

Date Sampled: 01/07/2015 1241
Date Received: 01/12/2015 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-260182	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-259996	Lab File ID:	01140011.D
Dilution:	1.0			Initial Weight/Volume:	30.0 g
Analysis Date:	01/14/2015 1801			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1121			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1000	U	1000	4200
C10-C28		710	U	710	4200

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	74		49 - 115

W 2/16/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K6**

Lab Sample ID: 280-64290-4
Client Matrix: Solid
% Moisture: 4.9

Date Sampled: 01/07/2015 1218
Date Received: 01/12/2015 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-260182	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-259996	Lab File ID:	01140012.D
Dilution:	1.0			Initial Weight/Volume:	30.9 g
Analysis Date:	01/14/2015 1825			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1121			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1000	U	1000	4100
C10-C28		690	U	690	4100

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	72		49 - 115

2/10/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K7**

Lab Sample ID: 280-64290-5
Client Matrix: Solid

% Moisture: 5.2

Date Sampled: 01/07/2015 1222
Date Received: 01/12/2015 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-260182	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-259996	Lab File ID:	01140013.D
Dilution:	1.0			Initial Weight/Volume:	30.9 g
Analysis Date:	01/14/2015 1849			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1121			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1000	U	1000	4100
C10-C28		690	U	690	4100

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	74		49 - 115

2/16/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K8**

Lab Sample ID: 280-64290-6
Client Matrix: Solid
% Moisture: 4.7

Date Sampled: 01/07/2015 1236
Date Received: 01/12/2015 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-260182	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-259996	Lab File ID:	01140014.D
Dilution:	1.0			Initial Weight/Volume:	31.1 g
Analysis Date:	01/14/2015 1913			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1121			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1000	U	1000	4000
C10-C28		690	U	690	4000

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	64		49 - 115

2/14/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K9**

Lab Sample ID: 280-64290-7
Client Matrix: Solid
% Moisture: 5.8

Date Sampled: 01/07/2015 1245
Date Received: 01/12/2015 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-260182	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-259996	Lab File ID:	01140015.D
Dilution:	1.0			Initial Weight/Volume:	32.2 g
Analysis Date:	01/14/2015 1938			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1121			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		990	U	990	4000
C10-C28		670	U	670	4000

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	74		49 - 115

2/14/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L0**

Lab Sample ID: 280-64290-8
Client Matrix: Solid
% Moisture: 5.1

Date Sampled: 01/07/2015 1230
Date Received: 01/12/2015 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-260182	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-259996	Lab File ID:	01140018.D
Dilution:	1.0			Initial Weight/Volume:	32.3 g
Analysis Date:	01/14/2015 2050			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1121			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		980	U	980	3900
C10-C28		660	U	660	3900

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	76		49 - 115

2/14/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L1**

Lab Sample ID: 280-64290-9
Client Matrix: Solid
% Moisture: 5.1

Date Sampled: 01/07/2015 1252
Date Received: 01/12/2015 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-260182	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-259996	Lab File ID:	01140021.D
Dilution:	1.0			Initial Weight/Volume:	30.3 g
Analysis Date:	01/14/2015 2202			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1121			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1000	U	1000	4200
C10-C28		710	U	710	4200

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	78		49 - 115

2/14/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L2**

Lab Sample ID: 280-64290-10
Client Matrix: Solid
% Moisture: 4.9

Date Sampled: 01/07/2015 1302
Date Received: 01/12/2015 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-260182	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-259996	Lab File ID:	01140022.D
Dilution:	1.0			Initial Weight/Volume:	30.5 g
Analysis Date:	01/14/2015 2226			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1121			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1000	U	1000	4100
C10-C28		700	U	700	4100

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	81		49 - 115

W 2/16/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L3**

Lab Sample ID: 280-64290-11
Client Matrix: Solid
% Moisture: 6.5

Date Sampled: 01/07/2015 1255
Date Received: 01/12/2015 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-260182	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-259996	Lab File ID:	01140023.D
Dilution:	1.0			Initial Weight/Volume:	30.4 g
Analysis Date:	01/14/2015 2250			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1121			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		22000		1100	4200
C10-C28		11000		720	4200

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	76		49 - 115

2/16/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L4**

Lab Sample ID: 280-64290-12
Client Matrix: Solid
% Moisture: 8.0

Date Sampled: 01/07/2015 1309
Date Received: 01/12/2015 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-260182	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-259996	Lab File ID:	01140024.D
Dilution:	1.0			Initial Weight/Volume:	30.4 g
Analysis Date:	01/14/2015 2314			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1121			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		12000		1100	4300
C10-C28		4700		730	4300

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	76		49 - 115

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L5**

Lab Sample ID: 280-64290-13
Client Matrix: Solid
% Moisture: 5.1

Date Sampled: 01/07/2015 1222
Date Received: 01/12/2015 0900

NWTPH-Dx Northwest - Semi-Volatile Petroleum Products (GC)

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-260182	Instrument ID:	SGC_U2a
Prep Method:	3550C	Prep Batch:	280-259996	Lab File ID:	01140025.D
Dilution:	1.0			Initial Weight/Volume:	32.5 g
Analysis Date:	01/14/2015 2338			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1121			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		970	U	970	3900
C10-C28		660	U	660	3900

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	74		49 - 115

2/16/15

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Job Number: 280-64290-1

SDG #: JP0891
SAF#: RC-075

Date SDG Closed: January 12, 2015
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V2K3	280-64290-1	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K4	280-64290-2	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K5	280-64290-3	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K6	280-64290-4	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K7	280-64290-5	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K8	280-64290-6	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K9	280-64290-7	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L0	280-64290-8	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L1	280-64290-9	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L2	280-64290-10	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L3	280-64290-11	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L4	280-64290-12	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L5	280-64290-13	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. 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 signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 1/12/2015 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.6° C, 2.8° C and 5.7° C.

GC/MS SEMIVOLATILES - SW846 8270C
Compounds Benzo(b)fluoranthene and Benzo(k)fluoranthene were unresolved in sample J1V2L0 due to matrix interferences. It can be noted that these compounds were adequately resolved in associated standards, indicating the instrument is achieving separation. The combined peak was reported as Benzo(b)fluoranthene, while Benzo(k)fluoranthene was reported as undetected even though it may be present. Associated results have been flagged with a "K".

The MS aliquot of the MS/MSD performed on sample J1V2K4 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "T". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs
The laboratory noted that a Sulfuric Acid clean-up was performed on the samples presented in this report to reduce matrix interferences.

Surrogate Decachlorobiphenyl was recovered outside the control limits, biased low, in sample J1V2L3. The laboratory noted that evidence of matrix interference is present; therefore, corrective action is deemed unnecessary. The laboratory noted that the sample chromatogram shows large non-target peaks present in the area where the surrogate elutes interfering with recovery and quantitation of the surrogate.

Samples J1V2L3 and J1V2L4 contained a combination of Aroclor 1254 and Aroclor 1260 with insufficient separation to quantify individually. The samples have been quantified and reported as the predominant Aroclor.

No other anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
No anomalies were encountered.

HPLC - SW846 8310 - PAHs
The LCS associated with batch 280-259915 exhibited the percent recovery outside the control limits for Benzo[k]fluoranthene at 84% (lower limit 85%), and associated sample results have been flagged "N". Although Benzo[k]fluoranthene was recovered outside current historical control limits, the recovery was within the allowed Marginal Exceedance control limits (lower limit 80%). This marginal exceedance has been determined to be sporadic, not systematic; therefore, corrective action is deemed unnecessary.

It should be noted that the low level estimated detection reported for Benzo[b]fluoranthene in sample J1V2L4 was not confirmed on the confirmation column (result was ND), and Benzo[b]fluoranthene was recovered outside the control limits, biased low, in the associated LCS on the confirmation column at 74% (lower limit is 85%). The LCS was in control on the primary column; therefore, Benzo[b]fluoranthene in sample J1V2L4 has been reported from the primary column.

The RPD between the primary and confirmation columns exceeded 40% for analytes in samples J1V2L3 and J1V2L4. The lower of the two values has been reported, as matrix interference is evident on both columns. Associated results have been flagged with an "X".

The MSD aliquot of the MS/MSD performed on sample J1V2L5 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "N". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-259902 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. In some cases, samples required a 2X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Iron, Lead and Vanadium to minimize the interference caused by Titanium concentrations greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Calcium, Copper and Magnesium are present in the method blank associated with batch 280-259902. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, corrective action is deemed unnecessary.

Low levels of Iron, a common laboratory contaminant, are present at a level greater than half the reporting limit in the method blank associated with batch 280-259902. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1V2K3; therefore, control limits are not applicable.

The Matrix Spike performed on sample J1V2K3 exhibited percent recoveries outside the control limits for Arsenic, Boron, Molybdenum, Selenium and Zinc, and the associated sample results have been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

DWS 1/7/15

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page 1 of 2 — 4

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4588	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 days		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-86:1, VER, Deep Zone	SAF No.: RC-075	
Ice Chest No.: AFS-04-121	Field Logbook No.: EL-1862-03	COA: 01D8612000	Method of Shipment: Commercial Carrier \ Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131312	Bill of Lading/Air Bill No.: See OSPC	
Other Labs Shipped To: TestAmerica Richland			

RCF 38670

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1					
Volume	250mL	250mL	250mL	250mL	125mL					
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	Semi-VOA - 8270 (TCL)	PAHs - 8310	TPH-Diesel Range - WTPH-D +					

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

Cooling as required

Sample No.	Matrix	Sample Date	Sample Time										
J1V2K3	SOIL	01/07/15	1215	X	X	X	X	X					
~~J1V2K4~~	~~SOIL~~	~~01/07/15~~	~~0926~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	DWS 1/7/15				
J1V2K5	SOIL	01/07/15	1241	X	X	X	X	X					
J1V2K6	SOIL	01/07/15	1218	X	X	X	X	X					
J1V2K7	SOIL	01/07/15	1222	X	X	X	X	X					

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1-7-15 1324	WCH DWSHEA	1/7/15 1324
DWSHEA DWSHEA	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	1060 Battelle Fridge #2B	1-7-15 1640
1060 Battelle Fridge #2B	1-8-15 0430	C. Bingham	1-8-15 0430
C. Bingham WCH	1-8-15 0515	Fed Ex	
			1-12-15 900

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | 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) (Mercury)

280-64290 Chain of Custody

5.2, 2.1, 2.3 IRS 20.5 Turnaround 1/12/15

JP0891

REVIEWED BY DATE 01/08/15

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page 4 of 4 1-7-15 CMB

Collector: A. Stowe

Company Contact: Joan Kessner

Telephone No.: 375-4688

Project Coordinator: KESSNER, JH

Price Code: 8B

Data Turnaround: 7 days

Project Designation: 100-D/DR Field Remediation

Sampling Location: 100-D-86:1, VER, Deep Zone

SAF No.: RC-075

Ice Chest No.: AFS-04-121

Field Logbook No.: EL-1662-03

COA: 01D8612000

Method of Shipment: Commercial Carrier / Fed Ex

Shipped To: TestAmerica Denver

Offsite Property No.: A131312

Bill of Lading/Air Bill No.: See OSRC

Other Labs Shipped To: TestAmerica Richland

RCF 38670

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	250mL	250mL	125mL						
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	Semi-VOA - 8270 (TCL)	PAHs - 8310	TPH-Diesel Range - WTPH-D +						

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

Cooling as required

Sample No.	Matrix	Sample Date	Sample Time										
~~J1V2K3~~	SOIL			01/07/15									
J1V2K4	SOIL	01/07/15	0926	X	X	X	X	X					
~~J1V2K5~~	SOIL												
~~J1V2K6~~ 01/07/15	SOIL												
~~J1V2K7~~	SOIL												

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	0953 1-7-15	WCH DWSHEA	0953 1/7/15
DWSHEA DWSHEA	1/7/15 1618	C. Bingham	1618 1-7-15
C. Bingham	1640 1-7-15	1060 Battelle, fridge #28	1640 1-7-15
1060 Battelle, fridge #28	0430 1-8-15	C. Bingham	0430 1-8-15
C. Bingham WCH	0515 1-8-15	Fed Ex	
			1-12-15 9:00

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | 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) (Mercury)

REVIEWED BY CAB DATE 01/07/15

JP0891

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page 2 of 8 - 4 DWS 1/7/15

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4888	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 days		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-86:1, VER, Deep Zone		SAF No.: RC-075
Ice Chest No.: AFS-04-121	Field Logbook No.: EL-1662-03	COA: 01D8612000	Method of Shipment: Commercial Carrier \ Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: 131312		Bill of Lading/Air Bill No.: See OSRC
Other Labs Shipped To: TestAmerica Richland			

RCF 38670

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1					
Volume	250mL	250mL	250mL	250mL	125mL					
Sample Analysis	See Item (1) in Special Instructions	PCBs - 8082	Semi-VOA - 8270 (TCL)	PAHs - 8310	TPH-Diesel Range - WTPH-D +					

Sample No.	Matrix	Sample Date	Sample Time										
J1V2K8	SOIL	01/07/15	1236	X	X	X	X	X					
J1V2K9	SOIL	01/07/15	1245	X	X	X	X	X					
J1V2L0	SOIL	01/07/15	1230	X	X	X	X	X					
J1V2L1	SOIL	01/07/15	1252	X	X	X	X	X					
J1V2L2	SOIL	01/07/15	1302	X	X	X	X	X					

Page 1 of 1

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1-7-15 1324	Joshua Dwshea (WCH)	1/7/15 1324
Joshua Dwshea	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	1060 Battelle, fridge #2B	1-7-15 1640
1060 Battelle, fridge #2B	1-8-15 0430	C. Bingham	1-8-15 0430
C. Bingham WCH	1-8-15 0515	Fed Ex	
			1-12-15 9:00

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | 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) {Mercury}

REVIEWED BY [signature] DATE 01/08/15

JP0891

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page 3 of 3 — 4
DWS 1/7/15

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-86:1, VER, Deep Zone		SAF No.: RC-075
Ice Chest No.: AFS-04-121	Field Logbook No.: EL-1662-03	COA: 01D8612000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131312		Bill of Lading/Air Bill No.: See OSPC

Price Code: 8B

Data Turnaround: 7 days

Other Labs Shipped To: TestAmerica Richland

RCF 38670

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	250mL	250mL	125mL						
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	Semi-VOA - 8270 (TCL)	PAHs - 8310	TPH-Diesel Range - WTPH-D +						
Sample No.	Matrix	Sample Date	Sample Time								
J1V2L3	SOIL	01/07/15	1255	X	X	X	X	X			
J1V2L4	SOIL	01/07/15	1309	X	X	X	X	X			
J1V2L5	SOIL	01/07/15	1222	X	X	X	X	X			

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

Cooling as required

Page 15 of 20

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1-7-15 1324	Dwshea DWSHEA (WCH)	1/7/15 1324
DWSHEA DWSHEA	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	1060 Battelle fridge #2B	1-7-15 1640
1060 Battelle fridge #2B	1-8-15 0430	C. Bingham	1-8-15 0430
C. Bingham WCH	1-8-15 0515	fed Ex	
			1-12-15 900

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | 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) (Mercury)

REVIEWED BY DAS DATE 01/07/15

JP0891

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GENERAL ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	100-D-861		DATA PACKAGE:	J P0891	
VALIDATOR:	ECR	LAB: TAL		DATE: 2/15/18	
			SDG:	J P0891	
ANALYSES PERFORMED					
8015	8021	8141	8151	8315	
		WTPH-HCID	WTPH-G	WTPH-D	
SAMPLES/MATRIX:					
J1V2F3	J1V2F4	J1V2F5	J1V2F6	J1V2F7	
J1V2F8	J1V2F9	J1V2G0	J1V2G1	J1V2G2	
J1V2G3	J1V2G4	J1V2G5			
				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

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: _____

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

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Method Blank - Batch: 280-259996

Method: NWTPH-Dx
Preparation: 3550C

Lab Sample ID:	MB 280-259996/1-A	Analysis Batch:	280-260182	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-259996	Lab File ID:	01140006.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.5 g
Analysis Date:	01/14/2015 1601	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1121			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
C10-C36	980	U	980	3900
C10-C28	670	U	670	3900

Surrogate	% Rec	Acceptance Limits
o-Terphenyl	71	49 - 115

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 280-259996

Method: NWTPH-Dx
Preparation: 3550C

LCS Lab Sample ID:	LCS 280-259996/2-A	Analysis Batch:	280-260182	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-259996	Lab File ID:	01140007.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.4 g
Analysis Date:	01/14/2015 1625	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1121			Injection Volume:	1 uL
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 280-259996/3-A	Analysis Batch:	280-260182	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-259996	Lab File ID:	01140008.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.1 g
Analysis Date:	01/14/2015 1649	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1121			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	% Rec. LCS	% Rec. LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
C10-C36	81	85	57 - 115	6	23		
C10-C28	81	85	53 - 115	6	23		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
o-Terphenyl	73	79	49 - 115

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Laboratory Control/
Laboratory Duplicate Data Report - Batch: 280-259996

Method: NWTPH-Dx
Preparation: 3550C

LCS Lab Sample ID:	LCS 280-259996/2-A	Units: ug/Kg		LCSD Lab Sample ID:	LCSD 280-259996/3-A
Client Matrix:	Solid			Client Matrix:	Solid
Dilution:	1.0			Dilution:	1.0
Analysis Date:	01/14/2015 1625			Analysis Date:	01/14/2015 1649
Prep Date:	01/13/2015 1121			Prep Date:	01/13/2015 1121
Leach Date:	N/A			Leach Date:	N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
C10-C36	65800	66400	53300	56300
C10-C28	65800	66400	53400	56400

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-259996

Method: NWTPH-Dx
Preparation: 3550C

MS Lab Sample ID:	280-64290-8	Analysis Batch:	280-260182	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-259996	Lab File ID:	01140019.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	32.0 g
Analysis Date:	01/14/2015 2114			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1121			Injection Volume:	1 uL
Leach Date:	N/A				

MSD Lab Sample ID:	280-64290-8	Analysis Batch:	280-260182	Instrument ID:	SGC_U2a
Client Matrix:	Solid	Prep Batch:	280-259996	Lab File ID:	01140020.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.4 g
Analysis Date:	01/14/2015 2138			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1121			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
C10-C36	83	87	57 - 115	7	23		
C10-C28	83	87	56 - 115	7	23		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
o-Terphenyl	73	76	49 - 115

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-259996

Method: NWTPH-Dx
Preparation: 3550C

MS Lab Sample ID:	280-64290-8	Units: ug/Kg	
Client Matrix:	Solid		
Dilution:	1.0		
Analysis Date:	01/14/2015 2114		
Prep Date:	01/13/2015 1121		
Leach Date:	N/A		

MSD Lab Sample ID:	280-64290-8
Client Matrix:	Solid
Dilution:	1.0
Analysis Date:	01/14/2015 2138
Prep Date:	01/13/2015 1121
Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
C10-C36	980	U	65900	67100	54700	58600
C10-C28	660	U	65900	67100	54500	58300

Date: 16 February 2015
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 100-D-86:1
Subject: Inorganic - Data Package No. JP0891-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0891 prepared by TestAmerica Laboratories (TAL). 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
J1V2K3	1/7/15	Soil	C	See note 1
J1V2K4	1/7/15	Soil	C	See note 1
J1V2K5	1/7/15	Soil	C	See note 1
J1V2K6	1/7/15	Soil	C	See note 1
J1V2K7	1/7/15	Soil	C	See note 1
J1V2K8	1/7/15	Soil	C	See note 1
J1V2K9	1/7/15	Soil	C	See note 1
J1V2L0	1/7/15	Soil	C	See note 1
J1V2L1	1/7/15	Soil	C	See note 1
J1V2L2	1/7/15	Soil	C	See note 1
J1V2L3	1/7/15	Soil	C	See note 1
J1V2L4	1/7/15	Soil	C	See note 1
J1V2L5	1/7/15	Soil	C	See note 1

1 - ICP metals (6010B).

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). 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 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 blank was 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 75% to 125%. Samples with a recovery of less than 30% and a sample result below the IDL are rejected and flagged "UR". Samples with a recovery of 30% to 74% and a sample result less than the IDL are qualified "UJ". Samples with a recovery of greater than 125% or less than 74% and a sample result greater than the IDL are qualified as estimates and flagged "J". Finally, for samples with a recovery greater than 125% and a sample result less than the IDL, no qualification is required.

Due to matrix spike recoveries outside QC limits, all arsenic (68%), boron (68%), selenium (69%), zinc (68%), antimony (55%) and silicon (32%) results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits, all silicon (10%) 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 (J1V2K7/J1T2L5) 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 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data package No. JP0891 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 arsenic (68%), boron (68%), selenium (69%), zinc (68%), antimony (55%) and silicon (32%) results were qualified as estimates and flagged "J".

- Due to an LCS recovery outside QC limits, all silicon (10%) 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-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

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

INORGANIC DATA QUALIFICATION SUMMARY*

SDG: JP0891	**REVIEWER: ELR**	**Project: 100-D-86:1**	**PAGE_1_OF_1**
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Arsenic boron selenium zinc antimony silicon	J	All	MS recovery
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

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K3**

Lab Sample ID: 280-64290-1
Client Matrix: Solid
% Moisture: 5.2

Date Sampled: 01/07/2015 1215
Date Received: 01/12/2015 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 01/13/2015 1613
Prep Date: 01/13/2015 0830

Analysis Batch: 280-260138
Prep Batch: 280-259902

V 2/16/15

Instrument ID: MT_026
Lab File ID: 26b011315.asc
Initial Weight/Volume: 1.18 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		3830	X	1.4	4.5
Arsenic		1.5	N J	0.59	0.89
Barium		64.4	X	0.068	0.45
Boron		0.88	U N J	0.88	1.8
Cadmium		0.11	B	0.037	0.18
Calcium		7060	X	12.6	44.7
Chromium		3.4	X	0.052	0.18
Magnesium		4170	X	3.3	17.9
Manganese		295	X	0.089	0.89
Molybdenum		0.23	U N	0.23	1.8
Nickel		6.4	X	0.11	3.6
Potassium		476		36.7	268
Selenium		0.77	U N J	0.77	0.89
Silicon		92.0	J	5.1	8.9
Silver		0.14	U	0.14	0.18
Sodium		332		52.7	107
Zinc		45.1	N X J	0.36	0.89

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 2.0
Analysis Date: 01/14/2015 1357
Prep Date: 01/13/2015 0830

Analysis Batch: 280-260307
Prep Batch: 280-259902

Instrument ID: MT_026
Lab File ID: 26b011415.asc
Initial Weight/Volume: 1.18 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.68	U J	0.68	1.1
Beryllium		0.059	U	0.059	0.36
Cobalt		9.6	X	0.18	1.8
Copper		14.0		0.39	1.8
Iron		28800		6.8	8.9
Lead		2.4		0.48	0.89
Vanadium		81.1		0.17	3.6

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 01/13/2015 1403
Prep Date: 01/13/2015 1020

Analysis Batch: 280-260040
Prep Batch: 280-259884

Instrument ID: MT_033
Lab File ID: 150113aa.txt
Initial Weight/Volume: 0.61 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0057	U	0.0057	0.018

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K4**

Lab Sample ID: 280-64290-2
Client Matrix: Solid
% Moisture: 4.3

Date Sampled: 01/07/2015 0926
Date Received: 01/12/2015 0900

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-260138	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-259902	Lab File ID:	26b011315.asc
Dilution:	1.0			Initial Weight/Volume:	1.13 g
Analysis Date:	01/13/2015 1624			Final Weight/Volume:	100 mL
Prep Date:	01/13/2015 0830				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4300	X	1.4	4.6
Arsenic		1.5	J	0.61	0.93
Barium		53.3	X	0.070	0.46
Boron		0.91	U J	0.91	1.9
Cadmium		0.11	B	0.038	0.19
Calcium		6320	X	13.0	46.3
Chromium		3.6	X	0.054	0.19
Magnesium		4140	X	3.4	18.5
Manganese		302	X	0.093	0.93
Molybdenum		0.24	U	0.24	1.9
Nickel		6.8	X	0.11	3.7
Potassium		533		37.9	278
Selenium		0.80	U J	0.80	0.93
Silicon		124	J	5.2	9.3
Silver		0.15	U	0.15	0.19
Sodium		434		54.6	111
Zinc		44.1	X J	0.37	0.93

Analysis Method:	6010B	Analysis Batch:	280-260307	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-259902	Lab File ID:	26b011415.asc
Dilution:	2.0			Initial Weight/Volume:	1.13 g
Analysis Date:	01/14/2015 1408			Final Weight/Volume:	100 mL
Prep Date:	01/13/2015 0830				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.70	U J	0.70	1.1
Beryllium		0.061	U	0.061	0.37
Cobalt		9.7	X	0.19	1.9
Copper		14.8		0.40	1.9
Iron		28700		7.0	9.3
Lead		3.0		0.50	0.93
Vanadium		80.7		0.17	3.7

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-260040	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-259884	Lab File ID:	150113aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.69 g
Analysis Date:	01/13/2015 1405			Final Weight/Volume:	50 mL
Prep Date:	01/13/2015 1020				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0050	U	0.0050	0.015

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K5**

Lab Sample ID: 280-64290-3
Client Matrix: Solid

% Moisture: 4.7

Date Sampled: 01/07/2015 1241
Date Received: 01/12/2015 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 01/13/2015 1627
Prep Date: 01/13/2015 0830

Analysis Batch: 280-260138
Prep Batch: 280-259902

Instrument ID: MT_026
Lab File ID: 26b011315.asc
Initial Weight/Volume: 1.04 g
Final Weight/Volume: 100 mL

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4400	X J	1.6	5.0
Arsenic		1.4		0.67	1.0
Barium		72.1	X	0.077	0.50
Boron		0.99	U J	0.99	2.0
Cadmium		0.13	B	0.041	0.20
Calcium		7180	X	14.2	50.4
Chromium		3.8	X	0.059	0.20
Magnesium		4570	X	3.7	20.2
Manganese		315	X	0.10	1.0
Molybdenum		0.26	U	0.26	2.0
Nickel		8.0	X	0.12	4.0
Potassium		543		41.4	303
Selenium		0.87	U J	0.87	1.0
Silicon		146	J	5.7	10.1
Silver		0.16	U	0.16	0.20
Sodium		338		59.5	121
Zinc		47.5	X J	0.40	1.0

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 2.0
Analysis Date: 01/14/2015 1410
Prep Date: 01/13/2015 0830

Analysis Batch: 280-260307
Prep Batch: 280-259902

Instrument ID: MT_026
Lab File ID: 26b011415.asc
Initial Weight/Volume: 1.04 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.77	U J	0.77	1.2
Beryllium		0.067	U	0.067	0.40
Cobalt		10.1	X	0.20	2.0
Copper		15.0		0.44	2.0
Iron		30600		7.7	10.1
Lead		2.7		0.54	1.0
Vanadium		85.9		0.19	4.0

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 01/13/2015 1407
Prep Date: 01/13/2015 1020

Analysis Batch: 280-260040
Prep Batch: 280-259884

Instrument ID: MT_033
Lab File ID: 150113aa.txt
Initial Weight/Volume: 0.61 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.015	B	0.0057	0.018

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K6**

Lab Sample ID: 280-64290-4
Client Matrix: Solid

% Moisture: 4.9

Date Sampled: 01/07/2015 1218
Date Received: 01/12/2015 0900

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-260138	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-259902	Lab File ID:	26b011315.asc
Dilution:	1.0			Initial Weight/Volume:	1.13 g
Analysis Date:	01/13/2015 1629			Final Weight/Volume:	100 mL
Prep Date:	01/13/2015 0830				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4230	X	1.4	4.7
Arsenic		1.6	J	0.61	0.93
Barium		66.0	X	0.071	0.47
Boron		0.91	U J	0.91	1.9
Cadmium		0.11	B	0.038	0.19
Calcium		6450	X	13.1	46.5
Chromium		3.9	X	0.054	0.19
Magnesium		4210	X	3.4	18.6
Manganese		306	X	0.093	0.93
Molybdenum		0.24	U	0.24	1.9
Nickel		7.0	X	0.11	3.7
Potassium		505		38.2	279
Selenium		0.80	U J	0.80	0.93
Silicon		118	J	5.3	9.3
Silver		0.15	U	0.15	0.19
Sodium		373		54.9	112
Zinc		46.0	X J	0.37	0.93

Analysis Method:	6010B	Analysis Batch:	280-260307	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-259902	Lab File ID:	26b011415.asc
Dilution:	2.0			Initial Weight/Volume:	1.13 g
Analysis Date:	01/14/2015 1413			Final Weight/Volume:	100 mL
Prep Date:	01/13/2015 0830				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.71	U J	0.71	1.1
Beryllium		0.061	U	0.061	0.37
Cobalt		9.9	X	0.19	1.9
Copper		14.2		0.40	1.9
Iron		30300		7.1	9.3
Lead		2.6		0.50	0.93
Vanadium		87.6		0.17	3.7

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-260040	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-259884	Lab File ID:	150113aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.68 g
Analysis Date:	01/13/2015 1410			Final Weight/Volume:	50 mL
Prep Date:	01/13/2015 1020				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0051	U	0.0051	0.016

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K7**

Lab Sample ID: 280-64290-5
Client Matrix: Solid

% Moisture: 5.2

Date Sampled: 01/07/2015 1222
Date Received: 01/12/2015 0900

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-260138	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-259902	Lab File ID:	26b011315.asc
Dilution:	1.0			Initial Weight/Volume:	1.18 g
Analysis Date:	01/13/2015 1632			Final Weight/Volume:	100 mL
Prep Date:	01/13/2015 0830				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		3750	X	1.4	4.5
Arsenic		1.5	J	0.59	0.89
Barium		63.1	X	0.068	0.45
Boron		0.88	U J	0.88	1.8
Cadmium		0.11	B	0.037	0.18
Calcium		6130	X	12.6	44.7
Chromium		4.3	X	0.052	0.18
Magnesium		4130	X	3.3	17.9
Manganese		295	X	0.089	0.89
Molybdenum		0.23	U	0.23	1.8
Nickel		6.3	X	0.11	3.6
Potassium		450		36.7	268
Selenium		0.77	~~U~~ J	0.77	0.89
Silicon		102		5.1	8.9
Silver		0.14	U	0.14	0.18
Sodium		336		52.8	107
Zinc		42.8	X J	0.36	0.89

Analysis Method:	6010B	Analysis Batch:	280-260307	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-259902	Lab File ID:	26b011415.asc
Dilution:	2.0			Initial Weight/Volume:	1.18 g
Analysis Date:	01/14/2015 1416			Final Weight/Volume:	100 mL
Prep Date:	01/13/2015 0830				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.68	U J	0.68	1.1
Beryllium		0.059	U	0.059	0.36
Cobalt		9.7	X	0.18	1.8
Copper		13.1		0.39	1.8
Iron		28200		6.8	8.9
Lead		2.3		0.48	0.89
Vanadium		82.0		0.17	3.6

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-260040	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-259884	Lab File ID:	150113aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.66 g
Analysis Date:	01/13/2015 1412			Final Weight/Volume:	50 mL
Prep Date:	01/13/2015 1020				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0053	U	0.0053	0.016

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K8**

Lab Sample ID: 280-64290-6
Client Matrix: Solid

% Moisture: 4.7

Date Sampled: 01/07/2015 1236
Date Received: 01/12/2015 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 01/13/2015 1645
Prep Date: 01/13/2015 0830

Analysis Batch: 280-260138
Prep Batch: 280-259902

Instrument ID: MT_026
Lab File ID: 26b011315.asc
Initial Weight/Volume: 1.02 g
Final Weight/Volume: 100 mL

2/14/15

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4240	X	1.6	5.1
Arsenic		2.1	J	0.68	1.0
Barium		213	X	0.078	0.51
Boron		1.0	U J	1.0	2.1
Cadmium		0.12	B	0.042	0.21
Calcium		6970	X	14.5	51.4
Chromium		3.7	X	0.060	0.21
Magnesium		4490	X	3.8	20.6
Manganese		306	X	0.10	1.0
Molybdenum		0.27	U	0.27	2.1
Nickel		8.1	X	0.13	4.1
Potassium		526		42.2	309
Selenium		0.88	U J	0.88	1.0
Silicon		123	J	5.8	10.3
Silver		0.16	U	0.16	0.21
Sodium		351		60.7	123
Zinc		46.4	X J	0.41	1.0

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 2.0
Analysis Date: 01/14/2015 1429
Prep Date: 01/13/2015 0830

Analysis Batch: 280-260307
Prep Batch: 280-259902

Instrument ID: MT_026
Lab File ID: 26b011415.asc
Initial Weight/Volume: 1.02 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.78	U J	0.78	1.2
Beryllium		0.068	U	0.068	0.41
Cobalt		10.3	X	0.21	2.1
Copper		14.4		0.45	2.1
Iron		30600		7.8	10.3
Lead		3.0		0.56	1.0
Vanadium		88.6		0.19	4.1

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 01/13/2015 1414
Prep Date: 01/13/2015 1020

Analysis Batch: 280-260040
Prep Batch: 280-259884

Instrument ID: MT_033
Lab File ID: 150113aa.txt
Initial Weight/Volume: 0.65 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0054	U	0.0054	0.016

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K9**

Lab Sample ID: 280-64290-7
Client Matrix: Solid
% Moisture: 5.8

Date Sampled: 01/07/2015 1245
Date Received: 01/12/2015 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 01/13/2015 1648
Prep Date: 01/13/2015 0830

Analysis Batch: 280-260138
Prep Batch: 280-259902

Instrument ID: MT_026
Lab File ID: 26b011315.asc
Initial Weight/Volume: 1.10 g
Final Weight/Volume: 100 mL

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4130	X J	1.5	4.8
Arsenic		1.8		0.64	0.96
Barium		58.5	X	0.073	0.48
Boron		0.95	U J	0.95	1.9
Cadmium		0.12	B	0.040	0.19
Calcium		6450	X	13.6	48.2
Chromium		3.9	X	0.056	0.19
Magnesium		4100	X	3.6	19.3
Manganese		289	X	0.096	0.96
Molybdenum		0.25	U	0.25	1.9
Nickel		6.8	X	0.12	3.9
Potassium		520		39.5	289
Selenium		0.83	U J	0.83	0.96
Silicon		113	J	5.5	9.6
Silver		0.15	U	0.15	0.19
Sodium		321		56.9	116
Zinc		44.6	X J	0.38	0.96

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 2.0
Analysis Date: 01/14/2015 1431
Prep Date: 01/13/2015 0830

Analysis Batch: 280-260307
Prep Batch: 280-259902

Instrument ID: MT_026
Lab File ID: 26b011415.asc
Initial Weight/Volume: 1.10 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.73	U J	0.73	1.2
Beryllium		0.064	U	0.064	0.39
Cobalt		9.2	X	0.19	1.9
Copper		13.1		0.42	1.9
Iron		29700		7.3	9.6
Lead		2.6		0.52	0.96
Vanadium		86.9		0.18	3.9

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 01/13/2015 1417
Prep Date: 01/13/2015 1020

Analysis Batch: 280-260040
Prep Batch: 280-259884

Instrument ID: MT_033
Lab File ID: 150113aa.txt
Initial Weight/Volume: 0.62 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0057	U	0.0057	0.017

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L0**

Lab Sample ID: 280-64290-8
Client Matrix: Solid

% Moisture: 5.1

Date Sampled: 01/07/2015 1230
Date Received: 01/12/2015 0900

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-260138	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-259902	Lab File ID:	26b011315.asc
Dilution:	1.0			Initial Weight/Volume:	1.18 g
Analysis Date:	01/13/2015 1651			Final Weight/Volume:	100 mL
Prep Date:	01/13/2015 0830				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4110	X J	1.4	4.5
Arsenic		1.9		0.59	0.89
Barium		59.2	X	0.068	0.45
Boron		0.88	U J	0.88	1.8
Cadmium		0.11	B	0.037	0.18
Calcium		5590	X	12.6	44.7
Chromium		4.2	X	0.052	0.18
Magnesium		3920	X	3.3	17.9
Manganese		305	X	0.089	0.89
Molybdenum		0.23	U	0.23	1.8
Nickel		6.8	X	0.11	3.6
Potassium		624		36.6	268
Selenium		0.77	U J	0.77	0.89
Silicon		209	J	5.1	8.9
Silver		0.14	U	0.14	0.18
Sodium		313		52.7	107
Zinc		42.4	X J	0.36	0.89

Analysis Method:	6010B	Analysis Batch:	280-260307	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-259902	Lab File ID:	26b011415.asc
Dilution:	2.0			Initial Weight/Volume:	1.18 g
Analysis Date:	01/14/2015 1434			Final Weight/Volume:	100 mL
Prep Date:	01/13/2015 0830				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.68	U J	0.68	1.1
Beryllium		0.059	U	0.059	0.36
Cobalt		8.8	X	0.18	1.8
Copper		14.0		0.39	1.8
Iron		26100		6.8	8.9
Lead		3.2		0.48	0.89
Vanadium		72.2		0.17	3.6

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-260040	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-259884	Lab File ID:	150113aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.63 g
Analysis Date:	01/13/2015 1424			Final Weight/Volume:	50 mL
Prep Date:	01/13/2015 1020				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0056	U	0.0056	0.017

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L1**

Lab Sample ID: 280-64290-9
Client Matrix: Solid

% Moisture: 5.1

Date Sampled: 01/07/2015 1252
Date Received: 01/12/2015 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 01/13/2015 1654
Prep Date: 01/13/2015 0830

Analysis Batch: 280-260138
Prep Batch: 280-259902

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Instrument ID: MT_026
Lab File ID: 26b011315.asc
Initial Weight/Volume: 1.14 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		3610	X	1.4	4.6
Arsenic		1.6	J	0.61	0.92
Barium		58.0	X	0.070	0.46
Boron		0.91	U J	0.91	1.8
Cadmium		0.11	B	0.038	0.18
Calcium		5570	X	13.0	46.2
Chromium		3.9	X	0.054	0.18
Magnesium		4060	X	3.4	18.5
Manganese		299	X	0.092	0.92
Molybdenum		0.24	U	0.24	1.8
Nickel		8.5	X	0.11	3.7
Potassium		447		37.9	277
Selenium		0.80	U J	0.80	0.92
Silicon		110	J	5.2	9.2
Silver		0.15	U	0.15	0.18
Sodium		285		54.6	111
Zinc		43.6	X J	0.37	0.92

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 2.0
Analysis Date: 01/14/2015 1437
Prep Date: 01/13/2015 0830

Analysis Batch: 280-260307
Prep Batch: 280-259902

Instrument ID: MT_026
Lab File ID: 26b011415.asc
Initial Weight/Volume: 1.14 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.70	U J	0.70	1.1
Beryllium		0.061	U	0.061	0.37
Cobalt		9.4	X	0.18	1.8
Copper		12.7		0.40	1.8
Iron		28400		7.0	9.2
Lead		2.6		0.50	0.92
Vanadium		88.2		0.17	3.7

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 01/13/2015 1431
Prep Date: 01/13/2015 1020

Analysis Batch: 280-260040
Prep Batch: 280-259884

Instrument ID: MT_033
Lab File ID: 150113aa.txt
Initial Weight/Volume: 0.66 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0053	U	0.0053	0.016

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L2**

Lab Sample ID: 280-64290-10
Client Matrix: Solid
% Moisture: 4.9

Date Sampled: 01/07/2015 1302
Date Received: 01/12/2015 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 01/13/2015 1656
Prep Date: 01/13/2015 0830

Analysis Batch: 280-260138
Prep Batch: 280-259902

Instrument ID: MT_026
Lab File ID: 26b011315.asc
Initial Weight/Volume: 1.10 g
Final Weight/Volume: 100 mL

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		3790	X	1.5	4.8
Arsenic		1.4	J	0.63	0.96
Barium		63.9	X	0.073	0.48
Boron		0.94	U J	0.94	1.9
Cadmium		0.10	B	0.039	0.19
Calcium		6130	X	13.5	47.8
Chromium		3.7	X	0.055	0.19
Magnesium		4080	X	3.5	19.1
Manganese		285	X	0.096	0.96
Molybdenum		0.25	U	0.25	1.9
Nickel		8.3	X	0.12	3.8
Potassium		453		39.2	287
Selenium		0.82	U J	0.82	0.96
Silicon		102	J	5.4	9.6
Silver		0.15	U	0.15	0.19
Sodium		306		56.4	115
Zinc		41.9	X J	0.38	0.96

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 2.0
Analysis Date: 01/14/2015 1439
Prep Date: 01/13/2015 0830

Analysis Batch: 280-260307
Prep Batch: 280-259902

Instrument ID: MT_026
Lab File ID: 26b011415.asc
Initial Weight/Volume: 1.10 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.73	U J	0.73	1.1
Beryllium		0.063	U	0.063	0.38
Cobalt		9.9	X	0.19	1.9
Copper		14.0		0.41	1.9
Iron		29600		7.3	9.6
Lead		2.5		0.52	0.96
Vanadium		87.0		0.18	3.8

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 01/13/2015 1433
Prep Date: 01/13/2015 1020

Analysis Batch: 280-260040
Prep Batch: 280-259884

Instrument ID: MT_033
Lab File ID: 150113aa.txt
Initial Weight/Volume: 0.68 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0051	U	0.0051	0.016

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L3**

Lab Sample ID: 280-64290-11
Client Matrix: Solid

% Moisture: 6.5

Date Sampled: 01/07/2015 1255
Date Received: 01/12/2015 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 01/13/2015 1659
Prep Date: 01/13/2015 0830

Analysis Batch: 280-260138
Prep Batch: 280-259902

Instrument ID: MT_026
Lab File ID: 26b011315.asc
Initial Weight/Volume: 1.13 g
Final Weight/Volume: 100 mL

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5360	X	1.5	4.7
Antimony		0.36	U J	0.36	0.57
Arsenic		2.8	J	0.62	0.95
Barium		58.5	X	0.072	0.47
Beryllium		0.031	U	0.031	0.19
Boron		0.93	U J	0.93	1.9
Cadmium		0.12	B	0.039	0.19
Calcium		8100	X	13.3	47.3
Chromium		6.7	X	0.055	0.19
Cobalt		7.9	X	0.095	0.95
Copper		13.3		0.21	0.95
Lead		6.2		0.26	0.47
Magnesium		4280	X	3.5	18.9
Manganese		289	X	0.095	0.95
Molybdenum		0.25	U	0.25	1.9
Nickel		8.9	X	0.12	3.8
Potassium		860		38.8	284
Selenium		0.81	U J	0.81	0.95
Silicon		221	J	5.4	9.5
Silver		0.15	U	0.15	0.19
Sodium		348		55.8	114
Vanadium		61.6		0.089	1.9
Zinc		43.2	X J	0.38	0.95

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 01/14/2015 1442
Prep Date: 01/13/2015 0830

Analysis Batch: 280-260307
Prep Batch: 280-259902

Instrument ID: MT_026
Lab File ID: 26b011415.asc
Initial Weight/Volume: 1.13 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Iron		23400		3.6	4.7

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 01/13/2015 1435
Prep Date: 01/13/2015 1020

Analysis Batch: 280-260040
Prep Batch: 280-259884

Instrument ID: MT_033
Lab File ID: 150113aa.txt
Initial Weight/Volume: 0.66 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.30		0.0054	0.017

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L4**

Lab Sample ID: 280-64290-12
Client Matrix: Solid
% Moisture: 8.0

Date Sampled: 01/07/2015 1309
Date Received: 01/12/2015 0900

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-260138	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-259902	Lab File ID:	26b011315.asc
Dilution:	1.0			Initial Weight/Volume:	1.04 g
Analysis Date:	01/13/2015 1702			Final Weight/Volume:	100 mL
Prep Date:	01/13/2015 0830				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4630	X	1.6	5.2
Antimony		0.40	U J	0.40	0.63
Arsenic		2.4	J	0.69	1.0
Barium		61.2	X	0.079	0.52
Beryllium		0.034	U	0.034	0.21
Boron		1.0	U J	1.0	2.1
Cadmium		0.10	B	0.043	0.21
Calcium		9080	X	14.7	52.2
Chromium		6.2	X	0.061	0.21
Cobalt		7.2	X	0.10	1.0
Copper		12.2		0.23	1.0
Lead		4.1		0.28	0.52
Magnesium		3950	X	3.9	20.9
Manganese		283	X	0.10	1.0
Molybdenum		0.27	U	0.27	2.1
Nickel		9.0	X	0.13	4.2
Potassium		732		42.8	313
Selenium		0.90	U J	0.90	1.0
Silicon		310	J	5.9	10.4
Silver		0.17	U	0.17	0.21
Sodium		274		61.6	125
Vanadium		52.8		0.098	2.1
Zinc		37.4	X J	0.42	1.0

Analysis Method:	6010B	Analysis Batch:	280-260307	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-259902	Lab File ID:	26b011415.asc
Dilution:	1.0			Initial Weight/Volume:	1.04 g
Analysis Date:	01/14/2015 1445			Final Weight/Volume:	100 mL
Prep Date:	01/13/2015 0830				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Iron		21700		4.0	5.2

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-260040	Instrument ID:	MT_033
Prep Method:	7471A	Prep Batch:	280-259884	Lab File ID:	150113aa.txt
Dilution:	1.0			Initial Weight/Volume:	0.68 g
Analysis Date:	01/13/2015 1437			Final Weight/Volume:	50 mL
Prep Date:	01/13/2015 1020				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.061		0.0053	0.016

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L5**

Lab Sample ID: 280-64290-13
Client Matrix: Solid

% Moisture: 5.1

Date Sampled: 01/07/2015 1222
Date Received: 01/12/2015 0900

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 01/13/2015 1704
Prep Date: 01/13/2015 0830

Analysis Batch: 280-260138
Prep Batch: 280-259902

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Instrument ID: MT_026
Lab File ID: 26b011315.asc
Initial Weight/Volume: 1.14 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		3830	X J	1.4	4.6
Arsenic		1.6		0.61	0.92
Barium		66.8	X	0.070	0.46
Boron		0.91	U J	0.91	1.8
Cadmium		0.10	B	0.038	0.18
Calcium		6360	X	13.0	46.2
Chromium		3.6	X	0.054	0.18
Magnesium		4170	X	3.4	18.5
Manganese		300	X	0.092	0.92
Molybdenum		0.24	U	0.24	1.8
Nickel		8.0	X	0.11	3.7
Potassium		472		37.9	277
Selenium		0.80	U J	0.80	0.92
Silicon		103	J	5.2	9.2
Silver		0.15	U	0.15	0.18
Sodium		344		54.5	111
Zinc		45.4	X J	0.37	0.92

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 2.0
Analysis Date: 01/14/2015 1447
Prep Date: 01/13/2015 0830

Analysis Batch: 280-260307
Prep Batch: 280-259902

Instrument ID: MT_026
Lab File ID: 26b011415.asc
Initial Weight/Volume: 1.14 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.70	U J	0.70	1.1
Beryllium		0.061	U	0.061	0.37
Cobalt		9.9	X	0.18	1.8
Copper		14.1		0.40	1.8
Iron		30100		7.0	9.2
Lead		2.7		0.50	0.92
Vanadium		92.4		0.17	3.7

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 01/13/2015 1440
Prep Date: 01/13/2015 1020

Analysis Batch: 280-260040
Prep Batch: 280-259884

Instrument ID: MT_033
Lab File ID: 150113aa.txt
Initial Weight/Volume: 0.65 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.0054	U	0.0054	0.017

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Job Number: 280-64290-1

SDG #: JP0891
SAF#: RC-075

Date SDG Closed: January 12, 2015
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V2K3	280-64290-1	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K4	280-64290-2	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K5	280-64290-3	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K6	280-64290-4	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K7	280-64290-5	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K8	280-64290-6	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K9	280-64290-7	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L0	280-64290-8	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L1	280-64290-9	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L2	280-64290-10	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L3	280-64290-11	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L4	280-64290-12	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L5	280-64290-13	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. 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 signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 1/12/2015 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.6° C, 2.8° C and 5.7° C.

GC/MS SEMIVOLATILES - SW846 8270C
Compounds Benzo(b)fluoranthene and Benzo(k)fluoranthene were unresolved in sample J1V2L0 due to matrix interferences. It can be noted that these compounds were adequately resolved in associated standards, indicating the instrument is achieving separation. The combined peak was reported as Benzo(b)fluoranthene, while Benzo(k)fluoranthene was reported as undetected even though it may be present. Associated results have been flagged with a "K".

The MS aliquot of the MS/MSD performed on sample J1V2K4 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "T". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs
The laboratory noted that a Sulfuric Acid clean-up was performed on the samples presented in this report to reduce matrix interferences.

Surrogate Decachlorobiphenyl was recovered outside the control limits, biased low, in sample J1V2L3. The laboratory noted that evidence of matrix interference is present; therefore, corrective action is deemed unnecessary. The laboratory noted that the sample chromatogram shows large non-target peaks present in the area where the surrogate elutes interfering with recovery and quantitation of the surrogate.

Samples J1V2L3 and J1V2L4 contained a combination of Aroclor 1254 and Aroclor 1260 with insufficient separation to quantify individually. The samples have been quantified and reported as the predominant Aroclor.

No other anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
No anomalies were encountered.

HPLC - SW846 8310 - PAHs
The LCS associated with batch 280-259915 exhibited the percent recovery outside the control limits for Benzo[k]fluoranthene at 84% (lower limit 85%), and associated sample results have been flagged "N". Although Benzo[k]fluoranthene was recovered outside current historical control limits, the recovery was within the allowed Marginal Exceedance control limits (lower limit 80%). This marginal exceedance has been determined to be sporadic, not systematic; therefore, corrective action is deemed unnecessary.

It should be noted that the low level estimated detection reported for Benzo[b]fluoranthene in sample J1V2L4 was not confirmed on the confirmation column (result was ND), and Benzo[b]fluoranthene was recovered outside the control limits, biased low, in the associated LCS on the confirmation column at 74% (lower limit is 85%). The LCS was in control on the primary column; therefore, Benzo[b]fluoranthene in sample J1V2L4 has been reported from the primary column.

The RPD between the primary and confirmation columns exceeded 40% for analytes in samples J1V2L3 and J1V2L4. The lower of the two values has been reported, as matrix interference is evident on both columns. Associated results have been flagged with an "X".

The MSD aliquot of the MS/MSD performed on sample J1V2L5 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "N". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-259902 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. In some cases, samples required a 2X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Iron, Lead and Vanadium to minimize the interference caused by Titanium concentrations greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Calcium, Copper and Magnesium are present in the method blank associated with batch 280-259902. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, corrective action is deemed unnecessary.

Low levels of Iron, a common laboratory contaminant, are present at a level greater than half the reporting limit in the method blank associated with batch 280-259902. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1V2K3; therefore, control limits are not applicable.

The Matrix Spike performed on sample J1V2K3 exhibited percent recoveries outside the control limits for Arsenic, Boron, Molybdenum, Selenium and Zinc, and the associated sample results have been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

DWS 1/7/15

Page 1 of 3 - 4

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Data Turnaround

Price Code: 8B

7 days

Collector: Q. Stowe

Project Designation: 100-D/DR Field Remediation

Chest No.: AFS-04-121

Shipped To: TestAmerica Denver

Other Labs Shipped To: TestAmerica Richland

RCF 38670

Company Contact: Joan Kessner

Telephone No.: 375-4688

Project Coordinator: KESSNER, JH

Sampling Location: 100-D-86:1, VER, Deep Zone

SAF No.: RC-075

Field Logbook No.: EL-1662-03

COA: 01D8612000

Method of Shipment: Commercial Carrier Fed Ex

Offsite Property No.: A131312

Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

Cooling as required

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis
				Cool 4C	G/P	1	250mL	See item (1) in Special Instructions
				Cool 4C	aG	1	250mL	PCBs - 8082
				Cool 4C	aG	1	250mL	Semi-VOA - 8270 (TCL)
				Cool 4C	aG	1	250mL	PAHs - 8310
				Cool 4C	aG	1	125mL	TPH-Diesel Range - WTPH-D +
11V2K3	SOIL	01/07/15	1215	X	X	X	X	X
11V2K4	SOIL	01/07/15	0926	X	X	X	X	X
11V2K5	SOIL	01/07/15	1241	X	X	X	X	X
11V2K6	SOIL	01/07/15	1218	X	X	X	X	X
11V2K7	SOIL	01/07/15	1222	X	X	X	X	X

DWS 1/7/15

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1-7-15 1324	WCH DJOSHUA	1/7/15 1324
DJOSHUA DJOSHUA	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	1060 Battelle, fridge #28	1-7-15 1640
1060 Battelle, fridge #28	1-8-15 0430	C. Bingham	1-8-15 0430
C. Bingham WCH	1-8-15 0515	Fed Ex	
			1-12-15 900

Sign/Print Names

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | 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) (Mercury)

280-64290 Chain of Custody

5.2, 2.1.2.3 IRS 20.5 Turnaround Time 1/12/15

JP0891

REVIEWED BY DWS DATE 01/08/15

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page 1 of 4 1-7-15 CMB

Collector: A. Stowe

Project Designation: 100-D/DR Field Remediation

Chest No.: AFS-04-121

Shipped To: TestAmerica Denver

Other Labs Shipped To: TestAmerica Richland

RCF 38670

Company Contact: Joan Kessner

Telephone No.: 375-4688

Project Coordinator: KESSNER, JH

Price Code: 8B

Data Turnaround: 7 days

Sampling Location: 100-D-86:1, VER, Deep Zone

SAF No.: RC-075

Field Logbook No.: EL-1662-03

COA: 01D8612000

Method of Shipment: Commercial Carrier / Fed Ex

Offsite Property No.: A131312

Bill of Lading/Air Bill No.: See OSPC

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1					
Volume	250mL	250mL	250mL	250mL	125mL					
Sample Analysis	See Item (1) in Special Instructions	PCBs - 8082	Semi-VOA - 8270 (TCL)	PAHs - 8310	TPH-Diesel Range - WTPH-D +					

Sample No.	Matrix	Sample Date	Sample Time									
J1V2K3	SOIL											
J1V2K4	SOIL	01/07/15	0926	X	X	X	X	X				
J1V2K5	SOIL											
J1V2K6	SOIL											
J1V2K7	SOIL											

01/07/15

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1-7-15 0953	WCH DWSHEA DWSHEA	1/7/15 0955
DWSHEA DWSHEA	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	1060 Battelle, fridge #2B	1-7-15 1640
1060 Battelle, fridge #2B	1-8-15 0430	C. Bingham	1-8-15 0430
C. Bingham WCH	1-8-15 0515	Fed Ex	
			1-12-15 9:00

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | 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) (Mercury)

REVIEWED BY CAS DATE 01/08/15

JP0891

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

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DWS 1/7/15

Collector	R. Stowe
Project Designation	100-D/DR Field Remediation
Chest No.	AFS-04-121
Shipped To	TestAmerica Denver
Other Labs Shipped To	TestAmerica Richland
	RCF 38670
Company Contact	Joan Kessner
Telephone No.	375-4688
Sampling Location	100-D-86:1, VER, Deep Zone
Field Logbook No.	EL-1662-03
COA	01D8612000
Offsite Property No.	A131312
Project Coordinator	KESSNER, JH
SAF No.	RC-075
Method of Shipment	Commercial Carrier \ Fed Ex
Bill of Lading/Air Bill No.	See OSRC
Price Code	8B
Data Turnaround	7 days

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1					
Volume	250mL	250mL	250mL	250mL	125mL					
Sample Analysis	See Item (1) in Special Instructions	PCBs - 8082	Semi-VOA - 8270 (TCL)	PAHs - 8310	TPH-Diesel Range - WTPH-D +					

Sample No.	Matrix	Sample Date	Sample Time										
1V2K8	SOIL	01/07/15	1236	X	X	X	X	X					
1V2K9	SOIL	01/07/15	1245	X	X	X	X	X					
1V2L0	SOIL	01/07/15	1250	X	X	X	X	X					
1V2L1	SOIL	01/07/15	1252	X	X	X	X	X					
1V2L2	SOIL	01/07/15	1302	X	X	X	X	X					

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1-7-15 1324	Joshua Joshua (WCH)	1/7/15 1324
Joshua Joshua	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	1060 Battelle, Fridge #28	1-7-15 1640
1060 Battelle, Fridge #28	1-8-15 0430	C. Bingham	1-8-15 0430
C. Bingham WCH	1-8-15 0515	Fed Ex	
			1-12-15 9:00

FINAL SAMPLE DISPOSITION — Disposal Method — Disposed By — 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) (Mercury)

REVIEWED BY [illegible] DATE 01/08/15

JP0891

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page 3 of 3 — 4 DWS 1/7/15

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-86:1, VER, Deep Zone		SAF No.: RC-075
Ice Chest No.: AFS-04-121	Field Logbook No.: EL-1662-03	COA: 01D8612000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131312		Bill of Lading/Air Bill No.: See OSPC
Other Labs Shipped To: TestAmerica Richland RCF 38670			

Price Code: 8B

Data Turnaround: 7 days

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1					
Volume	250mL	250mL	250mL	250mL	125mL					
Sample Analysis	See Item (1) in Special Instructions	PCBs - 8082	Semi-VOA - 8270 (TCL)	PAHs - 8310	TPH-Diesel Range - WTPH-D +					

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

Cooling as required

Sample No.	Matrix	Sample Date	Sample Time										
J1V2L3	SOIL	01/07/15	1255	X	X	X	X	X					
J1V2L4	SOIL	01/07/15	1309	X	X	X	X	X					
J1V2L5	SOIL	01/07/15	1222	X	X	X	X	X					

Page 1 of 2

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1-7-15 1324	Dwshea DWSHEA (WCH)	1/7/15 1324
DWSHEA DWSHEA	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	1060 Battelle, fridge #28	1-7-15 1640
1060 Battelle, fridge #28	1-8-15 0430	C. Bingham	1-8-15 0430
C. Bingham WCH	1-8-15 0515	Fed Ex	
			1-12-15 900

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | 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) (Mercury)

REVIEWED BY DAS DATE 01/07/15

JP0891

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-861			DATA PACKAGE: JP089		
VALIDATOR: ELR		LAB: TAL		DATE: 2/15/15	
			SDG: JP089		

ANALYSES PERFORMED

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

SAMPLES/MATRIX

J1V2K3	J1V2K4	J1V2K5	J1V2K6	J1V2K7
J1V2K8	J1V2K9	J1V2L0	J1V2L1	J1V2L2
J1V2L3	J1V2L4	J1V2L5		
				Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

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

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

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: no PAS

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: LCS - silica 107% - J all

MS - IIII 1 - J all

no PAS

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: _____

6. ICP QUALITY CONTROL (Levels D and E)

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

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

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

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

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

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

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

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

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

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

Comments: _____

8. HOLDING TIMES (all levels)

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

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

Comments: _____

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

9. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Method Blank - Batch: 280-259902

Method: 6010B
Preparation: 3050B

Lab Sample ID:	MB 280-259902/1-A	Analysis Batch:	280-260138	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-259902	Lab File ID:	26b011315.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.00 g
Analysis Date:	01/13/2015 1608	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/13/2015 0830				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Aluminum	1.6	U	1.6	5.0
Antimony	0.38	U	0.38	0.60
Arsenic	0.66	U	0.66	1.0
Barium	0.076	U	0.076	0.50
Beryllium	0.033	U	0.033	0.20
Boron	0.98	U	0.98	2.0
Cadmium	0.041	U	0.041	0.20
Calcium	17.80	B	14.1	50.0
Chromium	0.058	U	0.058	0.20
Cobalt	0.10	U	0.10	1.0
Copper	0.305	B	0.22	1.0
Lead	0.27	U	0.27	0.50
Magnesium	5.85	B	3.7	20.0
Manganese	0.10	U	0.10	1.0
Molybdenum	0.26	U	0.26	2.0
Nickel	0.12	U	0.12	4.0
Potassium	41.0	U	41.0	300
Selenium	0.86	U	0.86	1.0
Silicon	5.7	U	5.7	10.0
Silver	0.16	U	0.16	0.20
Sodium	59.0	U	59.0	120
Vanadium	0.094	U	0.094	2.0
Zinc	0.40	U	0.40	1.0

Method Blank - Batch: 280-259902

Method: 6010B
Preparation: 3050B

Lab Sample ID:	MB 280-259902/1-A	Analysis Batch:	280-260307	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-259902	Lab File ID:	26b011415.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.00 g
Analysis Date:	01/14/2015 1352	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/13/2015 0830				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Iron	4.15	B	3.8	5.0

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Lab Control Sample - Batch: 280-259902

Method: 6010B
Preparation: 3050B

Lab Sample ID:	LCS 280-259902/2-A	Analysis Batch:	280-260138	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-259902	Lab File ID:	26b011315.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.00 g
Analysis Date:	01/13/2015 1611	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/13/2015 0830				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	200	194.7	97	82 - 116	
Antimony	50.0	48.71	97	82 - 110	
Arsenic	100	97.70	98	85 - 110	
Barium	200	204.1	102	87 - 112	
Beryllium	5.00	4.89	98	84 - 114	
Boron	100	96.91	97	80 - 120	
Cadmium	10.0	10.09	101	87 - 110	
Calcium	5000	4931	99	82 - 114	
Chromium	20.0	19.87	99	84 - 114	
Cobalt	50.0	49.23	98	87 - 110	
Copper	25.0	25.93	104	88 - 110	
Lead	50.0	49.39	99	86 - 110	
Magnesium	5000	4982	100	90 - 110	
Manganese	50.0	49.96	100	88 - 110	
Molybdenum	100	99.13	99	86 - 110	
Nickel	50.0	49.57	99	87 - 110	
Potassium	5000	5085	102	89 - 110	
Selenium	200	193.9	97	83 - 110	
Silicon	1000	95.99	10	10 - 70	
Silver	5.00	5.21	104	87 - 114	
Sodium	5000	5174	103	90 - 112	
Vanadium	50.0	50.43	101	88 - 110	
Zinc	50.0	49.98	100	76 - 114	

Lab Control Sample - Batch: 280-259902

Method: 6010B
Preparation: 3050B

Lab Sample ID:	LCS 280-259902/2-A	Analysis Batch:	280-260307	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-259902	Lab File ID:	26b011415.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.00 g
Analysis Date:	01/14/2015 1355	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/13/2015 0830				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Iron	100	105.9	106	87 - 120	

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Matrix Spike - Batch: 280-259902

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-64290-1	Analysis Batch:	280-260138	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-259902	Lab File ID:	26b011315.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.14 g
Analysis Date:	01/13/2015 1621	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/13/2015 0830				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	3830		185	5060	664	50 - 200	4
Arsenic	1.5		92.5	64.61	68	76 - 111	N
Barium	64.4		185	207.4	77	52 - 159	
Boron	0.88	U	92.5	63.36	68	80 - 120	N
Cadmium	0.11	B	9.25	6.94	74	40 - 130	
Calcium	7060		4630	11080	87	43 - 165	
Chromium	3.4		18.5	16.62	72	70 - 200	
Magnesium	4170		4630	7967	82	64 - 145	
Manganese	295		46.3	373.7	169	40 - 200	4
Molybdenum	0.23	U	92.5	65.00	70	75 - 103	N
Nickel	6.4		46.3	39.15	71	61 - 126	
Potassium	476		4630	3944	75	56 - 172	
Selenium	0.77	U	185	126.9	69	76 - 104	N
Silicon	92.0		925	392.8	32	20 - 200	
Silver	0.14	U	4.63	3.58	77	75 - 141	
Sodium	332		4630	4142	82	78 - 111	
Zinc	45.1		46.3	76.67	68	70 - 200	N

Matrix Spike - Batch: 280-259902

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-64290-1	Analysis Batch:	280-260307	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-259902	Lab File ID:	26b011415.asc
Dilution:	2.0	Leach Batch:	N/A	Initial Weight/Volume:	1.14 g
Analysis Date:	01/14/2015 1405	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/13/2015 0830				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Antimony	0.68	U	46.3	25.27	55	20 - 200	
Beryllium	0.059	U	4.63	3.48	75	72 - 105	
Cobalt	9.6		46.3	51.76	91	72 - 106	
Copper	14.0		23.1	36.11	96	37 - 187	
Iron	28800		92.5	33390	4917	70 - 200	4
Lead	2.4		46.3	44.63	91	70 - 200	
Vanadium	81.1		46.3	140.6	129	50 - 169	

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Duplicate - Batch: 280-259902

Method: 6010B
Preparation: 3050B

Lab Sample ID:	*280-64290-1*	*Analysis Batch:*	*280-260138*	*Instrument ID:*	*MT_026*
Client Matrix:	Solid	Prep Batch:	280-259902	Lab File ID:	26b011315.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.07 g
Analysis Date:	01/13/2015 1619	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/13/2015 0830				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Aluminum	3830		3870	1	40	
Arsenic	1.5		1.63	9	30	
Barium	64.4		64.62	0.4	30	
Boron	0.88	U	0.97	NC	30	U
Cadmium	0.11	B	0.113	5	30	B
Calcium	7060		6605	7	30	
Chromium	3.4		3.20	5	40	
Magnesium	4170		4258	2	30	
Manganese	295		316.2	7	40	
Molybdenum	0.23	U	0.26	NC	30	U
Nickel	6.4		6.69	5	30	
Potassium	476		462.6	3	40	
Selenium	0.77	U	0.85	NC	30	U
Silicon	92.0		112.7	20	40	
Silver	0.14	U	0.16	NC	30	U
Sodium	332		319.8	4	30	
Zinc	45.1		46.10	2	40	

Duplicate - Batch: 280-259902

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-64290-1	Analysis Batch:	280-260307	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-259902	Lab File ID:	26b011415.asc
Dilution:	2.0	Leach Batch:	N/A	Initial Weight/Volume:	1.07 g
Analysis Date:	01/14/2015 1402	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	01/13/2015 0830				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Antimony	0.68	U	0.75	NC	40	U
Beryllium	0.059	U	0.065	NC	30	U
Cobalt	9.6		10.09	5	30	
Copper	14.0		15.53	10	30	
Iron	28800		29750	3	40	
Lead	2.4		2.82	14	40	
Vanadium	81.1		84.49	4	30	

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Method Blank - Batch: 280-259884

Method: 7471A
Preparation: 7471A

Lab Sample ID:	MB 280-259884/1-A	Analysis Batch:	280-260040	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-259884	Lab File ID:	150113aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.6 g
Analysis Date:	01/13/2015 1358	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	01/13/2015 1020				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Mercury	0.0055	U	0.0055	0.017

Lab Control Sample - Batch: 280-259884

Method: 7471A
Preparation: 7471A

Lab Sample ID:	LCS 280-259884/2-A	Analysis Batch:	280-260040	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-259884	Lab File ID:	150113aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.6 g
Analysis Date:	01/13/2015 1400	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	01/13/2015 1020				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.417	0.419	100	87 - 111	

Matrix Spike - Batch: 280-259884

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-64290-8	Analysis Batch:	280-260040	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-259884	Lab File ID:	150113aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.68 g
Analysis Date:	01/13/2015 1428	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	01/13/2015 1020				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.0056	U	0.387	0.398	103	87 - 111	

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Duplicate - Batch: 280-259884

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-64290-8	Analysis Batch:	280-260040	Instrument ID:	MT_033
Client Matrix:	Solid	Prep Batch:	280-259884	Lab File ID:	150113aa.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.66 g
Analysis Date:	01/13/2015 1426	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	01/13/2015 1020				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Mercury	0.0056	U	0.0053	NC	20	U

Date: 16 February 2015
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 100-D-86:1
Subject: Polyaromatic Hydrocarbon - Data Package No. JP0891-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0891 prepared by TestAmerica Laboratories (TAL). 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
J1V2K3	1/7/15	Soil	C	See note 1
J1V2K4	1/7/15	Soil	C	See note 1
J1V2K5	1/7/15	Soil	C	See note 1
J1V2K6	1/7/15	Soil	C	See note 1
J1V2K7	1/7/15	Soil	C	See note 1
J1V2K8	1/7/15	Soil	C	See note 1
J1V2K9	1/7/15	Soil	C	See note 1
J1V2L0	1/7/15	Soil	C	See note 1
J1V2L1	1/7/15	Soil	C	See note 1
J1V2L2	1/7/15	Soil	C	See note 1
J1V2L3	1/7/15	Soil	C	See note 1
J1V2L4	1/7/15	Soil	C	See note 1
J1V2L5	1/7/15	Soil	C	See note 1

1 – Polyaromatic hydrocarbons by 8310.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). 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 blank was 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 duplicate results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1V2K7/J1K2L5) were submitted for analysis. Laboratory 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. JP0891 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-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

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

POLYAROMATIC HYDROCARBON DATA QUALIFICATION SUMMARY*

SDG: JP0891	REVIEWER: ELR	Project: 100-D-86:1	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

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K3**

Lab Sample ID: 280-64290-1
Client Matrix: Solid
% Moisture: 5.2

Date Sampled: 01/07/2015 1215
Date Received: 01/12/2015 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-260230	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-259915	Initial Weight/Volume:	31.8 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	01/15/2015 0117			Injection Volume:	20 uL
Prep Date:	01/12/2015 2022			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.0	U	9.0	100
Anthracene		3.0	U	3.0	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.4	U	6.4	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.2	U	7.2	30
Benzo[k]fluoranthene		3.9	U N	3.9	15
Chrysene		4.8	U	4.8	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	40
Fluorene		5.3	U	5.3	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	83		72 - 115

2/16/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K4**

Lab Sample ID: 280-64290-2
Client Matrix: Solid
% Moisture: 4.3

Date Sampled: 01/07/2015 0926
Date Received: 01/12/2015 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-260230	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-259915	Initial Weight/Volume:	32.4 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	01/15/2015 0148			Injection Volume:	20 uL
Prep Date:	01/12/2015 2022			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.7	U	9.7	97
Acenaphthylene		8.7	U	8.7	97
Anthracene		3.0	U	3.0	19
Benzo[a]anthracene		3.1	U	3.1	15
Benzo[a]pyrene		6.2	U	6.2	15
Benzo[b]fluoranthene		4.1	U	4.1	15
Benzo[g,h,i]perylene		7.0	U	7.0	29
Benzo[k]fluoranthene		3.8	U N	3.8	15
Chrysene		4.7	U	4.7	39
Dibenzo(a,h)anthracene		11	U	11	29
Fluoranthene		13	U	13	39
Fluorene		5.1	U	5.1	29
Indeno[1,2,3-cd]pyrene		12	U	12	29
Naphthalene		12	U	12	97
Phenanthrene		12	U	12	39
Pyrene		12	U	12	39

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	86		72 - 115

2/16/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K5**

Lab Sample ID: 280-64290-3
Client Matrix: Solid
% Moisture: 4.7

Date Sampled: 01/07/2015 1241
Date Received: 01/12/2015 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-260230	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-259915	Initial Weight/Volume:	32.3 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	01/15/2015 0218			Injection Volume:	20 uL
Prep Date:	01/12/2015 2022			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.7	U	9.7	97
Acenaphthylene		8.8	U	8.8	97
Anthracene		3.0	U	3.0	19
Benzo[a]anthracene		3.1	U	3.1	15
Benzo[a]pyrene		6.2	U	6.2	15
Benzo[b]fluoranthene		4.1	U	4.1	15
Benzo[g,h,i]perylene		7.0	U	7.0	29
Benzo[k]fluoranthene		3.8	U N	3.8	15
Chrysene		4.7	U	4.7	39
Dibenzo(a,h)anthracene		11	U	11	29
Fluoranthene		13	U	13	39
Fluorene		5.1	U	5.1	29
Indeno[1,2,3-cd]pyrene		12	U	12	29
Naphthalene		12	U	12	97
Phenanthrene		12	U	12	39
Pyrene		12	U	12	39

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	89		72 - 115

2/16/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K6**

Lab Sample ID: 280-64290-4
Client Matrix: Solid
% Moisture: 4.9

Date Sampled: 01/07/2015 1218
Date Received: 01/12/2015 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-260230	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-259915	Initial Weight/Volume:	30.7 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	01/15/2015 0249			Injection Volume:	20 uL
Prep Date:	01/12/2015 2022			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.2	U	9.2	100
Anthracene		3.1	U	3.1	21
Benzo[a]anthracene		3.3	U	3.3	15
Benzo[a]pyrene		6.6	U	6.6	15
Benzo[b]fluoranthene		4.3	U	4.3	15
Benzo[g,h,i]perylene		7.4	U	7.4	31
Benzo[k]fluoranthene		4.0	U N	4.0	15
Chrysene		5.0	U	5.0	41
Dibenzo(a,h)anthracene		11	U	11	31
Fluoranthene		13	U	13	41
Fluorene		5.4	U	5.4	31
Indeno[1,2,3-cd]pyrene		12	U	12	31
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	41
Pyrene		12	U	12	41

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	91		72 - 115

2/14/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K7**

Lab Sample ID: 280-64290-5
Client Matrix: Solid
% Moisture: 5.2

Date Sampled: 01/07/2015 1222
Date Received: 01/12/2015 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-260230	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-259915	Initial Weight/Volume:	30.8 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	01/15/2015 0320			Injection Volume:	20 uL
Prep Date:	01/12/2015 2022			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.3	U	9.3	100
Anthracene		3.1	U	3.1	21
Benzo[a]anthracene		3.3	U	3.3	15
Benzo[a]pyrene		6.6	U	6.6	15
Benzo[b]fluoranthene		4.3	U	4.3	15
Benzo[g,h,i]perylene		7.4	U	7.4	31
Benzo[k]fluoranthene		4.0	U N	4.0	15
Chrysene		5.0	U	5.0	41
Dibenzo(a,h)anthracene		11	U	11	31
Fluoranthene		13	U	13	41
Fluorene		5.4	U	5.4	31
Indeno[1,2,3-cd]pyrene		12	U	12	31
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	41
Pyrene		12	U	12	41

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	88		72 - 115

2/14/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K8**

Lab Sample ID: 280-64290-6
Client Matrix: Solid
% Moisture: 4.7

Date Sampled: 01/07/2015 1236
Date Received: 01/12/2015 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-260230	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-259915	Initial Weight/Volume:	31.0 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	01/15/2015 0350			Injection Volume:	20 uL
Prep Date:	01/12/2015 2022			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.1	U	9.1	100
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.5	U	6.5	15
Benzo[b]fluoranthene		4.3	U	4.3	15
Benzo[g,h,i]perylene		7.3	U	7.3	30
Benzo[k]fluoranthene		4.0	U N	4.0	15
Chrysene		4.9	U	4.9	41
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	41
Fluorene		5.4	U	5.4	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	41
Pyrene		12	U	12	41

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	75		72 - 115

2/14/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K9**

Lab Sample ID: 280-64290-7
Client Matrix: Solid
% Moisture: 5.8

Date Sampled: 01/07/2015 1245
Date Received: 01/12/2015 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-260230	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-259915	Initial Weight/Volume:	32.4 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	01/15/2015 0421			Injection Volume:	20 uL
Prep Date:	01/12/2015 2022			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.8	U	9.8	98
Acenaphthylene		8.8	U	8.8	98
Anthracene		3.0	U	3.0	20
Benzo[a]anthracene		3.1	U	3.1	15
Benzo[a]pyrene		6.3	U	6.3	15
Benzo[b]fluoranthene		4.1	U	4.1	15
Benzo[g,h,i]perylene		7.1	U	7.1	29
Benzo[k]fluoranthene		3.9	U N	3.9	15
Chrysene		4.8	U	4.8	39
Dibenzo(a,h)anthracene		11	U	11	29
Fluoranthene		13	U	13	39
Fluorene		5.2	U	5.2	29
Indeno[1,2,3-cd]pyrene		12	U	12	29
Naphthalene		12	U	12	98
Phenanthrene		12	U	12	39
Pyrene		12	U	12	39

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	85		72 - 115

2/16/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L0**

Lab Sample ID: 280-64290-8
Client Matrix: Solid
% Moisture: 5.1

Date Sampled: 01/07/2015 1230
Date Received: 01/12/2015 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-260230	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-259915	Initial Weight/Volume:	31.9 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	01/15/2015 0451			Injection Volume:	20 uL
Prep Date:	01/12/2015 2022			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.9	U	9.9	99
Acenaphthylene		8.9	U	8.9	99
Anthracene		3.0	U	3.0	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.4	U	6.4	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.1	U	7.1	30
Benzo[k]fluoranthene		3.9	U N	3.9	15
Chrysene		4.8	U	4.8	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	40
Fluorene		5.2	U	5.2	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	99
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	86		72 - 115

2/14/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L1**

Lab Sample ID: 280-64290-9
Client Matrix: Solid
% Moisture: 5.1

Date Sampled: 01/07/2015 1252
Date Received: 01/12/2015 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-260230	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-259915	Initial Weight/Volume:	31.6 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	01/15/2015 0552			Injection Volume:	20 uL
Prep Date:	01/12/2015 2022			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.0	U	9.0	100
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.4	U	6.4	15
Benzo[b]fluoranthene		4.2	U	4.2	15
Benzo[g,h,i]perylene		7.2	U	7.2	30
Benzo[k]fluoranthene		3.9	U N	3.9	15
Chrysene		4.8	U	4.8	40
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		13	U	13	40
Fluorene		5.3	U	5.3	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	82		72 - 115

2/14/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L2**

Lab Sample ID: 280-64290-10
Client Matrix: Solid
% Moisture: 4.9

Date Sampled: 01/07/2015 1302
Date Received: 01/12/2015 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-260230	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-259915	Initial Weight/Volume:	32.6 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	01/15/2015 0623			Injection Volume:	20 uL
Prep Date:	01/12/2015 2022			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		9.7	U	9.7	97
Acenaphthylene		8.7	U	8.7	97
Anthracene		3.0	U	3.0	19
Benzo[a]anthracene		3.1	U	3.1	15
Benzo[a]pyrene		6.2	U	6.2	15
Benzo[b]fluoranthene		4.1	U	4.1	15
Benzo[g,h,i]perylene		7.0	U	7.0	29
Benzo[k]fluoranthene		3.8	U N	3.8	15
Chrysene		4.7	U	4.7	39
Dibenzo(a,h)anthracene		11	U	11	29
Fluoranthene		13	U	13	39
Fluorene		5.1	U	5.1	29
Indeno[1,2,3-cd]pyrene		12	U	12	29
Naphthalene		12	U	12	97
Phenanthrene		12	U	12	39
Pyrene		12	U	12	39

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	90		72 - 115

2/16/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L3**

Lab Sample ID: 280-64290-11
Client Matrix: Solid
% Moisture: 6.5

Date Sampled: 01/07/2015 1255
Date Received: 01/12/2015 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-260230	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-259915	Initial Weight/Volume:	31.6 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	01/15/2015 0653			Injection Volume:	20 uL
Prep Date:	01/12/2015 2022			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.1	U	9.1	100
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		24	X	3.2	15
Benzo[a]pyrene		40		6.5	15
Benzo[b]fluoranthene		24	X	4.3	15
Benzo[g,h,i]perylene		30		7.3	30
Benzo[k]fluoranthene		8.6	J X N	4.0	15
Chrysene		28	J X	4.9	41
Dibenzo(a,h)anthracene		11	U	11	30
Fluoranthene		60	X	13	41
Fluorene		5.4	U	5.4	30
Indeno[1,2,3-cd]pyrene		19	J X	12	30
Naphthalene		12	U	12	100
Phenanthrene		37	J	12	41
Pyrene		74		12	41

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	96		72 - 115

2/14/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L4**

Lab Sample ID: 280-64290-12
Client Matrix: Solid
% Moisture: 8.0

Date Sampled: 01/07/2015 1309
Date Received: 01/12/2015 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-260230	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-259915	Initial Weight/Volume:	31.1 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	01/15/2015 0724			Injection Volume:	20 uL
Prep Date:	01/12/2015 2022			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.4	U	9.4	100
Anthracene		3.2	U	3.2	21
Benzo[a]anthracene		3.3	U	3.3	16
Benzo[a]pyrene		7.7	J X	6.7	16
Benzo[b]fluoranthene		5.3	J	4.4	16
Benzo[g,h,i]perylene		7.5	U	7.5	31
Benzo[k]fluoranthene		4.1	U N	4.1	16
Chrysene		7.1	J	5.1	42
Dibenzo(a,h)anthracene		12	U	12	31
Fluoranthene		17	J	14	42
Fluorene		5.5	U	5.5	31
Indeno[1,2,3-cd]pyrene		13	U	13	31
Naphthalene		13	U	13	100
Phenanthrene		13	U	13	42
Pyrene		16	J	13	42

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	90		72 - 115

2/10/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L5**

Lab Sample ID: 280-64290-13
Client Matrix: Solid
% Moisture: 5.1

Date Sampled: 01/07/2015 1222
Date Received: 01/12/2015 0900

8310 PAHs (HPLC)

Analysis Method:	8310	Analysis Batch:	280-260230	Instrument ID:	CHHPLC_G
Prep Method:	3550C	Prep Batch:	280-259915	Initial Weight/Volume:	31.5 g
Dilution:	1.0			Final Weight/Volume:	4 mL
Analysis Date:	01/15/2015 0754			Injection Volume:	20 uL
Prep Date:	01/12/2015 2022			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.0	U	9.0	100
Anthracene		3.1	U	3.1	20
Benzo[a]anthracene		3.2	U	3.2	15
Benzo[a]pyrene		6.4	U	6.4	15
Benzo[b]fluoranthene		4.2	U N	4.2	15
Benzo[g,h,i]perylene		7.2	U	7.2	30
Benzo[k]fluoranthene		4.0	U N	4.0	15
Chrysene		4.9	U	4.9	40
Dibenzo(a,h)anthracene		11	U N	11	30
Fluoranthene		13	U	13	40
Fluorene		5.3	U	5.3	30
Indeno[1,2,3-cd]pyrene		12	U	12	30
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	40
Pyrene		12	U	12	40

Surrogate	%Rec	Qualifier	Acceptance Limits
Terphenyl-d14 (SUR)	92		72 - 115

V 2/24/15

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Job Number: 280-64290-1

SDG #: JP0891
SAF#: RC-075

Date SDG Closed: January 12, 2015
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V2K3	280-64290-1	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K4	280-64290-2	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K5	280-64290-3	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K6	280-64290-4	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K7	280-64290-5	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K8	280-64290-6	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K9	280-64290-7	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L0	280-64290-8	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L1	280-64290-9	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L2	280-64290-10	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L3	280-64290-11	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L4	280-64290-12	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L5	280-64290-13	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. 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 signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 1/12/2015 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.6° C, 2.8° C and 5.7° C.

GC/MS SEMIVOLATILES - SW846 8270C
Compounds Benzo(b)fluoranthene and Benzo(k)fluoranthene were unresolved in sample J1V2L0 due to matrix interferences. It can be noted that these compounds were adequately resolved in associated standards, indicating the instrument is achieving separation. The combined peak was reported as Benzo(b)fluoranthene, while Benzo(k)fluoranthene was reported as undetected even though it may be present. Associated results have been flagged with a "K".

The MS aliquot of the MS/MSD performed on sample J1V2K4 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "T". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs
The laboratory noted that a Sulfuric Acid clean-up was performed on the samples presented in this report to reduce matrix interferences.

Surrogate Decachlorobiphenyl was recovered outside the control limits, biased low, in sample J1V2L3. The laboratory noted that evidence of matrix interference is present; therefore, corrective action is deemed unnecessary. The laboratory noted that the sample chromatogram shows large non-target peaks present in the area where the surrogate elutes interfering with recovery and quantitation of the surrogate.

Samples J1V2L3 and J1V2L4 contained a combination of Aroclor 1254 and Aroclor 1260 with insufficient separation to quantify individually. The samples have been quantified and reported as the predominant Aroclor.

No other anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
No anomalies were encountered.

HPLC - SW846 8310 - PAHs
The LCS associated with batch 280-259915 exhibited the percent recovery outside the control limits for Benzo[k]fluoranthene at 84% (lower limit 85%), and associated sample results have been flagged "N". Although Benzo[k]fluoranthene was recovered outside current historical control limits, the recovery was within the allowed Marginal Exceedance control limits (lower limit 80%). This marginal exceedance has been determined to be sporadic, not systematic; therefore, corrective action is deemed unnecessary.

It should be noted that the low level estimated detection reported for Benzo[b]fluoranthene in sample J1V2L4 was not confirmed on the confirmation column (result was ND), and Benzo[b]fluoranthene was recovered outside the control limits, biased low, in the associated LCS on the confirmation column at 74% (lower limit is 85%). The LCS was in control on the primary column; therefore, Benzo[b]fluoranthene in sample J1V2L4 has been reported from the primary column.

The RPD between the primary and confirmation columns exceeded 40% for analytes in samples J1V2L3 and J1V2L4. The lower of the two values has been reported, as matrix interference is evident on both columns. Associated results have been flagged with an "X".

The MSD aliquot of the MS/MSD performed on sample J1V2L5 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "N". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-259902 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. In some cases, samples required a 2X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Iron, Lead and Vanadium to minimize the interference caused by Titanium concentrations greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Calcium, Copper and Magnesium are present in the method blank associated with batch 280-259902. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, corrective action is deemed unnecessary.

Low levels of Iron, a common laboratory contaminant, are present at a level greater than half the reporting limit in the method blank associated with batch 280-259902. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1V2K3; therefore, control limits are not applicable.

The Matrix Spike performed on sample J1V2K3 exhibited percent recoveries outside the control limits for Arsenic, Boron, Molybdenum, Selenium and Zinc, and the associated sample results have been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

DWS 1/7/15

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page 1 of 2 ~~3~~ ~~4~~ DWS 1/7/15

Collector: Quincy Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 days		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-86:1, VER, Deep Zone		SAF No.: RC-075
Ice Chest No.: AFS-04-121	Field Logbook No.: EL-1662-03	COA: 01D8612000	Method of Shipment: Commercial Carrier \Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131312		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To: TestAmerica Richland

RCF 38670

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
Type of Container	G/P	aG	aG	aG	aG					
No. of Container(s)	1	1	1	1	1					
Volume	250mL	250mL	250mL	250mL	125mL					
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	Semi-VOA - 8270 (TCL)	PAHs - 8310	TPH-Diesel Range - WTPH-D +					

Sample No.	Matrix	Sample Date	Sample Time										
J1V2K3	SOIL	01/07/15	1215	X	X	X	X	X					
~~J1V2K4~~	~~SOIL~~	~~01/07/15~~	~~0926~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	DWS 1/7/15				
J1V2K5	SOIL	01/07/15	1241	X	X	X	X	X					
J1V2K6	SOIL	01/07/15	1218	X	X	X	X	X					
J1V2K7	SOIL	01/07/15	1222	X	X	X	X	X					

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1-7-15 1324	WCH DWSHEA	1/7/15 1324
DWSHEA DWSHEA	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	1060 Battelle, fridge #2B	1-7-15 1640
1060 Battelle, fridge #2B	1-8-15 0430	C. Bingham	1-8-15 0430
C. Bingham WCH	1-8-15 0515	fed EX	
			1-12-15 900

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	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) {Mercury}

280-64290 Chain of Custody

5.2, 2.1, 2.3 IRS 20.5
Tuesday 1/12/15

JP0891

REVIEWED BY
DATE 01/08/15

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page 1 of 3/4 1-7-15 CMB

Collector: D. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-86:1, VER, Deep Zone		SAF No.: RC-075
Ice Chest No.: AFS-04-121	Field Logbook No.: EL-1662-03	COA: 01D8612000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131312		Bill of Lading/Air Bill No.: See OSRC

Price Code: 8B

Data Turnaround: 7 days

Other Labs Shipped To: TestAmerica Richland

RCF 38670

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

cooling as required

Sample No.	Matrix	Sample Date	Sample Time	Preservation: Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C					
				Type of Container: G/P	aG	aG	aG	aG					
				No. of Container(s): 1	1	1	1	1					
				Volume: 250mL	250mL	250mL	250mL	125mL					
				Sample Analysis: See item (1) in Special Instructions	PCBs - 8082	Semi-VOA - 8270 (TCL)	PAHs - 8310	TPH-Diesel Range - WTPH-D +					
J1V2K3	SOIL												
J1V2K4	SOIL	01/07/15	0926	X	X	X	X	X					
J1V2K5	SOIL												
J1V2K6	SOIL												
J1V2K7	SOIL												

01/07/15

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1-7-15 0953	WCH DWSHEA	1/7/15 0953
DWSHEA DWSHEA	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	1060 Battelle, fridge #2B	1-7-15 1640
1060 Battelle, fridge #2B	1-8-15 0430	C. Bingham	1-8-15 0430
C. Bingham WCH	1-8-15 0515	Fed Ex	
			1-12-15 9:00

FINAL SAMPLE DISPOSITION: Disposal Method — Disposed By — 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) {Mercury}

REVIEWED BY JAS DATE 01/07/15

JP0891

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page 2 of 4

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 days		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-86:1, VER, Deep Zone		SAF No.: RC-075
Ice Chest No.: AFS-04-121	Field Logbook No.: EL-1662-03	COA: 01D8612000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131312		Bill of Lading/Air Bill No.: See OSRC
Other Labs Shipped To: TestAmerica Richland			

RCF 38670

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	250mL	250mL	125mL						
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	Semi-VOA - 8270 (TCL)	PAHs - 8310	TPH-Diesel Range - WTPH-D +						

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

cooling as required

Sample No.	Matrix	Sample Date	Sample Time										
J1V2K8	SOIL	01/07/15	1236	X	X	X	X	X					
J1V2K9	SOIL	01/07/15	1245	X	X	X	X	X					
J1V2L0	SOIL	01/07/15	1230	X	X	X	X	X					
J1V2L1	SOIL	01/07/15	1252	X	X	X	X	X					
J1V2L2	SOIL	01/07/15	1302	X	X	X	X	X					

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1-7-15 1324	(WCH) Moshea Moshea	1/7/15 1324
Moshea Moshea	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	C. Bingham / 1060 Battelle, fridge #2B	1-7-15 1640
1060 Battelle, fridge #2B	1-8-15 0430	C. Bingham	1-8-15 0430
C. Bingham WCH	1-8-15 0515	fed EX	
			1-12-15 9:00

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	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) {Mercury}

REVIEWED BY DAS DATE 01/08/15

JP0891

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page 3 of 3 — 4 DWS 1/7/15

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 days		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-86:1, VER, Deep Zone		SAF No.: RC-075
Ice Chest No.: AFS-04-121	Field Logbook No.: EL-1662-03	COA: 01D8612000	Method of Shipment: Commercial Carrier \ Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131312		Bill of Lading/Air Bill No.: See OSPC

Other Labs Shipped To: TestAmerica Richland

RCF 38670

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	250mL	250mL	125mL						
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	Semi-VOA - 8270 (TCL)	PAHs - 8310	TPH-Diesel Range - WTPH-D +						

Sample No.	Matrix	Sample Date	Sample Time										
J1V2L3	SOIL	01/07/15	1255	X	X	X	X	X					
J1V2L4	SOIL	01/07/15	1309	X	X	X	X	X					
J1V2L5	SOIL	01/07/15	1222	X	X	X	X	X					

Page 15 of 18

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1-7-15 1324	DWSHEA DWSHEA (WCH)	1/7/15 1324
DWSHEA DWSHEA	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	1060 Battelle, fridge #23	1-7-15 1640
1060 Battelle, fridge #23	1-8-15 0430	C. Bingham	1-8-15 0430
C. Bingham WCH	1-8-15 0515	fed Ex	
			1-12-15 900

Sign/Print Names

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | 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) {Mercury}

REVIEWED BY DAS DATE 01/08/15

JP0891

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GENERAL ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-861			DATA PACKAGE: JP0891		
VALIDATOR: ELR		LAB: TAL		DATE: 2/15/15	
			SDG: JP0891		
ANALYSES PERFORMED					
8015	8021	8141	8151	8315	8310
		WTPH-HCID	WTPH-G	WTPH-D	
SAMPLES/MATRIX:					
J1V2F3	J1V2F4	J1V2F5	J1V2F6	J1V2F7	
J1V2F8	J1V2F9	J1V2G0	J1V2G2	J1V2G3	
J1V2G4	J1V2G5				
					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

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:

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

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Method Blank - Batch: 280-259915

Method: 8310
Preparation: 3550C

Lab Sample ID:	MB 280-259915/1-A	Analysis Batch:	280-260230	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-259915	Lab File ID:	G0114016.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30 g
Analysis Date:	01/15/2015 0016	Units:	ug/Kg	Final Weight/Volume:	4 mL
Prep Date:	01/12/2015 2022			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Result	Qual	MDL	RL
Acenaphthene	10	U	10	100
Acenaphthylene	9.0	U	9.0	100
Anthracene	3.1	U	3.1	20
Benzo[a]anthracene	3.2	U	3.2	15
Benzo[a]pyrene	6.4	U	6.4	15
Benzo[b]fluoranthene	4.2	U	4.2	15
Benzo[g,h,i]perylene	7.2	U	7.2	30
Benzo[k]fluoranthene	3.9	U	3.9	15
Chrysene	4.8	U	4.8	40
Dibenzo(a,h)anthracene	11	U	11	30
Fluoranthene	13	U	13	40
Fluorene	5.3	U	5.3	30
Indeno[1,2,3-cd]pyrene	12	U	12	30
Naphthalene	12	U	12	100
Phenanthrene	12	U	12	40
Pyrene	12	U	12	40

Surrogate	% Rec	Acceptance Limits
Terphenyl-d14 (SUR)	89	72 - 115

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Lab Control Sample - Batch: 280-259915

Method: 8310
Preparation: 3550C

Lab Sample ID:	LCS 280-259915/2-A	Analysis Batch:	280-260230	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-259915	Lab File ID:	G0114017.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30 g
Analysis Date:	01/15/2015 0047	Units:	ug/Kg	Final Weight/Volume:	4 mL
Prep Date:	01/12/2015 2022			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Acenaphthene	2000	1660	83	78 - 116	
Acenaphthylene	2000	1660	83	76 - 115	
Anthracene	2000	1630	82	74 - 115	
Benzo[a]anthracene	2000	1820	91	85 - 120	
Benzo[a]pyrene	2000	1780	89	74 - 121	
Benzo[b]fluoranthene	2000	1690	85	85 - 115	
Benzo[g,h,i]perylene	2000	1850	92	85 - 120	
Benzo[k]fluoranthene	2000	1690	84	85 - 115	N
Chrysene	2000	1780	89	83 - 115	
Dibenzo(a,h)anthracene	2000	1660	83	83 - 115	
Fluoranthene	2000	1680	84	83 - 115	
Fluorene	2000	1730	86	80 - 115	
Indeno[1,2,3-cd]pyrene	2000	1800	90	85 - 123	
Naphthalene	2000	1640	82	80 - 121	
Phenanthrene	2000	1650	82	80 - 115	
Pyrene	2000	1790	90	75 - 116	

Surrogate	% Rec	Acceptance Limits
Terphenyl-d14 (SUR)	89	72 - 115

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-259915

Method: 8310
Preparation: 3550C

MS Lab Sample ID:	280-64290-13	Analysis Batch:	280-260230	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-259915	Lab File ID:	G0114032.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.4 g
Analysis Date:	01/15/2015 0825			Final Weight/Volume:	4 mL
Prep Date:	01/12/2015 2022			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

MSD Lab Sample ID:	280-64290-13	Analysis Batch:	280-260230	Instrument ID:	CHHPLC_G
Client Matrix:	Solid	Prep Batch:	280-259915	Lab File ID:	G0114033.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	32.6 g
Analysis Date:	01/15/2015 0855			Final Weight/Volume:	4 mL
Prep Date:	01/12/2015 2022			Injection Volume:	20 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Acenaphthene	88	83	78 - 116	10	20		
Acenaphthylene	87	83	76 - 115	9	21		
Anthracene	87	82	74 - 115	10	20		
Benzo[a]anthracene	98	89	85 - 120	13	20		
Benzo[a]pyrene	98	90	74 - 121	13	20		
Benzo[b]fluoranthene	92	84	85 - 115	13	20		N
Benzo[g,h,i]perylene	101	92	85 - 120	13	20		
Benzo[k]fluoranthene	92	84	85 - 115	13	20		N
Chrysene	97	88	83 - 115	13	20		
Dibenzo(a,h)anthracene	88	81	83 - 115	12	20		N
Fluoranthene	91	84	83 - 115	12	20		
Fluorene	91	86	80 - 115	9	20		
Indeno[1,2,3-cd]pyrene	99	90	85 - 123	13	20		
Naphthalene	85	81	80 - 121	8	20		
Phenanthrene	88	82	80 - 115	10	20		
Pyrene	97	89	75 - 116	12	20		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
Terphenyl-d14 (SUR)	97	89	72 - 115

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-259915

Method: 8310
Preparation: 3550C

MS Lab Sample ID:	280-64290-13	Units: ug/Kg		MSD Lab Sample ID:	280-64290-13
Client Matrix:	Solid			Client Matrix:	Solid
Dilution:	1.0			Dilution:	1.0
Analysis Date:	01/15/2015 0825			Analysis Date:	01/15/2015 0855
Prep Date:	01/12/2015 2022			Prep Date:	01/12/2015 2022
Leach Date:	N/A			Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual	
Acenaphthene	10	U	2010	1940	1780	1610	
Acenaphthylene	9.0	U	2010	1940	1760	1600	
Anthracene	3.1	U	2010	1940	1760	1580	
Benzo[a]anthracene	3.2	U	2010	1940	1970	1730	
Benzo[a]pyrene	6.4	U	2010	1940	1970	1740	
Benzo[b]fluoranthene	4.2	U	2010	1940	1860	1640	N
Benzo[g,h,i]perylene	7.2	U	2010	1940	2030	1780	
Benzo[k]fluoranthene	4.0	U	2010	1940	1860	1630	N
Chrysene	4.9	U	2010	1940	1950	1710	
Dibenzo(a,h)anthracene	11	U	2010	1940	1780	1580	N
Fluoranthene	13	U	2010	1940	1830	1630	
Fluorene	5.3	U	2010	1940	1840	1670	
Indeno[1,2,3-cd]pyrene	12	U	2010	1940	1990	1750	
Naphthalene	12	U	2010	1940	1720	1580	
Phenanthrene	12	U	2010	1940	1770	1590	
Pyrene	12	U	2010	1940	1950	1730	

Date: 16 February 2015
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 100-D-86:1
Subject: PCB - Data Package No. JP0891-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0891 prepared by TestAmerica Laboratories (TAL). 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
J1V2K3	1/7/15	Soil	C	See note 1
J1V2K4	1/7/15	Soil	C	See note 1
J1V2K5	1/7/15	Soil	C	See note 1
J1V2K6	1/7/15	Soil	C	See note 1
J1V2K7	1/7/15	Soil	C	See note 1
J1V2K8	1/7/15	Soil	C	See note 1
J1V2K9	1/7/15	Soil	C	See note 1
J1V2L0	1/7/15	Soil	C	See note 1
J1V2L1	1/7/15	Soil	C	See note 1
J1V2L2	1/7/15	Soil	C	See note 1
J1V2L3	1/7/15	Soil	C	See note 1
J1V2L4	1/7/15	Soil	C	See note 1
J1V2L5	1/7/15	Soil	C	See note 1

1 – PCBs by 8082.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). 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 OBJECTIVES

- **Holding Times**

Holding times are not applicable for PCB analysis.

- **Method Blank**

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

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike & Laboratory Control Sample

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

All accuracy results were acceptable.

Surrogate Recovery

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

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

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

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

All precision results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1V4K7/J1V2L5) 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 100 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data Package No. JP0891 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-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

PCB DATA QUALIFICATION SUMMARY*

SDG: JP0891	REVIEWER: ELR	Project: 100-D-86:1	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

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K3**

Lab Sample ID: 280-64290-1
Client Matrix: Solid
% Moisture: 5.2

Date Sampled: 01/07/2015 1215
Date Received: 01/12/2015 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-260128	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-259971	Initial Weight/Volume:	30.7 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/14/2015 1355			Injection Volume:	1 uL
Prep Date:	01/13/2015 1325			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.9	U	2.9	10
Aroclor 1221		8.3	U	8.3	17
Aroclor 1232		2.1	U	2.1	10
Aroclor 1242		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	75		59 - 130
Tetrachloro-m-xylene	72		53 - 128

r 2/12/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K4**

Lab Sample ID: 280-64290-2
Client Matrix: Solid

% Moisture: 4.3

Date Sampled: 01/07/2015 0926
Date Received: 01/12/2015 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-260128	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-259971	Initial Weight/Volume:	30.5 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/14/2015 1418			Injection Volume:	1 uL
Prep Date:	01/13/2015 1325			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.2	U	8.2	17
Aroclor 1232		2.1	U	2.1	10
Aroclor 1242		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	75		59 - 130
Tetrachloro-m-xylene	72		53 - 128

2/16/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K5**

Lab Sample ID: 280-64290-3
Client Matrix: Solid
% Moisture: 4.7

Date Sampled: 01/07/2015 1241
Date Received: 01/12/2015 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-260128	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-259971	Initial Weight/Volume:	30.8 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/14/2015 1441			Injection Volume:	1 uL
Prep Date:	01/13/2015 1325			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.2	U	8.2	17
Aroclor 1232		2.0	U	2.0	10
Aroclor 1242		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		2.9	J	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	72		59 - 130
Tetrachloro-m-xylene	73		53 - 128

2/12/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K6**

Lab Sample ID: 280-64290-4
Client Matrix: Solid

% Moisture: 4.9

Date Sampled: 01/07/2015 1218
Date Received: 01/12/2015 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-260128	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-259971	Initial Weight/Volume:	30.5 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/14/2015 1551			Injection Volume:	1 uL
Prep Date:	01/13/2015 1325			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.9	U	2.9	10
Aroclor 1221		8.3	U	8.3	17
Aroclor 1232		2.1	U	2.1	10
Aroclor 1242		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	69		59 - 130
Tetrachloro-m-xylene	66		53 - 128

2/10/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K7**

Lab Sample ID: 280-64290-5
Client Matrix: Solid

% Moisture: 5.2

Date Sampled: 01/07/2015 1222
Date Received: 01/12/2015 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-260128	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-259971	Initial Weight/Volume:	30.5 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/14/2015 1614			Injection Volume:	1 uL
Prep Date:	01/13/2015 1325			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.9	U	2.9	10
Aroclor 1221		8.3	U	8.3	17
Aroclor 1232		2.1	U	2.1	10
Aroclor 1242		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	75		59 - 130
Tetrachloro-m-xylene	72		53 - 128

2/16/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K8**

Lab Sample ID: 280-64290-6
Client Matrix: Solid
% Moisture: 4.7

Date Sampled: 01/07/2015 1236
Date Received: 01/12/2015 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-260128	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-259971	Initial Weight/Volume:	32.1 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/14/2015 1637			Injection Volume:	1 uL
Prep Date:	01/13/2015 1325			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.7	U	2.7	9.8
Aroclor 1221		7.9	U	7.9	16
Aroclor 1232		2.0	U	2.0	9.8
Aroclor 1242		4.6	U	4.6	9.8
Aroclor 1248		4.6	U	4.6	9.8
Aroclor 1254		2.5	U	2.5	9.8
Aroclor 1260		2.5	U	2.5	9.8

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	73		59 - 130
Tetrachloro-m-xylene	68		53 - 128

2/16/15

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K9**

Lab Sample ID: 280-64290-7
Client Matrix: Solid

% Moisture: 5.8

Date Sampled: 01/07/2015 1245
Date Received: 01/12/2015 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-260128	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-259971	Initial Weight/Volume:	30.9 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/14/2015 1724			Injection Volume:	1 uL
Prep Date:	01/13/2015 1325			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.9	U	2.9	10
Aroclor 1221		8.3	U	8.3	17
Aroclor 1232		2.1	U	2.1	10
Aroclor 1242		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	77		59 - 130
Tetrachloro-m-xylene	74		53 - 128

2/16/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L0**

Lab Sample ID: 280-64290-8
Client Matrix: Solid

% Moisture: 5.1

Date Sampled: 01/07/2015 1230
Date Received: 01/12/2015 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-260128	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-259971	Initial Weight/Volume:	30.4 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/14/2015 1747			Injection Volume:	1 uL
Prep Date:	01/13/2015 1325			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.9	U	2.9	10
Aroclor 1221		8.3	U	8.3	17
Aroclor 1232		2.1	U	2.1	10
Aroclor 1242		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	73		59 - 130
Tetrachloro-m-xylene	72		53 - 128

2/16/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L1**

Lab Sample ID: 280-64290-9
Client Matrix: Solid

% Moisture: 5.1

Date Sampled: 01/07/2015 1252
Date Received: 01/12/2015 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-260128	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-259971	Initial Weight/Volume:	32.1 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/14/2015 1810			Injection Volume:	1 uL
Prep Date:	01/13/2015 1325			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.7	U	2.7	9.9
Aroclor 1221		7.9	U	7.9	16
Aroclor 1232		2.0	U	2.0	9.9
Aroclor 1242		4.6	U	4.6	9.9
Aroclor 1248		4.6	U	4.6	9.9
Aroclor 1254		2.6	U	2.6	9.9
Aroclor 1260		2.6	U	2.6	9.9

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	74		59 - 130
Tetrachloro-m-xylene	70		53 - 128

2/16/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L2**

Lab Sample ID: 280-64290-10
Client Matrix: Solid

% Moisture: 4.9

Date Sampled: 01/07/2015 1302
Date Received: 01/12/2015 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-260128	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-259971	Initial Weight/Volume:	31.3 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/14/2015 1833			Injection Volume:	1 uL
Prep Date:	01/13/2015 1325			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.1	U	8.1	17
Aroclor 1232		2.0	U	2.0	10
Aroclor 1242		4.7	U	4.7	10
Aroclor 1248		4.7	U	4.7	10
Aroclor 1254		2.6	U	2.6	10
Aroclor 1260		2.6	U	2.6	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	76		59 - 130
Tetrachloro-m-xylene	71		53 - 128

2/16/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L3**

Lab Sample ID: 280-64290-11
Client Matrix: Solid

% Moisture: 6.5

Date Sampled: 01/07/2015 1255
Date Received: 01/12/2015 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-260128	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-259971	Initial Weight/Volume:	31.3 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/14/2015 1857			Injection Volume:	1 uL
Prep Date:	01/13/2015 1325			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.2	U	8.2	17
Aroclor 1232		2.1	U	2.1	10
Aroclor 1242		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		42		2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	55	*	59 - 130
Tetrachloro-m-xylene	68		53 - 128

2/14/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L4**

Lab Sample ID: 280-64290-12
Client Matrix: Solid

% Moisture: 8.0

Date Sampled: 01/07/2015 1309
Date Received: 01/12/2015 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-260128	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-259971	Initial Weight/Volume:	30.5 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/14/2015 1920			Injection Volume:	1 uL
Prep Date:	01/13/2015 1325			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		3.0	U	3.0	11
Aroclor 1221		8.6	U	8.6	18
Aroclor 1232		2.1	U	2.1	11
Aroclor 1242		5.0	U	5.0	11
Aroclor 1248		5.0	U	5.0	11
Aroclor 1254		14		2.8	11
Aroclor 1260		2.8	U	2.8	11

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	63		59 - 130
Tetrachloro-m-xylene	78		53 - 128

2/16/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L5**

Lab Sample ID: 280-64290-13
Client Matrix: Solid
% Moisture: 5.1

Date Sampled: 01/07/2015 1222
Date Received: 01/12/2015 0900

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-260128	Instrument ID:	SGC_W
Prep Method:	3550C	Prep Batch:	280-259971	Initial Weight/Volume:	30.9 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	01/14/2015 1943			Injection Volume:	1 uL
Prep Date:	01/13/2015 1325			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.8	U	2.8	10
Aroclor 1221		8.2	U	8.2	17
Aroclor 1232		2.0	U	2.0	10
Aroclor 1242		4.8	U	4.8	10
Aroclor 1248		4.8	U	4.8	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	70		59 - 130
Tetrachloro-m-xylene	68		53 - 128

2/16/15

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Job Number: 280-64290-1

SDG #: JP0891
SAF#: RC-075

Date SDG Closed: January 12, 2015
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V2K3	280-64290-1	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K4	280-64290-2	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K5	280-64290-3	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K6	280-64290-4	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K7	280-64290-5	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K8	280-64290-6	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K9	280-64290-7	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L0	280-64290-8	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L1	280-64290-9	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L2	280-64290-10	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L3	280-64290-11	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L4	280-64290-12	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L5	280-64290-13	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. 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 signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 1/12/2015 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.6° C, 2.8° C and 5.7° C.

GC/MS SEMIVOLATILES - SW846 8270C
Compounds Benzo(b)fluoranthene and Benzo(k)fluoranthene were unresolved in sample J1V2L0 due to matrix interferences. It can be noted that these compounds were adequately resolved in associated standards, indicating the instrument is achieving separation. The combined peak was reported as Benzo(b)fluoranthene, while Benzo(k)fluoranthene was reported as undetected even though it may be present. Associated results have been flagged with a "K".

The MS aliquot of the MS/MSD performed on sample J1V2K4 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "T". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs
The laboratory noted that a Sulfuric Acid clean-up was performed on the samples presented in this report to reduce matrix interferences.

Surrogate Decachlorobiphenyl was recovered outside the control limits, biased low, in sample J1V2L3. The laboratory noted that evidence of matrix interference is present; therefore, corrective action is deemed unnecessary. The laboratory noted that the sample chromatogram shows large non-target peaks present in the area where the surrogate elutes interfering with recovery and quantitation of the surrogate.

Samples J1V2L3 and J1V2L4 contained a combination of Aroclor 1254 and Aroclor 1260 with insufficient separation to quantify individually. The samples have been quantified and reported as the predominant Aroclor.

No other anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
No anomalies were encountered.

HPLC - SW846 8310 - PAHs
The LCS associated with batch 280-259915 exhibited the percent recovery outside the control limits for Benzo[k]fluoranthene at 84% (lower limit 85%), and associated sample results have been flagged "N". Although Benzo[k]fluoranthene was recovered outside current historical control limits, the recovery was within the allowed Marginal Exceedance control limits (lower limit 80%). This marginal exceedance has been determined to be sporadic, not systematic; therefore, corrective action is deemed unnecessary.

It should be noted that the low level estimated detection reported for Benzo[b]fluoranthene in sample J1V2L4 was not confirmed on the confirmation column (result was ND), and Benzo[b]fluoranthene was recovered outside the control limits, biased low, in the associated LCS on the confirmation column at 74% (lower limit is 85%). The LCS was in control on the primary column; therefore, Benzo[b]fluoranthene in sample J1V2L4 has been reported from the primary column.

The RPD between the primary and confirmation columns exceeded 40% for analytes in samples J1V2L3 and J1V2L4. The lower of the two values has been reported, as matrix interference is evident on both columns. Associated results have been flagged with an "X".

The MSD aliquot of the MS/MSD performed on sample J1V2L5 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "N". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-259902 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. In some cases, samples required a 2X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Iron, Lead and Vanadium to minimize the interference caused by Titanium concentrations greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Calcium, Copper and Magnesium are present in the method blank associated with batch 280-259902. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, corrective action is deemed unnecessary.

Low levels of Iron, a common laboratory contaminant, are present at a level greater than half the reporting limit in the method blank associated with batch 280-259902. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1V2K3; therefore, control limits are not applicable.

The Matrix Spike performed on sample J1V2K3 exhibited percent recoveries outside the control limits for Arsenic, Boron, Molybdenum, Selenium and Zinc, and the associated sample results have been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

DWS 1/7/15

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Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 days		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-86:1, VER, Deep Zone		SAF No.: RC-075
Ice Chest No.: AFS-04-121	Field Logbook No.: EL-1862-03	COA: 01D8612000	Method of Shipment: Commercial Carrier / Fed Ex
Shipped To: TestAmerica Denver	Offsite Property No.: A131312		Bill of Lading/Air Bill No.: See OSPC
Other Labs Shipped To: TestAmerica Richland			

RCF 38670

POSSIBLE SAMPLE HAZARDS/REMARKS
Potentially Radioactive but less than DOT limits

Special Handling and/or Storage
Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	250mL	250mL	125mL						
Sample Analysis	See Item (1) in Special Instructions	PCBs - 8082	Semi-VOA - 8270 (TCL)	PAHs - 8310	TPH-Diesel Range - WTPH-D +						

Sample No.	Matrix	Sample Date	Sample Time										
J1V2K3	SOIL	01/07/15	1215	X	X	X	X	X					
~~J1V2K4~~	~~SOIL~~	~~01/07/15~~	~~0926~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	DWS 1/7/15				
J1V2K5	SOIL	01/07/15	1241	X	X	X	X	X					
J1V2K6	SOIL	01/07/15	1218	X	X	X	X	X					
J1V2K7	SOIL	01/07/15	1222	X	X	X	X	X					

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1-7-15 1324	WCH DJOSHEA	1/7/15 1324
DJOSHEA DJOSHEA	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	1060 Battelle fridge #28	1-7-15 1640
1060 Battelle fridge #28	1-8-15 0430	C. Bingham	1-8-15 0430
C. Bingham WCH	1-8-15 0515	fed Ex	
			1-12-15 900

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | 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) (Mercury)

280-64290 Chain of Custody

5.2, 2.1.2 IRS 20.5
Turnaround Sys. 1/12/15

REVIEWED BY DWS DATE 01/08/15

JP0891

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page 4 of 4 1-7-15 cmb

Collector: A. Stowe

Project Designation: 100-D/DR Field Remediation

Ice Chest No.: AFS-04-121

Shipped To: TestAmerica Denver

Other Labs Shipped To: TestAmerica Richland

RCF 38670

Company Contact: Joan Kessner

Telephone No.: 375-4686

Sampling Location: 100-D-86:1, VER, Deep Zone

Field Logbook No.: EL-1662-03

COA: 01D8612000

Offsite Property No.: A131312

Project Coordinator: KESSNER, JH

SAF No.: RC-075

Method of Shipment: Commercial Carrier / Fed Ex

Bill of Lading/Air Bill No.: See OSPC

Price Code: 8B

Data Turnaround: 7 days

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	250mL	250mL	125mL						
Sample Analysis	See Item (1) in Special Instructions	PCBs - 8082	Semi-VOA - 8270 (TCL)	PAHs - 8310	TPH-Diesel Range - WTPH-D +						

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

Cooling as required

Sample No.	Matrix	Sample Date	Sample Time										
~~J1V2K3~~	SOIL			01/07/15									
J1V2K4	SOIL	01/07/15	0926	X	X	X	X	X					
~~J1V2K5~~	SOIL												
J1V2K6 01/07/15	SOIL												
~~J1V2K7~~	SOIL												

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1-7-15 0953	WCH DWSHEA	1/7/15 0953
DWSHEA DWSHEA	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	1060 Battelle, fridge #2B	1-7-15 1640
1060 Battelle, fridge #2B	1-8-15 0430	C. Bingham	1-8-15 0430
C. Bingham WCH	1-8-15 0515	Fed Ex	
			1-12-15 9:00

FINAL SAMPLE DISPOSITION

Disposal Method: | Disposed By: | 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) (Mercury)

REVIEWED BY JAS DATE 01/08/15

JP0891

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page 2 of 8 - 4

DWS 1/7/15

Collector: Q. Stower

Project Designation: 100-D/DR Field Remediation

Chest No.: AFS-04-121

Shipped To: TestAmerica Denver

Other Labs Shipped To: TestAmerica Richland

RCF 38670

Company Contact: Joan Kessner

Telephone No.: 375-4588

Project Coordinator: KESSNER, JH

Price Code: 8B

Data Turnaround: 7 days

Sampling Location: 100-D-86:1, VER, Deep Zone

SAF No.: RC-075

Field Logbook No.: EL-1662-03

COA: 01D8612000

Method of Shipment: Commercial Carrier \ Fed Ex

Offsite Property No.: A131312

Bill of Lading/Air Bill No.: See OSRC

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	250mL	250mL	125mL						
Sample Analysis	See Item (1) in Special Instructions	PCBs - 8082	Semi-VOA - 8270 (TCL)	PAHs - 8310	TPH-Diesel Range - WTPH-D +						

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

Cooling as required

Sample No.	Matrix	Sample Date	Sample Time										
1V2K8	SOIL	01/07/15	1236	X	X	X	X	X					
1V2K9	SOIL	01/07/15	1245	X	X	X	X	X					
1V2L0	SOIL	01/07/15	1250	X	X	X	X	X					
1V2L1	SOIL	01/07/15	1252	X	X	X	X	X					
1V2L2	SOIL	01/07/15	1302	X	X	X	X	X					

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stower	1-7-15 1324	(WCH) Moshea Dowshea	1/7/15 1324
Moshea Dowshea	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	C. Bingham / 1060 Battelle fridge #28	1-7-15 1640
1060 Battelle fridge #28	1-8-15 0430	C. Bingham	1-8-15 0430
C. Bingham WCH	1-8-15 0515	Fed EX	
			1-12-15 9:00

FINAL SAMPLE DISPOSITION: Disposal Method — Disposed By — 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) (Mercury)

REVIEWED BY DAB DATE 01/08/15

JP0891

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page 3 of 3 — 4
DWS 1/7/15

Collector: Q. Stowe

Project Designation: 100-D/DR Field Remediation

Ice Chest No.: AFS-04-121

Shipped To: TestAmerica Denver

Other Labs Shipped To: TestAmerica Richland

RCF 38670

Company Contact: Joan Kessner

Telephone No.: 375-4688

Sampling Location: 100-D-86:1, VER, Deep Zone

Field Logbook No.: EL-1662-03

COA: 01D8612000

Offsite Property No.: A131312

Project Coordinator: KESSNER, JH

SAF No.: RC-075

Method of Shipment: Commercial Carrier / Fed Ex

Bill of Lading/Air Bill No.: See OSPC

Price Code: 8B

Data Turnaround: 7 days

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	250mL	250mL	125mL						
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	Semi-VOA - 8270 (TCL)	PAHs - 8310	TPH-Diesel Range - WTPH-D +						

Sample No.	Matrix	Sample Date	Sample Time										
J1V2L3	SOIL	01/07/15	1255	X	X	X	X	X					
J1V2L4	SOIL	01/07/15	1309	X	X	X	X	X					
J1V2L5	SOIL	01/07/15	1222	X	X	X	X	X					

Page 1 of 1

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1324 1-7-15	DWSHEA (WCH) DWSHEA	1/7/15 1324
DWSHEA DWSHEA	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	1060 Battelle, Fridge #2B	1640 1-7-15
1060 Battelle, Fridge #2B	1-8-15 0430	C. Bingham	1-8-15 0430
C. Bingham WCH	1-8-15 0515	Fed Ex	
			1-12-15 900

Sign/Print Names

FINAL SAMPLE DISPOSITION

Disposal Method: | Disposed By: | 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) (Mercury)

REVIEWED BY
DATE 01/07/15

JP0891

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E

PROJECT: 100-D-861		DATA PACKAGE: JP0891	
VALIDATOR: ELR	LAB: TAL		DATE: 2/15/15
		SDG: JP0891	

ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		

SAMPLES/MATRIX				
J1V2K3	J1V2K4	J1V2K5	J1V2K6	J1V2K7
J1V2K8	J1V2K9	J1V2L0	J1V2L1	J1V2L2
J1V2L3	J1V2L4	J1V2L5		
				Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

Comments:

PCB DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: no FB

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Comments: no PAS

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

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Method Blank - Batch: 280-259971

Method: 8082
Preparation: 3550C

Lab Sample ID:	MB 280-259971/1-A	Analysis Batch:	280-260128	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-259971	Lab File ID:	01141504.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.7 g
Analysis Date:	01/14/2015 1308	Units:	ug/Kg	Final Weight/Volume:	5 mL
Prep Date:	01/13/2015 1325			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Result	Qual	MDL	RL
Aroclor 1016	2.6	U	2.6	9.5
Aroclor 1221	7.6	U	7.6	16
Aroclor 1232	1.9	U	1.9	9.5
Aroclor 1242	4.4	U	4.4	9.5
Aroclor 1248	4.4	U	4.4	9.5
Aroclor 1254	2.5	U	2.5	9.5
Aroclor 1260	2.5	U	2.5	9.5

Surrogate	% Rec	Acceptance Limits
Decachlorobiphenyl	78	59 - 130
Tetrachloro-m-xylene	73	53 - 128

Lab Control Sample - Batch: 280-259971

Method: 8082
Preparation: 3550C

Lab Sample ID:	LCS 280-259971/2-A	Analysis Batch:	280-260128	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-259971	Lab File ID:	01141505.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.5 g
Analysis Date:	01/14/2015 1332	Units:	ug/Kg	Final Weight/Volume:	5 mL
Prep Date:	01/13/2015 1325			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aroclor 1016	31.7	24.0	76	54 - 132	
Aroclor 1260	31.7	25.1	79	62 - 129	

Surrogate	% Rec	Acceptance Limits
Decachlorobiphenyl	75	59 - 130
Tetrachloro-m-xylene	72	53 - 128

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-259971

Method: 8082
Preparation: 3550C

MS Lab Sample ID:	280-64290-3	Analysis Batch:	280-260128	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-259971	Lab File ID:	01141509.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.2 g
Analysis Date:	01/14/2015 1504			Final Weight/Volume:	5 mL
Prep Date:	01/13/2015 1325			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

MSD Lab Sample ID:	280-64290-3	Analysis Batch:	280-260128	Instrument ID:	SGC_W
Client Matrix:	Solid	Prep Batch:	280-259971	Lab File ID:	01141510.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.4 g
Analysis Date:	01/14/2015 1528			Final Weight/Volume:	5 mL
Prep Date:	01/13/2015 1325			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Aroclor 1016	81	78	54 - 132	1	26		
Aroclor 1260	84	84	62 - 129	2	26		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
Decachlorobiphenyl	76	77	59 - 130
Tetrachloro-m-xylene	76	79	53 - 128

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-259971

Method: 8082
Preparation: 3550C

MS Lab Sample ID:	280-64290-3	Units:	ug/Kg	MSD Lab Sample ID:	280-64290-3
Client Matrix:	Solid			Client Matrix:	Solid
Dilution:	1.0			Dilution:	1.0
Analysis Date:	01/14/2015 1504			Analysis Date:	01/14/2015 1528
Prep Date:	01/13/2015 1325			Prep Date:	01/13/2015 1325
Leach Date:	N/A			Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Aroclor 1016	2.8	U	33.6	34.5	27.3	27.0
Aroclor 1260	2.7	U	33.6	34.5	28.3	29.0

Date: 16 February 2015
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 100-D-86:1
Subject: Radiochemistry - Data Package No. JP0891-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0891 prepared by TestAmerica Laboratories (TAL). 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
J1V2K3	1/7/15	Soil	C	See note 1
J1V2K4	1/7/15	Soil	C	See note 1
J1V2K5	1/7/15	Soil	C	See note 1
J1V2K6	1/7/15	Soil	C	See note 1
J1V2K7	1/7/15	Soil	C	See note 1
J1V2K8	1/7/15	Soil	C	See note 1
J1V2K9	1/7/15	Soil	C	See note 1
J1V2L0	1/7/15	Soil	C	See note 1
J1V2L1	1/7/15	Soil	C	See note 1
J1V2L2	1/7/15	Soil	C	See note 1
J1V2L3	1/7/15	Soil	C	See note 1
J1V2L4	1/7/15	Soil	C	See note 1
J1V2L5	1/7/15	Soil	C	See note 1

1 – Gamma spectroscopy, carbon-14, alpha spectroscopy, strontium and tritium.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). 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 5%.

Due to a radiochemical yield outside QC limits (106%), the uranium-234 and uranium-238 results in sample J1V2L5 were qualified as estimates and flagged "J".

Due to the lack of a matrix spike analysis, all carbon-14 and tritium results were qualified as estimates and flagged "J".

Due to the lack of an LCS analysis, all plutonium-238 and uranium-235 results were qualified as estimates and flagged "J".

All other 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 (J1V2K7/J1V2L5) 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. All analytes met the RQL.

- **Completeness**

Data package No. JP0891 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 a radiochemical yield outside QC limits (106%), the uranium-234 and uranium-238 results in sample J1V2L5 were qualified as estimates and flagged "J".
- Due to the lack of a matrix spike analysis, all carbon-14 and tritium results were qualified as estimates and flagged "J".
- Due to the lack of an LCS analysis, all plutonium-238 and uranium-235 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.*

DOE/RL-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

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

RADIOCHEMICAL DATA QUALIFICATION SUMMARY*

SDG: JP0891	REVIEWER: ELR	Project: 100-D-86:1	PAGE 1 OF 1
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Tritium Carbon-14	J	All	No MS recovery
Uranium-234 Uranium-238	J	J1V2L5	Yield
Plutonium-238 Uranium-235	J	All	No LCS analysis

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

Appendix 3

Annotated Laboratory Reports

Date: 15-Jan-15

Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 64233

SDG No: JP0891

Batch	Client Id / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
5008055	C14_CHEM_LSC								
	J1V2K3								
	M5WR31AF	C-14	5.70E-02 +- 2.4E-01	U J	pCi/g	100%	5.21E-01	1.00E+00	
	J1V2K4								
	M5WRL1AF	C-14	8.23E-02 +- 2.4E-01	U	pCi/g	100%	5.26E-01	1.00E+00	
	J1V2K5								
	M5WR41AF	C-14	1.56E-01 +- 2.4E-01	U	pCi/g	100%	5.21E-01	1.00E+00	
	J1V2K6								
	M5WR51AF	C-14	2.75E-01 +- 2.5E-01	U	pCi/g	100%	5.26E-01	1.00E+00	
	J1V2K7								
	M5WR61AF	C-14	-1.49E-02 +- 2.3E-01	U	pCi/g	100%	5.24E-01	1.00E+00	
	J1V2K8								
	M5WRR1AF	C-14	1.90E-01 +- 2.5E-01	U	pCi/g	100%	5.28E-01	1.00E+00	
	J1V2K9								
	M5WRT1AF	C-14	-1.48E-02 +- 2.3E-01	U	pCi/g	100%	5.25E-01	1.00E+00	
	J1V2L0								
	M5WRV1AF	C-14	-2.75E-02 +- 2.3E-01	U	pCi/g	100%	5.25E-01	1.00E+00	
	J1V2L0 DUP								
	M5WRV1AJ	C-14	1.82E-01 +- 2.5E-01	U	pCi/g	100%	5.27E-01	1.00E+00	271.1
	J1V2L1								
	M5WRW1A	C-14	-2.49E-02 +- 2.3E-01	U J	pCi/g	100%	5.26E-01	1.00E+00	
	J1V2L2								
	M5WRX1AF	C-14	7.49E-02 +- 2.4E-01	U	pCi/g	100%	5.23E-01	1.00E+00	
	J1V2L3								
	M5WR01AF	C-14	3.00E-01 +- 2.5E-01	U	pCi/g	100%	5.26E-01	5.00E+01	
	J1V2L4								
	M5WR11AF	C-14	2.14E-01 +- 2.5E-01	U	pCi/g	100%	5.24E-01	5.00E+01	
	J1V2L5								
	M5WR21AF	C-14	1.09E-02 +- 2.3E-01	U	pCi/g	100%	5.19E-01	1.00E+00	
5008058	PUISO_PLATE_AEA								
	J1V2K3								
	M5WR32AD	Pu-238	-1.32E-02 +- 3.1E-02	U J	pCi/g	100%	1.06E-01	1.00E+00	
		PU239/40	-1.80E-03 +- 3.0E-02	U	pCi/g	100%	6.49E-02	1.00E+00	
	J1V2K4								
	M5WRL1AD	Pu-238	5.54E-03 +- 3.1E-02	U J	pCi/g	100%	9.89E-02	1.00E+00	
		PU239/40	-1.85E-03 +- 3.1E-02	U	pCi/g	100%	6.64E-02	1.00E+00	
	J1V2K4 DUP								
	M5WRL1AM	Pu-238	1.78E-03 +- 3.0E-02	U	pCi/g	96%	1.05E-01	1.00E+00	102.9
		PU239/40	-1.77E-03 +- 3.0E-02	U	pCi/g	96%	6.39E-02	1.00E+00	-3.9

TestAmerica Inc

rptTALRchSaSummary2 V5.3.6.4 A2002

RPD - Relative Percent Difference.

U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

Date: 15-Jan-15

Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 64233 2/14/15 **SDG No:** JP0891

Batch	Client Id / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
5008058 PUISO_PLATE_AEA									
	J1V2K5								
	M5WR41AD	Pu-238	2.66E-02 +- 4.3E-02	U J	pCi/g	95%	7.53E-02	1.00E+00	
		PU239/40	-1.21E-03 +- 3.0E-02	U	pCi/g	95%	6.08E-02	1.00E+00	
	J1V2K6								
	M5WR51AD	Pu-238	-1.18E-03 +- 3.0E-02	U J	pCi/g	98%	5.94E-02	1.00E+00	
		PU239/40	-1.18E-03 +- 3.0E-02	U	pCi/g	98%	5.94E-02	1.00E+00	
	J1V2K7								
	M5WR61AD	Pu-238	-3.35E-03 +- 2.8E-02	U J	pCi/g	100%	6.97E-02	1.00E+00	
		PU239/40	-1.12E-03 +- 2.8E-02	U	pCi/g	100%	5.62E-02	1.00E+00	
	J1V2K8								
	M5WRR1AD	Pu-238	-9.00E-03 +- 3.0E-02	U J	pCi/g	100%	9.46E-02	1.00E+00	
		PU239/40	-2.40E-03 +- 3.0E-02	U	pCi/g	100%	6.85E-02	1.00E+00	
	J1V2K9								
	M5WRT1AD	Pu-238	-1.36E-02 +- 3.0E-02	U J	pCi/g	96%	1.06E-01	1.00E+00	
		PU239/40	1.42E-02 +- 3.0E-02	U	pCi/g	96%	5.38E-02	1.00E+00	
	J1V2L0								
	M5WRV1AD	Pu-238	-1.03E-02 +- 3.1E-02	U J	pCi/g	100%	9.94E-02	1.00E+00	
		PU239/40	0.00E+00 +- 3.0E-02	U	pCi/g	100%	4.12E-02	1.00E+00	
	J1V2L1								
	M5WRW1A	Pu-238	-1.21E-02 +- 3.1E-02	U J	pCi/g	100%	1.04E-01	1.00E+00	
		PU239/40	-1.82E-03 +- 3.0E-02	U	pCi/g	100%	6.55E-02	1.00E+00	
	J1V2L2								
	M5WRX1AD	Pu-238	-3.88E-03 +- 2.8E-02	U J	pCi/g	100%	7.16E-02	1.00E+00	
		PU239/40	-1.66E-03 +- 2.8E-02	U	pCi/g	100%	5.99E-02	1.00E+00	
	J1V2L3								
	M5WR01AD	Pu-238	3.53E-03 +- 3.0E-02	U J	pCi/g	99%	9.95E-02	1.00E+00	
		PU239/40	-2.94E-03 +- 3.0E-02	U	pCi/g	99%	7.05E-02	1.00E+00	
	J1V2L4								
	M5WR11AD	Pu-238	-9.70E-03 +- 2.9E-02	U J	pCi/g	100%	9.34E-02	1.00E+00	
		PU239/40	-5.71E-04 +- 2.9E-02	U	pCi/g	100%	5.19E-02	1.00E+00	
	J1V2L5								
	M5WR21AD	Pu-238	1.63E-02 +- 4.3E-02	U J	pCi/g	92%	1.08E-01	1.00E+00	
		PU239/40	-1.21E-03 +- 3.0E-02	U	pCi/g	92%	6.07E-02	1.00E+00	
5008057 UISO_IE_PLATE_AEA									
	J1V2K3								
	M5WR31AC	U-234	1.86E-01 +- 1.1E-01		pCi/g	93%	9.43E-02	1.00E+00	
		U-235	2.05E-02 +- 3.6E-02	U J	pCi/g	93%	6.87E-02	1.00E+00	
		U-238	1.66E-01 +- 9.8E-02		pCi/g	93%	8.18E-02	1.00E+00	

TestAmerica Inc

rptTALRchSaSummary2 V5.3.6.4 A2002

RPD - Relative Percent Difference.

U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

Date: 15-Jan-15

Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 64233

SDG No: JP0891

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
5008057	UISO_IE_PLATE_AEA								
	J1V2K4								
	M5WRL1AC	U-234	1.46E-01 +- 8.7E-02		pCi/g	105%	6.53E-02	1.00E+00	
		U-235	3.33E-02 +- 4.0E-02	U J	pCi/g	105%	4.99E-02	1.00E+00	
		U-238	2.30E-01 +- 1.1E-01		pCi/g	105%	4.99E-02	1.00E+00	
	J1V2K5								
	M5WR41AC	U-234	1.69E-01 +- 9.9E-02		pCi/g	101%	9.28E-02	1.00E+00	
		U-235	2.33E-02 +- 3.5E-02	U J	pCi/g	101%	4.90E-02	1.00E+00	
		U-238	2.12E-01 +- 1.1E-01		pCi/g	101%	7.53E-02	1.00E+00	
	J1V2K6								
	M5WR51AC	U-234	1.50E-01 +- 9.0E-02		pCi/g	100%	6.54E-02	1.00E+00	
		U-235	-1.43E-03 +- 2.4E-02	U J	pCi/g	100%	5.14E-02	1.00E+00	
		U-238	1.77E-01 +- 9.7E-02		pCi/g	100%	5.14E-02	1.00E+00	
	J1V2K7								
	M5WR61AC	U-234	1.18E-01 +- 8.0E-02		pCi/g	97%	6.52E-02	1.00E+00	
		U-235	1.12E-02 +- 2.5E-02	U J	pCi/g	97%	4.91E-02	1.00E+00	
		U-238	2.28E-01 +- 1.1E-01		pCi/g	97%	6.31E-02	1.00E+00	
	J1V2K8								
	M5WRR1AC	U-234	2.62E-01 +- 1.5E-01		pCi/g	66%	9.54E-02	1.00E+00	
		U-235	1.64E-02 +- 3.6E-02	U J	pCi/g	66%	7.19E-02	1.00E+00	
		U-238	3.34E-01 +- 1.7E-01		pCi/g	66%	9.54E-02	1.00E+00	
	J1V2K8 DUP								
	M5WRR1AJ	U-234	1.19E-01 +- 1.0E-01	U	pCi/g	67%	1.38E-01	1.00E+00	75.4
		U-235	8.42E-03 +- 3.6E-02	U	pCi/g	67%	1.06E-01	1.00E+00	64.4
		U-238	1.24E-01 +- 1.0E-01	U	pCi/g	67%	1.26E-01	1.00E+00	91.5
	J1V2K9								
	M5WRT1AC	U-234	8.88E-02 +- 8.0E-02	U	pCi/g	87%	1.17E-01	1.00E+00	
		U-235	-2.76E-03 +- 2.8E-02	U J	pCi/g	87%	6.61E-02	1.00E+00	
		U-238	1.24E-01 +- 9.0E-02		pCi/g	87%	1.02E-01	1.00E+00	
	J1V2L0								
	M5WRV1AC	U-234	9.85E-02 +- 7.4E-02		pCi/g	94%	6.33E-02	1.00E+00	
		U-235	-1.53E-03 +- 2.5E-02	U J	pCi/g	94%	5.49E-02	1.00E+00	
		U-238	1.89E-01 +- 1.0E-01		pCi/g	94%	5.11E-02	1.00E+00	
	J1V2L1								
	M5WRW1A	U-234	2.20E-01 +- 1.1E-01		pCi/g	95%	6.87E-02	1.00E+00	
		U-235	1.10E-02 +- 2.5E-02	U J	pCi/g	95%	5.40E-02	1.00E+00	
		U-238	2.20E-01 +- 1.1E-01		pCi/g	95%	7.06E-02	1.00E+00	
	J1V2L2								
	M5WRX1AC	U-234	1.76E-01 +- 1.0E-01		pCi/g	92%	9.54E-02	1.00E+00	

TestAmerica Inc

rptTALRchSaSummary2 V5.3.6.4 A2002

RPD - Relative Percent Difference.

U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

Date: 15-Jan-15

Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 64233 V 2/16/15 SDG No: JP0891

Batch	Client Id / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
5008057 UISO_IE_PLATE_AEA									
J1V2L2									
	M5WRX1AC	U-235	-4.55E-03 +- 2.5E-02	U J	pCi/g	92%	6.95E-02	1.00E+00	
		U-238	1.67E-01 +- 9.9E-02		pCi/g	92%	8.55E-02	1.00E+00	
J1V2L3									
	M5WR01AC	U-234	1.76E-01 +- 1.1E-01		pCi/g	87%	1.06E-01	1.00E+00	
		U-235	2.57E-02 +- 3.9E-02	U J	pCi/g	87%	5.91E-02	1.00E+00	
		U-238	1.56E-01 +- 9.9E-02		pCi/g	87%	8.64E-02	1.00E+00	
J1V2L4									
	M5WR11AC	U-234	1.49E-01 +- 8.8E-02		pCi/g	101%	5.82E-02	1.00E+00	
		U-235	1.03E-02 +- 2.3E-02	U J	pCi/g	101%	5.04E-02	1.00E+00	
		U-238	1.51E-01 +- 8.8E-02		pCi/g	101%	4.70E-02	1.00E+00	
J1V2L5									
	M5WR21AC	U-234	2.86E-01 +- 1.3E-01	J	pCi/g	106%	6.19E-02	1.00E+00	
		U-235	1.02E-02 +- 2.3E-02	U J	pCi/g	106%	5.01E-02	1.00E+00	
		U-238	2.51E-01 +- 1.2E-01	J	pCi/g	106%	6.37E-02	1.00E+00	
5008056 GAMMA_GS									
J1V2K3									
	M5WR31AE	AMERICIUM 241	-7.04E-04 +- 1.8E-02	U	pCi/g		3.01E-02		
		CO-60	1.01E-03 +- 1.5E-02	U	pCi/g		2.59E-02	5.00E-02	
		CS-137	1.04E+00 +- 1.3E-01		pCi/g		2.60E-02	1.00E-01	
		EU-152	4.28E-02 +- 3.3E-02	U	pCi/g		5.90E-02	1.00E-01	
		EU-154	3.63E-03 +- 4.8E-02	U	pCi/g		8.44E-02	1.00E-01	
		EU-155	6.07E-02 +- 2.8E-02	U	pCi/g		4.91E-02	1.00E-01	
		K-40	1.33E+01 +- 1.6E+00		pCi/g		1.59E-01		
J1V2K4									
	M5WRL1AE	AMERICIUM 241	-3.75E-02 +- 6.8E-02	U	pCi/g		1.13E-01		
		CO-60	-5.69E-03 +- 1.4E-02	U	pCi/g		2.36E-02	5.00E-02	
		CS-137	4.38E-03 +- 1.4E-02	U	pCi/g		2.52E-02	1.00E-01	
		EU-152	-2.93E-01 +- 7.4E-02	U	pCi/g		6.90E-02	1.00E-01	
		EU-154	-3.88E-02 +- 4.6E-02	U	pCi/g		7.44E-02	1.00E-01	
		EU-155	-2.95E-02 +- 4.8E-02	U	pCi/g		8.00E-02	1.00E-01	
		K-40	9.35E+00 +- 1.2E+00		pCi/g		1.94E-01		
J1V2K5									
	M5WR41AE	AMERICIUM 241	-8.03E-04 +- 1.3E-02	U	pCi/g		2.14E-02		
		CO-60	-3.57E-03 +- 1.1E-02	U	pCi/g		1.86E-02	5.00E-02	
		CS-137	-8.85E-03 +- 1.1E-02	U	pCi/g		1.74E-02	1.00E-01	
		EU-152	-7.26E-03 +- 2.4E-02	U	pCi/g		4.08E-02	1.00E-01	
		EU-154	1.29E-02 +- 3.6E-02	U	pCi/g		6.69E-02	1.00E-01	

TestAmerica Inc

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Date: 15-Jan-15

Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 64233 ✓ 2/14/15 SDG No: JP0891

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
5008056 GAMMA_GS									
J1V2K5									
	M5WR41AE	EU-155	2.44E-02 +- 2.0E-02	U	pCi/g		3.52E-02	1.00E-01	
		K-40	9.09E+00 +- 1.1E+00		pCi/g		2.22E-01		
J1V2K6									
	M5WR51AE	AMERICIUM 241	-9.79E-03 +- 1.3E-02	U	pCi/g		2.06E-02		
		CO-60	-9.68E-03 +- 1.2E-02	U	pCi/g		2.03E-02	5.00E-02	
		CS-137	-1.37E-03 +- 1.1E-02	U	pCi/g		1.91E-02	1.00E-01	
		EU-152	1.78E-02 +- 2.4E-02	U	pCi/g		4.27E-02	1.00E-01	
		EU-154	2.28E-03 +- 4.0E-02	U	pCi/g		7.21E-02	1.00E-01	
		EU-155	1.23E-02 +- 1.9E-02	U	pCi/g		3.32E-02	1.00E-01	
		K-40	7.87E+00 +- 1.0E+00		pCi/g		1.45E-01		
J1V2K7									
	M5WR61AE	AMERICIUM 241	1.07E-02 +- 1.6E-02	U	pCi/g		2.64E-02		
		CO-60	-5.51E-04 +- 1.2E-02	U	pCi/g		2.21E-02	5.00E-02	
		CS-137	1.41E-02 +- 1.9E-02	U	pCi/g		1.80E-02	1.00E-01	
		EU-152	5.40E-03 +- 2.7E-02	U	pCi/g		4.69E-02	1.00E-01	
		EU-154	-2.12E-02 +- 4.2E-02	U	pCi/g		6.97E-02	1.00E-01	
		EU-155	5.43E-03 +- 2.4E-02	U	pCi/g		4.04E-02	1.00E-01	
		K-40	8.68E+00 +- 1.1E+00		pCi/g		1.87E-01		
J1V2K8									
	M5WRR1AE	AMERICIUM 241	-1.16E-02 +- 8.6E-02	U	pCi/g		1.51E-01		
		CO-60	1.14E-03 +- 1.3E-02	U	pCi/g		2.36E-02	5.00E-02	
		CS-137	1.76E-03 +- 1.4E-02	U	pCi/g		2.32E-02	1.00E-01	
		EU-152	-1.06E-02 +- 3.4E-02	U	pCi/g		5.63E-02	1.00E-01	
		EU-154	2.96E-03 +- 4.4E-02	U	pCi/g		7.82E-02	1.00E-01	
		EU-155	8.87E-03 +- 3.6E-02	U	pCi/g		6.15E-02	1.00E-01	
		K-40	8.96E+00 +- 1.2E+00		pCi/g		1.95E-01		
J1V2K9									
	M5WRT1AE	AMERICIUM 241	6.51E-03 +- 2.2E-02	U	pCi/g		3.59E-02		
		CO-60	-8.38E-03 +- 1.4E-02	U	pCi/g		2.31E-02	5.00E-02	
		CS-137	8.32E-03 +- 1.4E-02	U	pCi/g		2.58E-02	1.00E-01	
		EU-152	-1.05E-02 +- 3.4E-02	U	pCi/g		5.64E-02	1.00E-01	
		EU-154	1.17E-02 +- 4.2E-02	U	pCi/g		7.67E-02	1.00E-01	
		EU-155	4.02E-02 +- 3.2E-02	U	pCi/g		5.61E-02	1.00E-01	
		K-40	8.48E+00 +- 1.1E+00		pCi/g		2.50E-01		
J1V2K9 DUP									
	M5WRT1AJ	AMERICIUM 241	3.79E-03 +- 1.4E-02	U	pCi/g		2.33E-02		52.7
		CO-60	1.53E-04 +- 1.4E-02	U	pCi/g		2.53E-02	5.00E-02	-207.4

TestAmerica Inc

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Date: 15-Jan-16

Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 64233 V 2/16/15 SDG No: JP0891

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
5008056 GAMMA_GS									
J1V2K9 DUP									
	M5WRT1AJ	CS-137	2.12E-02 +- 1.2E-02	U	pCi/g		2.25E-02	1.00E-01	87.1
		EU-152	-4.31E-03 +- 2.3E-02	U	pCi/g		3.93E-02	1.00E-01	-83.9
		EU-154	3.94E-02 +- 4.4E-02	U	pCi/g		8.39E-02	1.00E-01	108.3
		EU-155	2.06E-02 +- 2.1E-02	U	pCi/g		3.72E-02	1.00E-01	64.5
		K-40	9.15E+00 +- 1.1E+00		pCi/g		2.10E-01		7.7
J1V2L0									
	M5WRV1AE	AMERICIUM 241	4.10E-03 +- 1.3E-02	U	pCi/g		2.23E-02		
		CO-60	-3.88E-03 +- 1.2E-02	U	pCi/g		2.04E-02	5.00E-02	
		CS-137	5.78E-03 +- 1.1E-02	U	pCi/g		2.05E-02	1.00E-01	
		EU-152	5.45E-03 +- 2.5E-02	U	pCi/g		4.24E-02	1.00E-01	
		EU-154	1.25E-03 +- 4.0E-02	U	pCi/g		7.23E-02	1.00E-01	
		EU-155	1.04E-02 +- 2.0E-02	U	pCi/g		3.54E-02	1.00E-01	
		K-40	9.79E+00 +- 1.2E+00		pCi/g		1.73E-01		
J1V2L1									
	M5WRW1A	AMERICIUM 241	-1.38E-03 +- 1.3E-02	U	pCi/g		2.12E-02		
		CO-60	6.37E-03 +- 1.3E-02	U	pCi/g		2.46E-02	5.00E-02	
		CS-137	-8.25E-04 +- 1.0E-02	U	pCi/g		1.82E-02	1.00E-01	
		EU-152	7.87E-03 +- 2.2E-02	U	pCi/g		3.96E-02	1.00E-01	
		EU-154	1.68E-02 +- 4.0E-02	U	pCi/g		7.40E-02	1.00E-01	
		EU-155	2.85E-02 +- 2.0E-02	U	pCi/g		3.54E-02	1.00E-01	
		K-40	8.18E+00 +- 1.1E+00		pCi/g		1.83E-01		
J1V2L2									
	M5WRX1AE	AMERICIUM 241	-1.34E-03 +- 1.5E-02	U	pCi/g		2.50E-02		
		CO-60	7.96E-04 +- 1.3E-02	U	pCi/g		2.39E-02	5.00E-02	
		CS-137	1.99E-03 +- 1.2E-02	U	pCi/g		2.12E-02	1.00E-01	
		EU-152	-4.06E-03 +- 2.6E-02	U	pCi/g		4.48E-02	1.00E-01	
		EU-154	1.31E-02 +- 4.4E-02	U	pCi/g		7.83E-02	1.00E-01	
		EU-155	1.38E-02 +- 2.4E-02	U	pCi/g		4.10E-02	1.00E-01	
		K-40	8.63E+00 +- 1.1E+00		pCi/g		1.76E-01		
J1V2L3									
	M5WR01AE	AMERICIUM 241	-4.49E-02 +- 7.1E-02	U	pCi/g		1.17E-01		
		CO-60	1.77E-02 +- 1.5E-02	U	pCi/g		2.81E-02	5.00E-02	
		CS-137	7.14E-02 +- 2.8E-02		pCi/g		2.40E-02	1.00E-01	
		EU-152	-3.30E-03 +- 1.2E-01	U	pCi/g		7.32E-02	1.00E-01	
		EU-154	-2.15E-02 +- 4.6E-02	U	pCi/g		7.64E-02	1.00E-01	
		EU-155	-3.15E-02 +- 5.2E-02	U	pCi/g		8.51E-02	1.00E-01	
		K-40	1.09E+01 +- 1.4E+00		pCi/g		2.03E-01		

TestAmerica Inc

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Date: 15-Jan-15

Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 64233 **SDG No:** JP0891

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
5008056 GAMMA_GS									
J1V2L4									
	M5WR11AE	AMERICIUM 241	3.96E-02 +- 7.0E-02	U	pCi/g		1.26E-01		
		CO-60	5.44E-03 +- 1.0E-02	U	pCi/g		1.94E-02	5.00E-02	
		CS-137	-2.78E-03 +- 1.1E-02	U	pCi/g		1.83E-02	1.00E-01	
		EU-152	-1.24E-02 +- 2.8E-02	U	pCi/g		4.65E-02	1.00E-01	
		EU-154	-2.85E-02 +- 3.6E-02	U	pCi/g		6.02E-02	1.00E-01	
		EU-155	9.64E-03 +- 3.1E-02	U	pCi/g		5.21E-02	1.00E-01	
		K-40	6.91E+00 +- 9.5E-01		pCi/g		1.85E-01		
J1V2L5									
	M5WR21AE	AMERICIUM 241	-1.73E-02 +- 2.1E-02	U	pCi/g		3.33E-02		
		CO-60	3.91E-03 +- 1.3E-02	U	pCi/g		2.39E-02	5.00E-02	
		CS-137	2.22E-02 +- 1.5E-02	U	pCi/g		2.78E-02	1.00E-01	
		EU-152	-2.70E-02 +- 3.3E-02	U	pCi/g		5.37E-02	1.00E-01	
		EU-154	-1.25E-02 +- 4.4E-02	U	pCi/g		7.65E-02	1.00E-01	
		EU-155	8.07E-03 +- 3.3E-02	U	pCi/g		5.53E-02	1.00E-01	
		K-40	8.12E+00 +- 1.1E+00		pCi/g		2.05E-01		
5008054 SRTOT_SEP_PRECIP_GPC									
J1V2K3									
	M5WR31AG	STRONTIUM	1.22E-01 +- 1.9E-01	U	pCi/g	86%	4.08E-01	1.00E+00	
J1V2K4									
	M5WRL1AK	STRONTIUM	3.04E-02 +- 1.6E-01	U	pCi/g	93%	3.63E-01	1.00E+00	
J1V2K5									
	M5WR41AG	STRONTIUM	5.68E-02 +- 1.9E-01	U	pCi/g	86%	4.41E-01	1.00E+00	
J1V2K6									
	M5WR51AG	STRONTIUM	3.07E-01 +- 2.4E-01	U	pCi/g	88%	4.50E-01	1.00E+00	
J1V2K7									
	M5WR61AG	STRONTIUM	2.30E-01 +- 2.1E-01	U	pCi/g	91%	4.06E-01	1.00E+00	
J1V2K8									
	M5WRR1A	STRONTIUM	3.32E-02 +- 1.6E-01	U	pCi/g	95%	3.76E-01	1.00E+00	
J1V2K9									
	M5WRT1AG	STRONTIUM	2.45E-02 +- 1.7E-01	U	pCi/g	93%	4.04E-01	1.00E+00	
J1V2L0									
	M5WRV1AG	STRONTIUM	8.93E-02 +- 1.7E-01	U	pCi/g	95%	3.69E-01	1.00E+00	
J1V2L1									
	M5WRW1A	STRONTIUM	9.78E-03 +- 1.8E-01	U	pCi/g	91%	4.23E-01	1.00E+00	
J1V2L1 DUP									
	M5WRW1A	STRONTIUM	1.33E-01 +- 3.0E-01	U	pCi/g	60%	6.66E-01	1.00E+00	172.6
J1V2L2									

TestAmerica Inc

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Date: 15-Jan-15

Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 64233

✓ 2/16/15 SDG No: JP0891

Batch	Client Id / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
5008054 SRTOT_SEP_PRECIP_GPC									
	J1V2L2 M5WRX1AG	STRONTIUM	9.19E-02 +- 1.7E-01	U	pCi/g	100%	3.72E-01	1.00E+00	
	J1V2L3 M5WR01AG	STRONTIUM	8.54E-01 +- 3.1E-01		pCi/g	94%	3.58E-01	1.00E+00	
	J1V2L4 M5WR11AG	STRONTIUM	1.50E-01 +- 1.9E-01	U	pCi/g	92%	3.88E-01	1.00E+00	
	J1V2L5 M5WR21AG	STRONTIUM	3.90E-01 +- 2.3E-01		pCi/g	97%	3.88E-01	1.00E+00	
5008045 7196_CR6									
	J1V2K3 M5WR31AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V2K4 M5WRL1AA	HEXCHROME	2.30E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	M5WRL1AH	HEXCHROME	1.88E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	20.1
	J1V2K5 M5WR41AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V2K6 M5WR51AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V2K7 M5WR61AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V2K8 M5WRR1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V2K9 M5WRT1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V2L0 M5WRV1AA	HEXCHROME	1.94E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	J1V2L1 M5WRW1A	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V2L2 M5WRX1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V2L3 M5WR01AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V2L4 M5WR11AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V2L5 M5WR21AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
5008053 TRITIUM_DIST_LSC									
	J1V2K3 M5WR31AH	H-3	5.20E-02 +- 1.0E-01	U J	pCi/g	100%	2.32E-01	1.00E+01	

✓ 2/16/15

TestAmerica Inc

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Date: 15-Jan-15

Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 64233

2/16/15

SDG No: JP0891

Batch	Client Id / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
5008053 TRITIUM_DIST_LSC									
	J1V2K4 M5WRL1AL	H-3	4.30E-02 +- 4.1E-02	U J	pCi/g	100%	9.00E-02	1.00E+01	
	J1V2K5 M5WR41AH	H-3	4.73E-02 +- 4.0E-02	U	pCi/g	100%	8.57E-02	1.00E+01	
	J1V2K6 M5WR51AH	H-3	1.98E-02 +- 4.9E-02	U	pCi/g	100%	1.14E-01	1.00E+01	
	J1V2K7 M5WR61AH	H-3	7.35E-02 +- 4.5E-02	U	pCi/g	100%	9.37E-02	1.00E+01	
	J1V2K8 M5WRR1AH	H-3	6.14E-02 +- 4.2E-02	U	pCi/g	100%	8.95E-02	1.00E+01	
	J1V2K9 M5WRT1AH	H-3	7.96E-02 +- 4.5E-02	U	pCi/g	100%	9.32E-02	1.00E+01	
	J1V2L0 M5WRV1AH	H-3	4.69E-02 +- 4.2E-02	U	pCi/g	100%	9.05E-02	1.00E+01	
	J1V2L1 M5WRW1A	H-3	-4.22E-03 +- 3.8E-02	U	pCi/g	100%	9.12E-02	1.00E+01	
	J1V2L2 M5WRX1AH	H-3	3.52E-02 +- 4.4E-02	U	pCi/g	100%	9.86E-02	1.00E+01	
	J1V2L2 DUP M5WRX1AJ	H-3	3.57E-02 +- 4.0E-02	U	pCi/g	100%	8.87E-02	1.00E+01	1.4
	J1V2L3 M5WR01AH	H-3	6.21E-02 +- 5.0E-02	U J	pCi/g	100%	1.09E-01	1.00E+01	
	J1V2L4 M5WR11AH	H-3	5.22E-02 +- 5.1E-02	U J	pCi/g	100%	1.11E-01	1.00E+01	
	J1V2L5 M5WR21AH	H-3	1.11E-02 +- 4.0E-02	U J	pCi/g	100%	9.49E-02	1.00E+01	

No. of Results: 224

TestAmerica Inc

rptTALRchSaSummary2 V5.3.6.4 A2002

RPD - Relative Percent Difference.

U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

Washington Hanford Closure
2620 Fermi Avenue
Richland, WA 99354

January 15, 2015

Attention: Joan Kessner

SAF Number	:	RC-075
Date SDG Closed	:	January 8, 2015
Number of Samples	:	Thirteen (13)
Sample Type	:	Soil
SDG Number	:	JP0891
Data Deliverable	:	7– Day / Summary

CASE NARRATIVE

I. Introduction

On January 8, 2015, thirteen soil samples were received at TestAmerica for radiochemical and chemistry analysis. Upon receipt, the samples were assigned the following laboratory ID number to correspond with the Washington Closure Hanford (WCH) specific ID:

WCH ID#	TARL ID#	MATRIX	DATE OF RECEIPT
J1V2K4	M5WRL	SOIL	1/08/15
J1V2K8	M5WRR	SOIL	1/08/15
J1V2K9	M5WRT	SOIL	1/08/15
J1V2L0	M5WRV	SOIL	1/08/15
J1V2L1	M5WRW	SOIL	1/08/15
J1V2L2	M5WRX	SOIL	1/08/15
J1V2L3	M5WR0	SOIL	1/08/15
J1V2L4	M5WR1	SOIL	1/08/15
J1V2L5	M5WR2	SOIL	1/08/15
J1V2K3	M5WR3	SOIL	1/08/15
J1V2K5	M5WR4	SOIL	1/08/15
J1V2K6	M5WR5	SOIL	1/08/15
J1V2K7	M5WR6	SOIL	1/08/15

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

Alpha Spectroscopy
Plutonium-238, -239/240 by method RL-ALP-002
Uranium 234, 235 and 238 by method RL-ALP-015
Gas Proportional Counting
Strontium-90 by method RL-GPC-010
Gamma Spectroscopy
Gamma Spec by method RL-GAM-001
Liquid Scintillation Counting
Tritium by method RL-LSC-005
Carbon-14 by method RL-LSC-008
Chemical Analysis
Hexavalent Chromium by EPA method 7196A

IV. Quality Control

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

V. Comments

Alpha Spectroscopy
Plutonium-238, -239/240 by method RL-ALP-002:
Sample J1V2K3 had a slightly elevated tracer yield; it was recount for an acceptable result. Except as noted; the LCS, batch blank, samples and sample duplicate (J1V2K4) results are within contractual requirements.

Uranium 234, 235 and 238 by method RL-ALP-015:
The LCS, batch blank, samples and sample duplicate (J1V2K8) results are within contractual requirements.

Gas Proportional Counting
Strontium-90 by method RL-GPC-010:
The LCS, batch blank, samples and sample duplicate (J1V2L1) results are within contractual requirements.

Gamma Spectroscopy
Gamma Spec by method RL-GAM-001:
The LCS, batch blank, samples and sample duplicate (J1V2K9) results are within contractual requirements.

Liquid Scintillation Counting

Tritium by method RL-LSC-005:
The LCS, batch blank, samples and sample duplicate (J1V2L0) results are within contractual requirements.

Carbon-14 by method RL-LSC-008:
The LCS, batch blank, samples and sample duplicate (J1V2K4) results are within contractual requirements.

Chemical Analysis
Hexavalent Chromium by EPA method 7196A
The LCS, batch blank, samples, sample duplicate (J1V2K4) and sample matrix spike (J1V2K4) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for 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.

Reviewed and approved:

Rhonda Wagar
Project Manager

TestAmerica Laboratories, Inc.

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Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page 1 of 1 4 DWS 1/7/15

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-86:1, VER, Deep Zone		SAF No.: RC-075
Ice Chest No.: ~~AAA~~ 1-8-15 cmB ERC-96-030	Field Logbook No.: EL-1662-03	COA: 01D8612000	Method of Shipment: Local Delivery
Shipped To: TestAmerica Richland	Offsite Property No.: nA		Bill of Lading/Air Bill No.: nA

Price Code: 8B

Data Turnaround: 7 days

Other Labs Shipped To: TestAmerica Denver

RCF 38670

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

cooling as required

Preservation	Cool 4C	None	None	None
Type of Container	G/P	G/P	G/P	G/P
No. of Container(s)	1	1	1	1
Volume	125mL	1000mL	120mL	120mL
Sample Analysis	Chromium Hex - 7196	See item (2) in Special Instructions	See item (3) in Special Instructions	Isotopic Plutonium; Isotopic Uranium

Sample No.	Matrix	Sample Date	Sample Time					
J1V2K3	~~SOIL~~			01/07/15				
J1V2K4 MSWRL	SOIL	01/07/15	0926	X	X	X	X	
~~J1V2K5~~	SOIL							
J1V2K6 01/07/15	SOIL							
J1V2K7	SOIL							

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	0953 1-7-15	DWSHEA DWSHEA	0953 1/7/15
DWSHEA DWSHEA	1618 1/7/15	C. Bingham	1618 1-7-15
C. Bingham	1640 1-7-15	1000 Battelle, fridge #2B	1640 1-7-15
1000 Battelle, fridge #2B	0430 1-8-15	C. Bingham	0430 1-8-15
C. Bingham WCH	1215 1-8-15	J. Bock, TARL	1215 1-8-15

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

(2) Gamma Spec (Client List) (Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

(3) Carbon-14 Low Level; Strontium-89,90 – Total Sr; Tritium - H3 Low Level Soil

J5A080423

Due 1-15-15

REVIEWED BY DATE 1/08/15

SDG:

JP0891

J5A080423

WCH-EE-011

TestAmerica Laboratories, Inc.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page ~~2 of 2~~ 2 of 4
DWS 1/7/15

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 days		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-86:1, VER, Deep Zone		SAF No.: RC-075
Ice Chest No.: A+A 1-8-15 CMB ERC-96-030	Field Logbook No.: EL-1662-03	COA: 01D8612000	Method of Shipment: Local Delivery
Shipped To: TestAmerica Richland	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A

Other Labs Shipped To: TestAmerica Denver

RCF 386670

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

cooling as required

Preservation	Cool 4C	None	None	None
Type of Container	G/P	G/P	G/P	G/P
No. of Container(s)	1	1	1	1
Volume	125mL	1000mL	120mL	120mL
Sample Analysis	Chromium Hex - 7196	See item (2) in Special Instructions	See item (3) in Special Instructions	Isotopic Plutonium; Isotopic Uranium

Sample No.	Matrix	Sample Date	Sample Time				
J1V2K8 MSWRP	SOIL	01/07/15	1236	X	X	X	X
J1V2K9 MSWRT	SOIL	01/07/15	1245	X	X	X	X
J1V2L0 MSWRV	SOIL	01/07/15	1220	X	X	X	X
J1V2L1 MSWRW	SOIL	01/07/15	1252	X	X	X	X
J1V2L2 MSWRX	SOIL	01/07/15	1302	X	X	X	X

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1-7-15 1324	(WCH) DWSHEA DWSHEA	1/7/15 1324
DWSHEA DWSHEA	1/7/15 1668	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	1060 Battelle, fridge #28	1-7-15 1640
1060 Battelle, fridge #28	1-8-15 0930	C. Bingham	1-8-15 0930
C. Bingham WCH	1-8-15 1215	J. Lock	1-8-15 1215

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

(2) Gamma Spec (Client List) {Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}
(3) Carbon-14 Low Level; Strontium-89,90 – Total Sr; Tritium - H3 Low Level Soil

JSA050423
Due 1-15-15

REVIEWED BY
DATE 01/08/15

JP0891

WCH-EE-011

TestAmerica Laboratories, Inc.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page 3 ~~of 3~~ of 4 DWS 1/7/15

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 days		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-86:1, VER, Deep Zone		SAF No.: RC-075
Ice Chest No.: ERC-96-030 ~~N/A~~ 1-8-15 CMD	Field Logbook No.: EL-1662-03	COA: 01D8612000	Method of Shipment: Local Delivery
Shipped To: TestAmerica Richland	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A

Other Labs Shipped To: TestAmerica Denver

RCF 38670

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

cooling as required

Preservation	Cool 4C	None	None	None							
Type of Container	G/P	G/P	G/P	G/P							
No. of Container(s)	1	1	1	1							
Volume	125mL	1000mL	120mL	120mL							
Sample Analysis	Chromium Hex - 7196	See Item (2) in Special Instructions	See Item (3) in Special Instructions	Isotopic Plutonium; Isotopic Uranium							

Sample No.	Matrix	Sample Date	Sample Time										
J1V2L3 MSWR0	SOIL	01/07/15	1255	X	X	X	X						
J1V2L4 MSWR1	SOIL	01/07/15	1309	X	X	X	X						
J1V2L5 MSWR2	SOIL	01/07/15	1222	X	X	X	X						

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1-7-15 1324	Dwshea Dwshea (WCH)	1/7/15 1324
Dwshea Dwshea	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	1060 Battelle fridge #28	1-7-15 1640
1060 Battelle fridge #28	1-8-15 0430	C. Bingham	1-8-15 0430
C. Bingham WCH	1-8-15 1215	J. Bock, TARL	1-8-15 1215

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

(2) Gamma Spec (Client List) (Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

(3) Carbon-14 Low Level; Strontium-89,90 -- Total Sr; Tritium - H3 Low Level Soil

JSA080423

Due 1-15-15

REVIEWED BY [illegible] DATE 01/08/15

JP0891

WCH-EE-011

TestAmerica Laboratories, Inc.

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Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page ~~1 of 3~~ 7 of 9 DWS 1/7/15

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-86:1, VER, Deep Zone		SAF No.: RC-075
Ice Chest No.: ERC-96-030 N/A 1-8-15 CMB	Field Logbook No.: EL-1662-03	COA: 01D8612000	Method of Shipment: Local Delivery
Shipped To: TestAmerica Richland	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A

Price Code: SB

Data Turnaround: 7 days

Other Labs Shipped To: TestAmerica Denver

KCF 38670

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

cooling as required

Preservation	Cool 4C	None	None	None						
Type of Container	G/P	G/P	G/P	G/P						
No. of Container(s)	1	1	1	1						
Volume	125mL	1000mL	120mL	120mL						
Sample Analysis	Chromium Hex - 7196	See item (2) in Special Instructions	See item (3) in Special Instructions	Isotopic Plutonium; Isotopic Uranium						

Sample No.	Matrix	Sample Date	Sample Time										
J1V2K3 mSWR3	SOIL	01/07/15	1215	X	X	X	X						
~~J1V2K4~~	~~SOIL~~	~~01/07/15~~		~~X~~	~~X~~	~~X~~	~~X~~	DWS	1/7/15				
J1V2K5 mSWR4	SOIL	01/07/15	1241	X	X	X	X						
J1V2K6 mSWR5	SOIL	01/07/15	1218	X	X	X	X						
J1V2K7 mSWR6	SOIL	01/07/15	1222	X	X	X	X						

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1324 1-7-15	DWSHEA DWSHEA	1/7/15 1324
DWSHEA DWSHEA	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	1060 Battelle, fridge #2B	1640 1-7-15
1060 Battelle, fridge #2B	0430 1-8-15	C. Bingham	1-8-15 0430
C. Bingham WCH	1-8-15 1215	J. Bock, TARL	1-8-15 1215

FINAL SAMPLE DISPOSITION — Disposal Method: | Disposed By: | Date/Time:

SPECIAL INSTRUCTIONS

(2) Gamma Spec (Client List) (Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

(3) Carbon-14 Low Level; Strontium-89,90 -- Total Sr; Tritium - H3 Low Level Soil

JSA080423
Due 1-15-15

REVIEWED BY
DATE 01/08/15

JP0891

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-86:1			DATA PACKAGE: JP0891		
VALIDATOR: ELR		LAB: TAL		DATE: 2/15/15	
			SDG: JP0891		

ANALYSES PERFORMED

☐ Gross Alpha/Beta	☒ Strontium-90	☐ Technetium-99	☒ Alpha Spectroscopy	☒ Gamma Spectroscopy
☐ Total Uranium	☐ Radium-22	☒ Tritium	X C14	

SAMPLES/MATRIX

J1V2K3	J1V2K4	J1K2V5	J1V2K6	J1V2K7
J1V2K8	J1V2K9	J1V2L0	J1V2L1	J1V2L2
J1V2L3	J1V2L4	J1V2L5		
				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: NO pu-239 or U-235 LCS - J all

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

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

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

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

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

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

Comments: _____

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

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

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

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

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

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

Comments: LS - U234 + U238 - 106% - J 2/15/15

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: no MS - J 3H & C-14

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

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

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

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

Comments: _____

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

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

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

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

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

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

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

Comments: no FS or RPD

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

Date: 15-Jan-15

QC Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No, QC Type,.

Report No. : 64233

SDG No.: JP0891

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
C14_CHEM_LSC								
5008055 BLANK QC, M5WWF1AA	C-14	2.18E-01 +- 2.5E-01	U	pCi/g	100%			5.24E-01
5008055 LCS, M5WWF1AC	C-14	6.82E+00 +- 6.6E-01		pCi/g	100%	95%	0.0	5.29E-01
PUISO_PLATE_AEA								
5008058 BLANK QC, M5WWP1AA	Pu-238	-2.27E-03 +- 2.8E-02	U	pCi/g	100%			6.47E-02
	PU239/40	-5.67E-04 +- 2.8E-02	U	pCi/g	100%			5.16E-02
5008058 LCS, M5WWP1A	PU239/40	7.57E+00 +- 1.5E+00		pCi/g	93%	114%	0.1	6.57E-02
UISO_IE_PLATE_AEA								
5008057 BLANK QC, M5WWL1AA	U-234	-1.40E-05 +- 2.9E-02	U	pCi/g	83%			1.04E-01
	U-235	9.59E-03 +- 2.8E-02	U	pCi/g	83%			7.53E-02
	U-238	-8.47E-03 +- 2.9E-02	U	pCi/g	83%			8.91E-02
5008057 LCS, M5WWL1AC	U-234	3.63E+00 +- 7.6E-01		pCi/g	98%	116%	0.2	9.92E-02
	U-238	3.41E+00 +- 7.2E-01		pCi/g	98%	104%	0.0	8.54E-02
GAMMA_GS								
5008056 BLANK QC, M5WWH1A	AMERICIUM 241	1.33E-03 +- 1.5E-02	U	pCi/g				2.44E-02
	CO-60	-7.91E-03 +- 1.0E-02	U	pCi/g				1.68E-02
	CS-137	-1.65E-03 +- 1.1E-02	U	pCi/g				1.92E-02
	EU-152	-6.68E-03 +- 2.7E-02	U	pCi/g				4.66E-02
	EU-154	-9.16E-03 +- 2.6E-02	U	pCi/g				4.57E-02
	EU-155	3.75E-04 +- 2.3E-02	U	pCi/g				3.95E-02
	K-40	-2.76E-01 +- 2.7E-01	U	pCi/g				5.66E-01
5008056 LCS, M5WWH1A	CS-137	9.54E-01 +- 1.2E-01		pCi/g		96%	0.0	2.74E-02
	RA-226	9.00E-01 +- 1.3E-01		pCi/g		79%	-0.2	4.40E-02
	RA-228	5.96E-01 +- 1.3E-01		pCi/g		100%	0.0	8.62E-02
	U-238	1.03E+00 +- 1.5E-01		pCi/g		86%	-0.1	4.82E-02
SRTOT_SEP_PRECIP_GPC								
5008054 BLANK QC, M5WV91AA	STRONTIUM	6.91E-02 +- 1.5E-01	U	pCi/g	95%			3.45E-01
5008054 LCS, M5WV91AC	STRONTIUM	3.72E+00 +- 9.4E-01		pCi/g	98%	109%	0.1	3.66E-01
7196_CR6								
5008045 MATRIX SPIKE, J1V2K4 M5WRL1AG	HEXCHROME	2.62E+01 +- 0.0E+00		mg/kg	N/A	85%	-0.1	1.55E-01
5008045 LCS,								

TestAmerica Inc
rptSTLRchQcSummary V5.3.6.4
A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

Date: 15-Jan-15

QC Results Summary
TestAmerica Inc TARL
Ordered by Method, Batch No, QC Type,.

Report No. : 64233

SDG No.: JP0891

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
M5WVC1AC	HEXCHROME	1.85E+01 +- 0.0E+00		mg/kg	N/A	93%	-0.1	1.55E-01
5008045 BLANK QC, M5WVC1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A			1.55E-01
TRITIUM_DIST_LSC								
5008053 BLANK QC, M5WV61AA	H-3	9.14E-03 +- 4.2E-02	U	pCi/g	100%			9.91E-02
5008053 LCS, M5WV61AC	H-3	4.46E-01 +- 8.0E-02		pCi/g	100%	95%	0.0	1.18E-01

No. of Results: 28

TestAmerica Inc
rptSTLRchQcSummary V5.3.6.4
A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

Date: 16 February 2015
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 100-D-86:1
Subject: Semivolatile Organic - Data Package No. JP0891-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0891 prepared by TestAmerica Laboratories (TAL). 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
J1V2K3	1/7/15	Soil	C	See note 1
J1V2K4	1/7/15	Soil	C	See note 1
J1V2K5	1/7/15	Soil	C	See note 1
J1V2K6	1/7/15	Soil	C	See note 1
J1V2K7	1/7/15	Soil	C	See note 1
J1V2K8	1/7/15	Soil	C	See note 1
J1V2K9	1/7/15	Soil	C	See note 1
J1V2L0	1/7/15	Soil	C	See note 1
J1V2L1	1/7/15	Soil	C	See note 1
J1V2L2	1/7/15	Soil	C	See note 1
J1V2L3	1/7/15	Soil	C	See note 1
J1V2L4	1/7/15	Soil	C	See note 1
J1V2L5	1/7/15	Soil	C	See note 1

1 – Semivolatile organics by 8270C.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). 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: Analytes 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 a matrix spike recovery outside QC limits, all 1,2-dichlorobenzene (47%), 1,3-dichlorobenzene (44%), 1,4-dichlorobenzene (46%) and hexachloroethane (44%) results were qualified as estimates and flagged "J".

All other accuracy results were acceptable.

Surrogate Recovery

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

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

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

All duplicate results were acceptable.

Field Duplicate Samples

One set field duplicates (J1V2K7/J1V2L5) were submitted for analysis. Laboratory duplicates are compared using the same criteria as for laboratory results. All field duplicate results are 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. JP0891 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 a matrix spike recovery outside QC limits, all 1,2-dichlorobenzene (47%), 1,3-dichlorobenzene (44%), 1,4-dichlorobenzene (46%) and hexachloroethane (44%) 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-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

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: JP0891	**REVIEWER: ELR**	**Project: 100-D-86:1**	**PAGE 1 OF 1**
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
1,2-dichlorobenzene 1,3-dichlorobenzene 1,4-dichlorobenzene hexachloroethane	J	All	MS recovery

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

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K3**

Lab Sample ID: 280-64290-1
Client Matrix: Solid

% Moisture: 5.2

Date Sampled: 01/07/2015 1215
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method: 8270C
Prep Method: 3550C
Dilution: 1.0
Analysis Date: 01/14/2015 1752
Prep Date: 01/13/2015 1100

Analysis Batch: 280-260178
Prep Batch: 280-259970

Instrument ID: SMS_D
Lab File ID: D8527.D
Initial Weight/Volume: 31.0 g
Final Weight/Volume: 1 mL
Injection Volume: 0.5 uL

2/16/15

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		11	U	11	340
Acenaphthylene		17	U	17	340
Anthracene		17	U	17	340
Benzo[a]anthracene		20	U	20	340
Benzo[a]pyrene		20	U	20	340
Benzo[b]fluoranthene		27	U	27	340
Benzo[ghi]perylene		16	U	16	340
Benzo[k]fluoranthene		41	U	41	340
Bis(2-chloroethoxy)methane		23	U	23	340
Bis(2-chloroethyl)ether		17	U	17	340
bis (2-chloroisopropyl) ether		23	U	23	340
Bis(2-ethylhexyl) phthalate		47	U	47	340
4-Bromophenyl phenyl ether		19	U	19	340
Butyl benzyl phthalate		44	U	44	340
Carbazole		37	U	37	340
4-Chloroaniline		84	U	84	340
4-Chloro-3-methylphenol		67	U	67	340
2-Chloronaphthalene		10	U	10	340
2-Chlorophenol		21	U	21	340
4-Chlorophenyl phenyl ether		21	U	21	340
Chrysene		28	U	28	340
Dibenz(a,h)anthracene		19	U	19	340
Dibenzofuran		20	U	20	340
1,2-Dichlorobenzene		22	U J	22	340
1,3-Dichlorobenzene		12	U J	12	340
1,4-Dichlorobenzene		14	U J	14	340
3,3'-Dichlorobenzidine		92	U	92	670
2,4-Dichlorophenol		10	U	10	340
Diethyl phthalate		27	U	27	340
2,4-Dimethylphenol		67	U	67	340
Dimethyl phthalate		23	U	23	340
Di-n-butyl phthalate		30	U	30	340
4,6-Dinitro-2-methylphenol		340	U	340	670
2,4-Dinitrophenol		340	U	340	840
2,4-Dinitrotoluene		67	U	67	340
2,6-Dinitrotoluene		29	U	29	340
Di-n-octyl phthalate		15	U	15	340
Fluoranthene		37	U	37	340
Fluorene		18	U	18	340
Hexachlorobenzene		30	U	30	340
Hexachlorobutadiene		10	U	10	340
Hexachlorocyclopentadiene		51	U	51	340
Hexachloroethane		22	U J	22	340
Indeno[1,2,3-cd]pyrene		22	U	22	340
Isophorone		17	U	17	340
2-Methylnaphthalene		19	U	19	340

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K3**

Lab Sample ID: 280-64290-1
Client Matrix: Solid

% Moisture: 5.2

Date Sampled: 01/07/2015 1215
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8527.D
Dilution:	1.0			Initial Weight/Volume:	31.0 g
Analysis Date:	01/14/2015 1752			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

2/14/15

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		13	U	13	340
3 & 4 Methylphenol		34	U	34	340
Naphthalene		32	U	32	340
2-Nitroaniline		51	U	51	340
3-Nitroaniline		75	U	75	340
4-Nitroaniline		74	U	74	340
Nitrobenzene		22	U	22	340
2-Nitrophenol		10	U	10	340
4-Nitrophenol		99	U	99	670
N-Nitrosodi-n-propylamine		32	U	32	340
N-Nitrosodiphenylamine		21	U	21	340
Pentachlorophenol		340	U	340	670
Phenanthrene		17	U	17	340
Phenol		18	U	18	340
Pyrene		12	U	12	340
1,2,4-Trichlorobenzene		29	U	29	340
2,4,5-Trichlorophenol		10	U	10	340
2,4,6-Trichlorophenol		10	U	10	340

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	60		50 - 120
2-Fluorophenol	60		53 - 120
Nitrobenzene-d5	58		50 - 120
Phenol-d5	62		52 - 120
Terphenyl-d14	77		55 - 120
2,4,6-Tribromophenol	62		51 - 120

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K3**

Lab Sample ID: 280-64290-1
Client Matrix: Solid

% Moisture: 5.2

Date Sampled: 01/07/2015 1215
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8527.D
Dilution:	1.0			Initial Weight/Volume:	31.0 g
Analysis Date:	01/14/2015 1752			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

Tentatively Identified Compounds **Number TIC's Found:** **2**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	1.62	630	J N
	Unknown	3.19	5300	J N

2/16/15

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K4**

Lab Sample ID: 280-64290-2
Client Matrix: Solid
% Moisture: 4.3

Date Sampled: 01/07/2015 0926
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8528.D
Dilution:	1.0			Initial Weight/Volume:	30.8 g
Analysis Date:	01/14/2015 1822		2/16/15	Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

Analyte . DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene	10	U	10	340
Acenaphthylene	17	U	17	340
Anthracene	17	U	17	340
Benzo[a]anthracene	20	U	20	340
Benzo[a]pyrene	20	U	20	340
Benzo[b]fluoranthene	27	U	27	340
Benzo[ghi]perylene	16	U	16	340
Benzo[k]fluoranthene	41	U	41	340
Bis(2-chloroethoxy)methane	23	U	23	340
Bis(2-chloroethyl)ether	17	U	17	340
bis (2-chloroisopropyl) ether	23	U	23	340
Bis(2-ethylhexyl) phthalate	47	U	47	340
4-Bromophenyl phenyl ether	19	U	19	340
Butyl benzyl phthalate	44	U	44	340
Carbazole	37	U	37	340
4-Chloroaniline	83	U	83	340
4-Chloro-3-methylphenol	67	U	67	340
2-Chloronaphthalene	10	U	10	340
2-Chlorophenol	21	U	21	340
4-Chlorophenyl phenyl ether	21	U	21	340
Chrysene	27	U	27	340
Dibenz(a,h)anthracene	19	U	19	340
Dibenzofuran	20	U	20	340
1,2-Dichlorobenzene	22	U T J	22	340
1,3-Dichlorobenzene	12	U T J	12	340
1,4-Dichlorobenzene	14	U T J	14	340
3,3'-Dichlorobenzidine	92	U	92	670
2,4-Dichlorophenol	10	U	10	340
Diethyl phthalate	26	U	26	340
2,4-Dimethylphenol	67	U	67	340
Dimethyl phthalate	23	U	23	340
Di-n-butyl phthalate	30	U	30	340
4,6-Dinitro-2-methylphenol	340	U	340	670
2,4-Dinitrophenol	340	U	340	840
2,4-Dinitrotoluene	67	U	67	340
2,6-Dinitrotoluene	29	U	29	340
Di-n-octyl phthalate	15	U	15	340
Fluoranthene	37	U	37	340
Fluorene	18	U	18	340
Hexachlorobenzene	30	U	30	340
Hexachlorobutadiene	10	U T	10	340
Hexachlorocyclopentadiene	51	U	51	340
Hexachloroethane	22	U T J	22	340
Indeno[1,2,3-cd]pyrene	22	U	22	340
Isophorone	17	U	17	340
2-Methylnaphthalene	19	U	19	340

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K4**

Lab Sample ID: 280-64290-2
Client Matrix: Solid

% Moisture: 4.3

Date Sampled: 01/07/2015 0926
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8528.D
Dilution:	1.0			Initial Weight/Volume:	30.8 g
Analysis Date:	01/14/2015 1822			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		13	U	13	340
3 & 4 Methylphenol		34	U	34	340
Naphthalene		32	U	32	340
2-Nitroaniline		51	U	51	340
3-Nitroaniline		74	U	74	340
4-Nitroaniline		74	U	74	340
Nitrobenzene		22	U	22	340
2-Nitrophenol		10	U	10	340
4-Nitrophenol		99	U	99	670
N-Nitrosodi-n-propylamine		32	U	32	340
N-Nitrosodiphenylamine		21	U	21	340
Pentachlorophenol		340	U	340	670
Phenanthrene		17	U	17	340
Phenol		18	U	18	340
Pyrene		12	U	12	340
1,2,4-Trichlorobenzene		29	U	29	340
2,4,5-Trichlorophenol		10	U	10	340
2,4,6-Trichlorophenol		10	U	10	340

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	80		50 - 120
2-Fluorophenol	77		53 - 120
Nitrobenzene-d5	76		50 - 120
Phenol-d5	79		52 - 120
Terphenyl-d14	85		55 - 120
2,4,6-Tribromophenol	79		51 - 120

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K4**

Lab Sample ID: 280-64290-2
Client Matrix: Solid

% Moisture: 4.3

Date Sampled: 01/07/2015 0926
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8528.D
Dilution:	1.0			Initial Weight/Volume:	30.8 g
Analysis Date:	01/14/2015 1822			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

2/16/15

Tentatively Identified Compounds **Number TIC's Found:** **3**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	1.62	1000	J N
	Unknown	3.19	6900	J N
107-70-0	2-Pentanone, 4-methoxy-4-methyl-	3.79	140	N J

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K5**

Lab Sample ID: 280-64290-3
Client Matrix: Solid

% Moisture: 4.7

Date Sampled: 01/07/2015 1241
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8531.D
Dilution:	1.0			Initial Weight/Volume:	31.1 g
Analysis Date:	01/14/2015 1951			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

2/16/15

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	330
Acenaphthylene		17	U	17	330
Anthracene		17	U	17	330
Benzo[a]anthracene		20	U	20	330
Benzo[a]pyrene		20	U	20	330
Benzo[b]fluoranthene		27	U	27	330
Benzo[ghi]perylene		16	U	16	330
Benzo[k]fluoranthene		40	U	40	330
Bis(2-chloroethoxy)methane		23	U	23	330
Bis(2-chloroethyl)ether		17	U	17	330
bis (2-chloroisopropyl) ether		23	U	23	330
Bis(2-ethylhexyl) phthalate		47	U	47	330
4-Bromophenyl phenyl ether		19	U	19	330
Butyl benzyl phthalate		44	U	44	330
Carbazole		36	U	36	330
4-Chloroaniline		83	U	83	330
4-Chloro-3-methylphenol		67	U	67	330
2-Chloronaphthalene		10	U	10	330
2-Chlorophenol		21	U	21	330
4-Chlorophenyl phenyl ether		21	U	21	330
Chrysene		27	U	27	330
Dibenz(a,h)anthracene		19	U	19	330
Dibenzofuran		20	U	20	330
1,2-Dichlorobenzene		22	U J	22	330
1,3-Dichlorobenzene		12	U J	12	330
1,4-Dichlorobenzene		14	U J	14	330
3,3'-Dichlorobenzidine		91	U	91	670
2,4-Dichlorophenol		10	U	10	330
Diethyl phthalate		26	U	26	330
2,4-Dimethylphenol		67	U	67	330
Dimethyl phthalate		23	U	23	330
Di-n-butyl phthalate		29	U	29	330
4,6-Dinitro-2-methylphenol		330	U	330	670
2,4-Dinitrophenol		340	U	340	830
2,4-Dinitrotoluene		67	U	67	330
2,6-Dinitrotoluene		28	U	28	330
Di-n-octyl phthalate		15	U	15	330
Fluoranthene		36	U	36	330
Fluorene		18	U	18	330
Hexachlorobenzene		29	U	29	330
Hexachlorobutadiene		10	U	10	330
Hexachlorocyclopentadiene		51	U	51	330
Hexachloroethane		22	U J	22	330
Indeno[1,2,3-cd]pyrene		22	U	22	330
Isophorone		17	U	17	330
2-Methylnaphthalene		19	U	19	330

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K5**

Lab Sample ID: 280-64290-3
Client Matrix: Solid

% Moisture: 4.7

Date Sampled: 01/07/2015 1241
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8531.D
Dilution:	1.0			Initial Weight/Volume:	31.1 g
Analysis Date:	01/14/2015 1951			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		13	U	13	330
3 & 4 Methylphenol		33	U	33	330
Naphthalene		31	U	31	330
2-Nitroaniline		51	U	51	330
3-Nitroaniline		74	U	74	330
4-Nitroaniline		73	U	73	330
Nitrobenzene		22	U	22	330
2-Nitrophenol		10	U	10	330
4-Nitrophenol		98	U	98	670
N-Nitrosodi-n-propylamine		31	U	31	330
N-Nitrosodiphenylamine		21	U	21	330
Pentachlorophenol		330	U	330	670
Phenanthrene		17	U	17	330
Phenol		18	U	18	330
Pyrene		12	U	12	330
1,2,4-Trichlorobenzene		28	U	28	330
2,4,5-Trichlorophenol		10	U	10	330
2,4,6-Trichlorophenol		10	U	10	330

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	73		50 - 120
2-Fluorophenol	72		53 - 120
Nitrobenzene-d5	71		50 - 120
Phenol-d5	73		52 - 120
Terphenyl-d14	82		55 - 120
2,4,6-Tribromophenol	75		51 - 120

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K5**

Lab Sample ID: 280-64290-3
Client Matrix: Solid
% Moisture: 4.7

Date Sampled: 01/07/2015 1241
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8531.D
Dilution:	1.0			Initial Weight/Volume:	31.1 g
Analysis Date:	01/14/2015 1951			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

2/14/15

Tentatively Identified Compounds **Number TIC's Found:** **4**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	*1.61*	*890*	J N
	Unknown	3.20	6800	J N
	Unknown	3.79	140	J N
126-73-8	Tributyl phosphate	8.25	140	J B N

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K6**

Lab Sample ID: 280-64290-4
Client Matrix: Solid

% Moisture: 4.9

Date Sampled: 01/07/2015 1218
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8532.D
Dilution:	1.0			Initial Weight/Volume:	30.4 g
Analysis Date:	01/14/2015 2021			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

V 2/14/15

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		11	U	11	340
Acenaphthylene		18	U	18	340
Anthracene		18	U	18	340
Benzo[a]anthracene		21	U	21	340
Benzo[a]pyrene		21	U	21	340
Benzo[b]fluoranthene		27	U	27	340
Benzo[ghi]perylene		17	U	17	340
Benzo[k]fluoranthene		42	U	42	340
Bis(2-chloroethoxy)methane		24	U	24	340
Bis(2-chloroethyl)ether		17	U	17	340
bis (2-chloroisopropyl) ether		24	U	24	340
Bis(2-ethylhexyl) phthalate		48	U	48	340
4-Bromophenyl phenyl ether		20	U	20	340
Butyl benzyl phthalate		45	U	45	340
Carbazole		37	U	37	340
4-Chloroaniline		85	U	85	340
4-Chloro-3-methylphenol		68	U	68	340
2-Chloronaphthalene		10	U	10	340
2-Chlorophenol		22	U	22	340
4-Chlorophenyl phenyl ether		22	U	22	340
Chrysene		28	U	28	340
Dibenz(a,h)anthracene		20	U	20	340
Dibenzofuran		21	U	21	340
1,2-Dichlorobenzene		23	U J	23	340
1,3-Dichlorobenzene		12	U J	12	340
1,4-Dichlorobenzene		14	U J	14	340
3,3'-Dichlorobenzidine		93	U	93	680
2,4-Dichlorophenol		10	U	10	340
Diethyl phthalate		27	U	27	340
2,4-Dimethylphenol		68	U	68	340
Dimethyl phthalate		24	U	24	340
Di-n-butyl phthalate		30	U	30	340
4,6-Dinitro-2-methylphenol		340	U	340	680
2,4-Dinitrophenol		350	U	350	860
2,4-Dinitrotoluene		68	U	68	340
2,6-Dinitrotoluene		29	U	29	340
Di-n-octyl phthalate		15	U	15	340
Fluoranthene		37	U	37	340
Fluorene		19	U	19	340
Hexachlorobenzene		30	U	30	340
Hexachlorobutadiene		10	U	10	340
Hexachlorocyclopentadiene		52	U	52	340
Hexachloroethane		22	U J	22	340
Indeno[1,2,3-cd]pyrene		23	U	23	340
Isophorone		18	U	18	340
2-Methylnaphthalene		20	U	20	340

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K6**

Lab Sample ID: 280-64290-4
Client Matrix: Solid

% Moisture: 4.9

Date Sampled: 01/07/2015 1218
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8532.D
Dilution:	1.0			Initial Weight/Volume:	30.4 g
Analysis Date:	01/14/2015 2021			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

✓ 2/14/15

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		13	U	13	340
3 & 4 Methylphenol		34	U	34	340
Naphthalene		32	U	32	340
2-Nitroaniline		52	U	52	340
3-Nitroaniline		76	U	76	340
4-Nitroaniline		75	U	75	340
Nitrobenzene		23	U	23	340
2-Nitrophenol		10	U	10	340
4-Nitrophenol		100	U	100	680
N-Nitrosodi-n-propylamine		32	U	32	340
N-Nitrosodiphenylamine		22	U	22	340
Pentachlorophenol		340	U	340	680
Phenanthrene		18	U	18	340
Phenol		19	U	19	340
Pyrene		13	U	13	340
1,2,4-Trichlorobenzene		29	U	29	340
2,4,5-Trichlorophenol		10	U	10	340
2,4,6-Trichlorophenol		10	U	10	340

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	67		50 - 120
2-Fluorophenol	67		53 - 120
Nitrobenzene-d5	65		50 - 120
Phenol-d5	67		52 - 120
Terphenyl-d14	79		55 - 120
2,4,6-Tribromophenol	68		51 - 120

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K6**

Lab Sample ID: 280-64290-4
Client Matrix: Solid

% Moisture: 4.9

Date Sampled: 01/07/2015 1218
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8532.D
Dilution:	1.0			Initial Weight/Volume:	30.4 g
Analysis Date:	01/14/2015 2021			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

2/16/15

Tentatively Identified Compounds **Number TIC's Found:** 3

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	1.81	1100	J N
	Unknown	3.19	6600	J N
107-70-0	2-Pentanone, 4-methoxy-4-methyl-	3.79	150	N J

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K7**

Lab Sample ID: 280-64290-5
Client Matrix: Solid

% Moisture: 5.2

Date Sampled: 01/07/2015 1222
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8533.D
Dilution:	1.0			Initial Weight/Volume:	30.8 g
Analysis Date:	01/14/2015 2050			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

2/14/15

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		11	U	11	340
Acenaphthylene		17	U	17	340
Anthracene		17	U	17	340
Benzo[a]anthracene		21	U	21	340
Benzo[a]pyrene		21	U	21	340
Benzo[b]fluoranthene		27	U	27	340
Benzo[ghi]perylene		16	U	16	340
Benzo[k]fluoranthene		41	U	41	340
Bis(2-chloroethoxy)methane		24	U	24	340
Bis(2-chloroethyl)ether		17	U	17	340
bis (2-chloroisopropyl) ether		24	U	24	340
Bis(2-ethylhexyl) phthalate		47	U	47	340
4-Bromophenyl phenyl ether		20	U	20	340
Butyl benzyl phthalate		44	U	44	340
Carbazole		37	U	37	340
4-Chloroaniline		84	U	84	340
4-Chloro-3-methylphenol		68	U	68	340
2-Chloronaphthalene		10	U	10	340
2-Chlorophenol		22	U	22	340
4-Chlorophenyl phenyl ether		22	U	22	340
Chrysene		28	U	28	340
Dibenz(a,h)anthracene		20	U	20	340
Dibenzofuran		21	U	21	340
1,2-Dichlorobenzene		23	U J	23	340
1,3-Dichlorobenzene		12	U J	12	340
1,4-Dichlorobenzene		14	U J	14	340
3,3'-Dichlorobenzidine		93	U	93	680
2,4-Dichlorophenol		10	U	10	340
Diethyl phthalate		27	U	27	340
2,4-Dimethylphenol		68	U	68	340
Dimethyl phthalate		24	U	24	340
Di-n-butyl phthalate		30	U	30	340
4,6-Dinitro-2-methylphenol		340	U	340	680
2,4-Dinitrophenol		340	U	340	850
2,4-Dinitrotoluene		68	U	68	340
2,6-Dinitrotoluene		29	U	29	340
Di-n-octyl phthalate		15	U	15	340
Fluoranthene		37	U	37	340
Fluorene		19	U	19	340
Hexachlorobenzene		30	U	30	340
Hexachlorobutadiene		10	U	10	340
Hexachlorocyclopentadiene		51	U	51	340
Hexachloroethane		22	U J	22	340
Indeno[1,2,3-cd]pyrene		23	U	23	340
Isophorone		17	U	17	340
2-Methylnaphthalene		20	U	20	340

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K7**

Lab Sample ID: 280-64290-5
Client Matrix: Solid

% Moisture: 5.2

Date Sampled: 01/07/2015 1222
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8533.D
Dilution:	1.0			Initial Weight/Volume:	30.8 g
Analysis Date:	01/14/2015 2050			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

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Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		13	U	13	340
3 & 4 Methylphenol		34	U	34	340
Naphthalene		32	U	32	340
2-Nitroaniline		51	U	51	340
3-Nitroaniline		75	U	75	340
4-Nitroaniline		75	U	75	340
Nitrobenzene		23	U	23	340
2-Nitrophenol		10	U	10	340
4-Nitrophenol		100	U	100	680
N-Nitrosodi-n-propylamine		32	U	32	340
N-Nitrosodiphenylamine		22	U	22	340
Pentachlorophenol		340	U	340	680
Phenanthrene		17	U	17	340
Phenol		19	U	19	340
Pyrene		12	U	12	340
1,2,4-Trichlorobenzene		29	U	29	340
2,4,5-Trichlorophenol		10	U	10	340
2,4,6-Trichlorophenol		10	U	10	340

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	76		50 - 120
2-Fluorophenol	74		53 - 120
Nitrobenzene-d5	72		50 - 120
Phenol-d5	75		52 - 120
Terphenyl-d14	82		55 - 120
2,4,6-Tribromophenol	71		51 - 120

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K7**

Lab Sample ID: 280-64290-5
Client Matrix: Solid

% Moisture: 5.2

Date Sampled: 01/07/2015 1222
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8533.D
Dilution:	1.0			Initial Weight/Volume:	30.8 g
Analysis Date:	01/14/2015 2050			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

✓ 2/16/15

Tentatively Identified Compounds **Number TIC's Found:** **4**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	1.61	860	J N
	Unknown	3.20	7800	J N
107-70-0	2-Pentanone, 4-methoxy-4-methyl-	3.79	180	N J
126-73-8	Tributyl phosphate	8.25	140	J B N

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K8**

Lab Sample ID: 280-64290-6
Client Matrix: Solid

% Moisture: 4.7

Date Sampled: 01/07/2015 1236
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method: 8270C
Prep Method: 3550C
Dilution: 1.0
Analysis Date: 01/14/2015 2120
Prep Date: 01/13/2015 1100

Analysis Batch: 280-260178
Prep Batch: 280-259970

Instrument ID: SMS_D
Lab File ID: D8534.D
Initial Weight/Volume: 31.4 g
Final Weight/Volume: 1 mL
Injection Volume: 0.5 uL

2/16/15

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	330
Acenaphthylene		17	U	17	330
Anthracene		17	U	17	330
Benzo[a]anthracene		20	U	20	330
Benzo[a]pyrene		20	U	20	330
Benzo[b]fluoranthene		26	U	26	330
Benzo[ghi]perylene		16	U	16	330
Benzo[k]fluoranthene		40	U	40	330
Bis(2-chloroethoxy)methane		23	U	23	330
Bis(2-chloroethyl)ether		17	U	17	330
bis (2-chloroisopropyl) ether		23	U	23	330
Bis(2-ethylhexyl) phthalate		46	U	46	330
4-Bromophenyl phenyl ether		19	U	19	330
Butyl benzyl phthalate		43	U	43	330
Carbazole		36	U	36	330
4-Chloroaniline		82	U	82	330
4-Chloro-3-methylphenol		66	U	66	330
2-Chloronaphthalene		10	U	10	330
2-Chlorophenol		21	U	21	330
4-Chlorophenyl phenyl ether		21	U	21	330
Chrysene		27	U	27	330
Dibenz(a,h)anthracene		19	U	19	330
Dibenzofuran		20	U	20	330
1,2-Dichlorobenzene		22	U J	22	330
1,3-Dichlorobenzene		12	U J	12	330
1,4-Dichlorobenzene		14	U J	14	330
3,3'-Dichlorobenzidine		90	U	90	660
2,4-Dichlorophenol		10	U	10	330
Diethyl phthalate		26	U	26	330
2,4-Dimethylphenol		66	U	66	330
Dimethyl phthalate		23	U	23	330
Di-n-butyl phthalate		29	U	29	330
4,6-Dinitro-2-methylphenol		330	U	330	660
2,4-Dinitrophenol		330	U	330	830
2,4-Dinitrotoluene		66	U	66	330
2,6-Dinitrotoluene		28	U	28	330
Di-n-octyl phthalate		14	U	14	330
Fluoranthene		36	U	36	330
Fluorene		18	U	18	330
Hexachlorobenzene		29	U	29	330
Hexachlorobutadiene		10	U	10	330
Hexachlorocyclopentadiene		50	U	50	330
Hexachloroethane		21	U J	21	330
Indeno[1,2,3-cd]pyrene		22	U	22	330
Isophorone		17	U	17	330
2-Methylnaphthalene		19	U	19	330

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K8**

Lab Sample ID: 280-64290-6
Client Matrix: Solid

% Moisture: 4.7

Date Sampled: 01/07/2015 1236
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8534.D
Dilution:	1.0			Initial Weight/Volume:	31.4 g
Analysis Date:	01/14/2015 2120			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

✓ 2/16/15

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		13	U	13	330
3 & 4 Methylphenol		33	U	33	330
Naphthalene		31	U	31	330
2-Nitroaniline		50	U	50	330
3-Nitroaniline		73	U	73	330
4-Nitroaniline		73	U	73	330
Nitrobenzene		22	U	22	330
2-Nitrophenol		10	U	10	330
4-Nitrophenol		97	U	97	660
N-Nitrosodi-n-propylamine		31	U	31	330
N-Nitrosodiphenylamine		21	U	21	330
Pentachlorophenol		330	U	330	660
Phenanthrene		17	U	17	330
Phenol		18	U	18	330
Pyrene		12	U	12	330
1,2,4-Trichlorobenzene		28	U	28	330
2,4,5-Trichlorophenol		10	U	10	330
2,4,6-Trichlorophenol		10	U	10	330

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	78		50 - 120
2-Fluorophenol	77		53 - 120
Nitrobenzene-d5	76		50 - 120
Phenol-d5	78		52 - 120
Terphenyl-d14	84		55 - 120
2,4,6-Tribromophenol	74		51 - 120

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K8**

Lab Sample ID: 280-64290-6
Client Matrix: Solid

% Moisture: 4.7

Date Sampled: 01/07/2015 1236
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8534.D
Dilution:	1.0			Initial Weight/Volume:	31.4 g
Analysis Date:	01/14/2015 2120			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

2/16/15

Tentatively Identified Compounds **Number TIC's Found:** 3

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	1.62	680	J N
	Unknown	3.19	6700	J N
	Unknown	3.79	160	J N

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K9**

Lab Sample ID: 280-64290-7
Client Matrix: Solid

% Moisture: 5.8

Date Sampled: 01/07/2015 1245
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8535.D
Dilution:	1.0			Initial Weight/Volume:	30.7 g
Analysis Date:	01/14/2015 2149			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

✓ 2/12/15

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		11	U	11	340
Acenaphthylene		18	U	18	340
Anthracene		18	U	18	340
Benzo[a]anthracene		21	U	21	340
Benzo[a]pyrene		21	U	21	340
Benzo[b]fluoranthene		27	U	27	340
Benzo[ghi]perylene		17	U	17	340
Benzo[k]fluoranthene		41	U	41	340
Bis(2-chloroethoxy)methane		24	U	24	340
Bis(2-chloroethyl)ether		17	U	17	340
bis (2-chloroisopropyl) ether		24	U	24	340
Bis(2-ethylhexyl) phthalate		48	U	48	340
4-Bromophenyl phenyl ether		20	U	20	340
Butyl benzyl phthalate		45	U	45	340
Carbazole		37	U	37	340
4-Chloroaniline		85	U	85	340
4-Chloro-3-methylphenol		68	U	68	340
2-Chloronaphthalene		10	U	10	340
2-Chlorophenol		22	U	22	340
4-Chlorophenyl phenyl ether		22	U	22	340
Chrysene		28	U	28	340
Dibenz(a,h)anthracene		20	U	20	340
Dibenzofuran		21	U	21	340
1,2-Dichlorobenzene		23	U J	23	340
1,3-Dichlorobenzene		12	U J	12	340
1,4-Dichlorobenzene		14	U J	14	340
3,3'-Dichlorobenzidine		93	U	93	680
2,4-Dichlorophenol		10	U	10	340
Diethyl phthalate		27	U	27	340
2,4-Dimethylphenol		68	U	68	340
Dimethyl phthalate		24	U	24	340
Di-n-butyl phthalate		30	U	30	340
4,6-Dinitro-2-methylphenol		340	U	340	680
2,4-Dinitrophenol		350	U	350	860
2,4-Dinitrotoluene		68	U	68	340
2,6-Dinitrotoluene		29	U	29	340
Di-n-octyl phthalate		15	U	15	340
Fluoranthene		37	U	37	340
Fluorene		19	U	19	340
Hexachlorobenzene		30	U	30	340
Hexachlorobutadiene		10	U	10	340
Hexachlorocyclopentadiene		52	U	52	340
Hexachloroethane		22	U J	22	340
Indeno[1,2,3-cd]pyrene		23	U	23	340
Isophorone		18	U	18	340
2-Methylnaphthalene		20	U	20	340

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K9**

Lab Sample ID: 280-64290-7
Client Matrix: Solid

% Moisture: 5.8

Date Sampled: 01/07/2015 1245
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8535.D
Dilution:	1.0			Initial Weight/Volume:	30.7 g
Analysis Date:	01/14/2015 2149			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

✓ 2/10/15

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		13	U	13	340
3 & 4 Methylphenol		34	U	34	340
Naphthalene		32	U	32	340
2-Nitroaniline		52	U	52	340
3-Nitroaniline		76	U	76	340
4-Nitroaniline		75	U	75	340
Nitrobenzene		23	U	23	340
2-Nitrophenol		10	U	10	340
4-Nitrophenol		100	U	100	680
N-Nitrosodi-n-propylamine		32	U	32	340
N-Nitrosodiphenylamine		22	U	22	340
Pentachlorophenol		340	U	340	680
Phenanthrene		18	U	18	340
Phenol		19	U	19	340
Pyrene		13	U	13	340
1,2,4-Trichlorobenzene		29	U	29	340
2,4,5-Trichlorophenol		10	U	10	340
2,4,6-Trichlorophenol		10	U	10	340

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	74		50 - 120
2-Fluorophenol	73		53 - 120
Nitrobenzene-d5	71		50 - 120
Phenol-d5	74		52 - 120
Terphenyl-d14	81		55 - 120
2,4,6-Tribromophenol	69		51 - 120

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2K9**

Lab Sample ID: 280-64290-7
Client Matrix: Solid

% Moisture: 5.8

Date Sampled: 01/07/2015 1245
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8535.D
Dilution:	1.0			Initial Weight/Volume:	30.7 g
Analysis Date:	01/14/2015 2149			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

✓ 2/16/15

Tentatively Identified Compounds **Number TIC's Found:** **4**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	1.62	780	J N
	Unknown	3.19	6900	J N
107-70-0	2-Pentanone, 4-methoxy-4-methyl-	3.79	190	N J
126-73-8	Tributyl phosphate	8.25	140	J B N

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L0**

Lab Sample ID: 280-64290-8
Client Matrix: Solid

% Moisture: 5.1

Date Sampled: 01/07/2015 1230
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8536.D
Dilution:	1.0			Initial Weight/Volume:	31.0 g
Analysis Date:	01/14/2015 2219			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

2/16/15

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		11	U	11	340
Acenaphthylene		17	U	17	340
Anthracene		17	U	17	340
Benzo[a]anthracene		32	J	20	340
Benzo[a]pyrene		20	U	20	340
Benzo[b]fluoranthene		40	J K	27	340
Benzo[ghi]perylene		16	U	16	340
Benzo[k]fluoranthene		41	U K	41	340
Bis(2-chloroethoxy)methane		23	U	23	340
Bis(2-chloroethyl)ether		17	U	17	340
bis (2-chloroisopropyl) ether		23	U	23	340
Bis(2-ethylhexyl) phthalate		47	U	47	340
4-Bromophenyl phenyl ether		19	U	19	340
Butyl benzyl phthalate		44	U	44	340
Carbazole		37	U	37	340
4-Chloroaniline		84	U	84	340
4-Chloro-3-methylphenol		67	U	67	340
2-Chloronaphthalene		10	U	10	340
2-Chlorophenol		21	U	21	340
4-Chlorophenyl phenyl ether		21	U	21	340
Chrysene		43	J	28	340
Dibenz(a,h)anthracene		19	U	19	340
Dibenzofuran		20	U	20	340
1,2-Dichlorobenzene		22	U J	22	340
1,3-Dichlorobenzene		12	U J	12	340
1,4-Dichlorobenzene		14	U J	14	340
3,3'-Dichlorobenzidine		92	U	92	670
2,4-Dichlorophenol		10	U	10	340
Diethyl phthalate		27	U	27	340
2,4-Dimethylphenol		67	U	67	340
Dimethyl phthalate		23	U	23	340
Di-n-butyl phthalate		30	U	30	340
4,6-Dinitro-2-methylphenol		340	U	340	670
2,4-Dinitrophenol		340	U	340	840
2,4-Dinitrotoluene		67	U	67	340
2,6-Dinitrotoluene		29	U	29	340
Di-n-octyl phthalate		15	U	15	340
Fluoranthene		58	J	37	340
Fluorene		18	U	18	340
Hexachlorobenzene		30	U	30	340
Hexachlorobutadiene		10	U	10	340
Hexachlorocyclopentadiene		51	U	51	340
Hexachloroethane		22	U J	22	340
Indeno[1,2,3-cd]pyrene		22	U	22	340
Isophorone		17	U	17	340
2-Methylnaphthalene		19	U	19	340

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L0**

Lab Sample ID: 280-64290-8
Client Matrix: Solid

% Moisture: 5.1

Date Sampled: 01/07/2015 1230
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8536.D
Dilution:	1.0			Initial Weight/Volume:	31.0 g
Analysis Date:	01/14/2015 2219			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

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Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		13	U	13	340
3 & 4 Methylphenol		34	U	34	340
Naphthalene		32	U	32	340
2-Nitroaniline		51	U	51	340
3-Nitroaniline		74	U	74	340
4-Nitroaniline		74	U	74	340
Nitrobenzene		22	U	22	340
2-Nitrophenol		10	U	10	340
4-Nitrophenol		99	U	99	670
N-Nitrosodi-n-propylamine		32	U	32	340
N-Nitrosodiphenylamine		21	U	21	340
Pentachlorophenol		340	U	340	670
Phenanthrene		17	U	17	340
Phenol		18	U	18	340
Pyrene		55	J	12	340
1,2,4-Trichlorobenzene		29	U	29	340
2,4,5-Trichlorophenol		10	U	10	340
2,4,6-Trichlorophenol		10	U	10	340

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	64		50 - 120
2-Fluorophenol	66		53 - 120
Nitrobenzene-d5	64		50 - 120
Phenol-d5	66		52 - 120
Terphenyl-d14	79		55 - 120
2,4,6-Tribromophenol	78		51 - 120

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L0**

Lab Sample ID: 280-64290-8
Client Matrix: Solid

% Moisture: 5.1

Date Sampled: 01/07/2015 1230
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8536.D
Dilution:	1.0			Initial Weight/Volume:	31.0 g
Analysis Date:	01/14/2015 2219			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

2/16/15

Tentatively Identified Compounds **Number TIC's Found:** **2**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	1.61	1200	J N
	Unknown	3.19	5700	J N

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: J1V2L1

Lab Sample ID: 280-64290-9
Client Matrix: Solid

% Moisture: 5.1

Date Sampled: 01/07/2015 1252
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method: 8270C
Prep Method: 3550C
Dilution: 1.0
Analysis Date: 01/14/2015 2249
Prep Date: 01/13/2015 1100

Analysis Batch: 280-260178
Prep Batch: 280-259970

Instrument ID: SMS_D
Lab File ID: D8537.D
Initial Weight/Volume: 30.1 g
Final Weight/Volume: 1 mL
Injection Volume: 0.5 uL

2/16/15

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		11	U	11	350
Acenaphthylene		18	U	18	350
Anthracene		18	U	18	350
Benzo[a]anthracene		21	U	21	350
Benzo[a]pyrene		21	U	21	350
Benzo[b]fluoranthene		28	U	28	350
Benzo[ghi]perylene		17	U	17	350
Benzo[k]fluoranthene		42	U	42	350
Bis(2-chloroethoxy)methane		24	U	24	350
Bis(2-chloroethyl)ether		17	U	17	350
bis (2-chloroisopropyl) ether		24	U	24	350
Bis(2-ethylhexyl) phthalate		48	U	48	350
4-Bromophenyl phenyl ether		20	U	20	350
Butyl benzyl phthalate		45	U	45	350
Carbazole		38	U	38	350
4-Chloroaniline		86	U	86	350
4-Chloro-3-methylphenol		69	U	69	350
2-Chloronaphthalene		11	U	11	350
2-Chlorophenol		22	U	22	350
4-Chlorophenyl phenyl ether		22	U	22	350
Chrysene		28	U	28	350
Dibenz(a,h)anthracene		20	U	20	350
Dibenzofuran		21	U	21	350
1,2-Dichlorobenzene		23	U J	23	350
1,3-Dichlorobenzene		13	U J	13	350
1,4-Dichlorobenzene		14	U J	14	350
3,3'-Dichlorobenzidine		95	U	95	690
2,4-Dichlorophenol		11	U	11	350
Diethyl phthalate		27	U	27	350
2,4-Dimethylphenol		69	U	69	350
Dimethyl phthalate		24	U	24	350
Di-n-butyl phthalate		30	U	30	350
4,6-Dinitro-2-methylphenol		350	U	350	690
2,4-Dinitrophenol		350	U	350	870
2,4-Dinitrotoluene		69	U	69	350
2,6-Dinitrotoluene		29	U	29	350
Di-n-octyl phthalate		15	U	15	350
Fluoranthene		38	U	38	350
Fluorene		19	U	19	350
Hexachlorobenzene		30	U	30	350
Hexachlorobutadiene		11	U	11	350
Hexachlorocyclopentadiene		53	U	53	350
Hexachloroethane		22	U J	22	350
Indeno[1,2,3-cd]pyrene		23	U	23	350
Isophorone		18	U	18	350
2-Methylnaphthalene		20	U	20	350

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L1**

Lab Sample ID: 280-64290-9
Client Matrix: Solid

% Moisture: 5.1

Date Sampled: 01/07/2015 1252
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method: 8270C
Prep Method: 3550C
Dilution: 1.0
Analysis Date: 01/14/2015 2249
Prep Date: 01/13/2015 1100

Analysis Batch: 280-260178
Prep Batch: 280-259970

Instrument ID: SMS_D
Lab File ID: D8537.D
Initial Weight/Volume: 30.1 g
Final Weight/Volume: 1 mL
Injection Volume: 0.5 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		14	U	14	350
3 & 4 Methylphenol		35	U	35	350
Naphthalene		33	U	33	350
2-Nitroaniline		53	U	53	350
3-Nitroaniline		77	U	77	350
4-Nitroaniline		76	U	76	350
Nitrobenzene		23	U	23	350
2-Nitrophenol		11	U	11	350
4-Nitrophenol		100	U	100	690
N-Nitrosodi-n-propylamine		33	U	33	350
N-Nitrosodiphenylamine		22	U	22	350
Pentachlorophenol		350	U	350	690
Phenanthrene		18	U	18	350
Phenol		19	U	19	350
Pyrene		13	U	13	350
1,2,4-Trichlorobenzene		29	U	29	350
2,4,5-Trichlorophenol		11	U	11	350
2,4,6-Trichlorophenol		11	U	11	350

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	61		50 - 120
2-Fluorophenol	62		53 - 120
Nitrobenzene-d5	59		50 - 120
Phenol-d5	63		52 - 120
Terphenyl-d14	71		55 - 120
2,4,6-Tribromophenol	65		51 - 120

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L1**

Lab Sample ID: 280-64290-9
Client Matrix: Solid

% Moisture: 5.1

Date Sampled: 01/07/2015 1252
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8537.D
Dilution:	1.0			Initial Weight/Volume:	30.1 g
Analysis Date:	01/14/2015 2249			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

VM 2/16/15

Tentatively Identified Compounds **Number TIC's Found:** **2**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	1.61	950	J N
	Unknown	3.19	5900	J N

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: J1V2L2

Lab Sample ID: 280-64290-10
Client Matrix: Solid

% Moisture: 4.9

Date Sampled: 01/07/2015 1302
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8538.D
Dilution:	1.0			Initial Weight/Volume:	30.1 g
Analysis Date:	01/14/2015 2318			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

Vzlaks

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		11	U	11	350
Acenaphthylene		18	U	18	350
Anthracene		18	U	18	350
Benzo[a]anthracene		21	U	21	350
Benzo[a]pyrene		21	U	21	350
Benzo[b]fluoranthene		27	U	27	350
Benzo[ghi]perylene		17	U	17	350
Benzo[k]fluoranthene		42	U	42	350
Bis(2-chloroethoxy)methane		24	U	24	350
Bis(2-chloroethyl)ether		17	U	17	350
bis (2-chloroisopropyl) ether		24	U	24	350
Bis(2-ethylhexyl) phthalate		48	U	48	350
4-Bromophenyl phenyl ether		20	U	20	350
Butyl benzyl phthalate		45	U	45	350
Carbazole		38	U	38	350
4-Chloroaniline		86	U	86	350
4-Chloro-3-methylphenol		69	U	69	350
2-Chloronaphthalene		10	U	10	350
2-Chlorophenol		22	U	22	350
4-Chlorophenyl phenyl ether		22	U	22	350
Chrysene		28	U	28	350
Dibenz(a,h)anthracene		20	U	20	350
Dibenzofuran		21	U	21	350
1,2-Dichlorobenzene		23	U J	23	350
1,3-Dichlorobenzene		13	U J	13	350
1,4-Dichlorobenzene		14	U J	14	350
3,3'-Dichlorobenzidine		94	U	94	690
2,4-Dichlorophenol		10	U	10	350
Diethyl phthalate		27	U	27	350
2,4-Dimethylphenol		69	U	69	350
Dimethyl phthalate		24	U	24	350
Di-n-butyl phthalate		30	U	30	350
4,6-Dinitro-2-methylphenol		350	U	350	690
2,4-Dinitrophenol		350	U	350	860
2,4-Dinitrotoluene		69	U	69	350
2,6-Dinitrotoluene		29	U	29	350
Di-n-octyl phthalate		15	U	15	350
Fluoranthene		38	U	38	350
Fluorene		19	U	19	350
Hexachlorobenzene		30	U	30	350
Hexachlorobutadiene		10	U	10	350
Hexachlorocyclopentadiene		52	U	52	350
Hexachloroethane		22	U J	22	350
Indeno[1,2,3-cd]pyrene		23	U	23	350
Isophorone		18	U	18	350
2-Methylnaphthalene		20	U	20	350

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L2**

Lab Sample ID: 280-64290-10
Client Matrix: Solid

% Moisture: 4.9

Date Sampled: 01/07/2015 1302
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8538.D
Dilution:	1.0			Initial Weight/Volume:	30.1 g
Analysis Date:	01/14/2015 2318			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

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Analyte DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol	14	U	14	350
3 & 4 Methylphenol	35	U	35	350
Naphthalene	32	U	32	350
2-Nitroaniline	52	U	52	350
3-Nitroaniline	77	U	77	350
4-Nitroaniline	76	U	76	350
Nitrobenzene	23	U	23	350
2-Nitrophenol	10	U	10	350
4-Nitrophenol	100	U	100	690
N-Nitrosodi-n-propylamine	32	U	32	350
N-Nitrosodiphenylamine	22	U	22	350
Pentachlorophenol	350	U	350	690
Phenanthrene	18	U	18	350
Phenol	19	U	19	350
Pyrene	13	U	13	350
1,2,4-Trichlorobenzene	29	U	29	350
2,4,5-Trichlorophenol	10	U	10	350
2,4,6-Trichlorophenol	10	U	10	350

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	76		50 - 120
2-Fluorophenol	74		53 - 120
Nitrobenzene-d5	73		50 - 120
Phenol-d5	74		52 - 120
Terphenyl-d14	84		55 - 120
2,4,6-Tribromophenol	74		51 - 120

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L2**

Lab Sample ID: 280-64290-10
Client Matrix: Solid

% Moisture: 4.9

Date Sampled: 01/07/2015 1302
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8538.D
Dilution:	1.0			Initial Weight/Volume:	30.1 g
Analysis Date:	01/14/2015 2318			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

V 2/10/15

Tentatively Identified Compounds **Number TIC's Found:** **4**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	1.61	1300	J N
	Unknown	1.79	170	J N
	Unknown	3.19	6500	J N
107-70-0	2-Pentanone, 4-methoxy-4-methyl-	3.78	150	N J

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: J1V2L3

Lab Sample ID: 280-64290-11
Client Matrix: Solid

% Moisture: 6.5

Date Sampled: 01/07/2015 1255
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8539.D
Dilution:	1.0			Initial Weight/Volume:	30.6 g
Analysis Date:	01/14/2015 2348			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

2/14/15

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		11	U	11	350
Acenaphthylene		18	U	18	350
Anthracene		18	U	18	350
Benzo[a]anthracene		40	J	21	350
Benzo[a]pyrene		34	J	21	350
Benzo[b]fluoranthene		27	U	27	350
Benzo[ghi]perylene		17	U	17	350
Benzo[k]fluoranthene		42	U	42	350
Bis(2-chloroethoxy)methane		24	U	24	350
Bis(2-chloroethyl)ether		17	U	17	350
bis (2-chloroisopropyl) ether		24	U	24	350
Bis(2-ethylhexyl) phthalate		48	U	48	350
4-Bromophenyl phenyl ether		20	U	20	350
Butyl benzyl phthalate		45	U	45	350
Carbazole		38	U	38	350
4-Chloroaniline		86	U	86	350
4-Chloro-3-methylphenol		69	U	69	350
2-Chloronaphthalene		10	U	10	350
2-Chlorophenol		22	U	22	350
4-Chlorophenyl phenyl ether		22	U	22	350
Chrysene		48	J	28	350
Dibenz(a,h)anthracene		20	U	20	350
Dibenzofuran		21	U	21	350
1,2-Dichlorobenzene		23	U J	23	350
1,3-Dichlorobenzene		13	U J	13	350
1,4-Dichlorobenzene		14	U J	14	350
3,3'-Dichlorobenzidine		94	U	94	690
2,4-Dichlorophenol		10	U	10	350
Diethyl phthalate		27	U	27	350
2,4-Dimethylphenol		69	U	69	350
Dimethyl phthalate		24	U	24	350
Di-n-butyl phthalate		30	U	30	350
4,6-Dinitro-2-methylphenol		350	U	350	690
2,4-Dinitrophenol		350	U	350	860
2,4-Dinitrotoluene		69	U	69	350
2,6-Dinitrotoluene		29	U	29	350
Di-n-octyl phthalate		15	U	15	350
Fluoranthene		72	J	38	350
Fluorene		19	U	19	350
Hexachlorobenzene		30	U	30	350
Hexachlorobutadiene		10	U	10	350
Hexachlorocyclopentadiene		52	U	52	350
Hexachloroethane		22	U J	22	350
Indeno[1,2,3-cd]pyrene		23	U	23	350
Isophorone		18	U	18	350
2-Methylnaphthalene		20	U	20	350

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L3**

Lab Sample ID: 280-64290-11
Client Matrix: Solid

% Moisture: 6.5

Date Sampled: 01/07/2015 1255
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8539.D
Dilution:	1.0			Initial Weight/Volume:	30.6 g
Analysis Date:	01/14/2015 2348			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

V 2/16/15

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		14	U	14	350
3 & 4 Methylphenol		35	U	35	350
Naphthalene		33	U	33	350
2-Nitroaniline		52	U	52	350
3-Nitroaniline		77	U	77	350
4-Nitroaniline		76	U	76	350
Nitrobenzene		23	U	23	350
2-Nitrophenol		10	U	10	350
4-Nitrophenol		100	U	100	690
N-Nitrosodi-n-propylamine		33	U	33	350
N-Nitrosodiphenylamine		22	U	22	350
Pentachlorophenol		350	U	350	690
Phenanthrene		43	J	18	350
Phenol		19	U	19	350
Pyrene		77	J	13	350
1,2,4-Trichlorobenzene		29	U	29	350
2,4,5-Trichlorophenol		10	U	10	350
2,4,6-Trichlorophenol		10	U	10	350

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	67		50 - 120
2-Fluorophenol	63		53 - 120
Nitrobenzene-d5	61		50 - 120
Phenol-d5	64		52 - 120
Terphenyl-d14	85		55 - 120
2,4,6-Tribromophenol	81		51 - 120

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: J1V2L3

Lab Sample ID: 280-64290-11
Client Matrix: Solid

% Moisture: 6.5

Date Sampled: 01/07/2015 1255
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8539.D
Dilution:	1.0			Initial Weight/Volume:	30.6 g
Analysis Date:	01/14/2015 2348			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

2/10/15

Tentatively Identified Compounds **Number TIC's Found:** 3

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	1.61	1000	J N
	Unknown	3.19	5700	J N
126-73-8	Tributyl phosphate	8.24	140	J B N

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L4**

Lab Sample ID: 280-64290-12
Client Matrix: Solid

% Moisture: 8.0

Date Sampled: 01/07/2015 1309
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8540.D
Dilution:	1.0			Initial Weight/Volume:	31.5 g
Analysis Date:	01/15/2015 0017			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

2/16/15

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		11	U	11	340
Acenaphthylene		18	U	18	340
Anthracene		18	U	18	340
Benzo[a]anthracene		21	U	21	340
Benzo[a]pyrene		21	U	21	340
Benzo[b]fluoranthene		27	U	27	340
Benzo[ghi]perylene		17	U	17	340
Benzo[k]fluoranthene		41	U	41	340
Bis(2-chloroethoxy)methane		24	U	24	340
Bis(2-chloroethyl)ether		17	U	17	340
bis (2-chloroisopropyl) ether		24	U	24	340
Bis(2-ethylhexyl) phthalate		48	U	48	340
4-Bromophenyl phenyl ether		20	U	20	340
Butyl benzyl phthalate		45	U	45	340
Carbazole		37	U	37	340
4-Chloroaniline		85	U	85	340
4-Chloro-3-methylphenol		68	U	68	340
2-Chloronaphthalene		10	U	10	340
2-Chlorophenol		22	U	22	340
4-Chlorophenyl phenyl ether		22	U	22	340
Chrysene		28	U	28	340
Dibenz(a,h)anthracene		20	U	20	340
Dibenzofuran		21	U	21	340
1,2-Dichlorobenzene		23	U J	23	340
1,3-Dichlorobenzene		12	U J	12	340
1,4-Dichlorobenzene		14	U J	14	340
3,3'-Dichlorobenzidine		93	U	93	680
2,4-Dichlorophenol		10	U	10	340
Diethyl phthalate		27	U	27	340
2,4-Dimethylphenol		68	U	68	340
Dimethyl phthalate		24	U	24	340
Di-n-butyl phthalate		30	U	30	340
4,6-Dinitro-2-methylphenol		340	U	340	680
2,4-Dinitrophenol		340	U	340	850
2,4-Dinitrotoluene		68	U	68	340
2,6-Dinitrotoluene		29	U	29	340
Di-n-octyl phthalate		15	U	15	340
Fluoranthene		37	U	37	340
Fluorene		19	U	19	340
Hexachlorobenzene		30	U	30	340
Hexachlorobutadiene		10	U	10	340
Hexachlorocyclopentadiene		52	U	52	340
Hexachloroethane		22	U J	22	340
Indeno[1,2,3-cd]pyrene		23	U	23	340
Isophorone		18	U	18	340
2-Methylnaphthalene		20	U	20	340

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L4**

Lab Sample ID: 280-64290-12
Client Matrix: Solid

% Moisture: 8.0

Date Sampled: 01/07/2015 1309
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8540.D
Dilution:	1.0			Initial Weight/Volume:	31.5 g
Analysis Date:	01/15/2015 0017			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		13	U	13	340
3 & 4 Methylphenol		34	U	34	340
Naphthalene		32	U	32	340
2-Nitroaniline		52	U	52	340
3-Nitroaniline		76	U	76	340
4-Nitroaniline		75	U	75	340
Nitrobenzene		23	U	23	340
2-Nitrophenol		10	U	10	340
4-Nitrophenol		100	U	100	680
N-Nitrosodi-n-propylamine		32	U	32	340
N-Nitrosodiphenylamine		22	U	22	340
Pentachlorophenol		340	U	340	680
Phenanthrene		18	U	18	340
Phenol		19	U	19	340
Pyrene		21	J	13	340
1,2,4-Trichlorobenzene		29	U	29	340
2,4,5-Trichlorophenol		10	U	10	340
2,4,6-Trichlorophenol		10	U	10	340

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	70		50 - 120
2-Fluorophenol	69		53 - 120
Nitrobenzene-d5	66		50 - 120
Phenol-d5	70		52 - 120
Terphenyl-d14	77		55 - 120
2,4,6-Tribromophenol	73		51 - 120

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L4**

Lab Sample ID: 280-64290-12
Client Matrix: Solid

% Moisture: 8.0

Date Sampled: 01/07/2015 1309
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8540.D
Dilution:	1.0			Initial Weight/Volume:	31.5 g
Analysis Date:	01/15/2015 0017			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

2/16/15

Tentatively Identified Compounds **Number TIC's Found:** **4**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	1.61	1100	J N
	Unknown	3.19	6200	J N
107-70-0	2-Pentanone, 4-methoxy-4-methyl-	3.79	140	N J
126-73-8	Tributyl phosphate	8.24	150	J B N

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: J1V2L5

Lab Sample ID: 280-64290-13
Client Matrix: Solid

% Moisture: 5.1

Date Sampled: 01/07/2015 1222
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method: 8270C
Prep Method: 3550C
Dilution: 1.0
Analysis Date: 01/15/2015 0047
Prep Date: 01/13/2015 1100

Analysis Batch: 280-260178
Prep Batch: 280-259970

2/14/15

Instrument ID: SMS_D
Lab File ID: D8541.D
Initial Weight/Volume: 31.3 g
Final Weight/Volume: 1 mL
Injection Volume: 0.5 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	330
Acenaphthylene		17	U	17	330
Anthracene		17	U	17	330
Benzo[a]anthracene		20	U	20	330
Benzo[a]pyrene		20	U	20	330
Benzo[b]fluoranthene		26	U	26	330
Benzo[ghi]perylene		16	U	16	330
Benzo[k]fluoranthene		40	U	40	330
Bis(2-chloroethoxy)methane		23	U	23	330
Bis(2-chloroethyl)ether		17	U	17	330
bis (2-chloroisopropyl) ether		23	U	23	330
Bis(2-ethylhexyl) phthalate		46	U	46	330
4-Bromophenyl phenyl ether		19	U	19	330
Butyl benzyl phthalate		43	U	43	330
Carbazole		36	U	36	330
4-Chloroaniline		83	U	83	330
4-Chloro-3-methylphenol		67	U	67	330
2-Chloronaphthalene		10	U	10	330
2-Chlorophenol		21	U	21	330
4-Chlorophenyl phenyl ether		21	U	21	330
Chrysene		27	U	27	330
Dibenz(a,h)anthracene		19	U	19	330
Dibenzofuran		20	U	20	330
1,2-Dichlorobenzene		22	U J	22	330
1,3-Dichlorobenzene		12	U J	12	330
1,4-Dichlorobenzene		14	U J	14	330
3,3'-Dichlorobenzidine		91	U	91	670
2,4-Dichlorophenol		10	U	10	330
Diethyl phthalate		26	U	26	330
2,4-Dimethylphenol		67	U	67	330
Dimethyl phthalate		23	U	23	330
Di-n-butyl phthalate		29	U	29	330
4,6-Dinitro-2-methylphenol		330	U	330	670
2,4-Dinitrophenol		340	U	340	830
2,4-Dinitrotoluene		67	U	67	330
2,6-Dinitrotoluene		28	U	28	330
Di-n-octyl phthalate		15	U	15	330
Fluoranthene		36	U	36	330
Fluorene		18	U	18	330
Hexachlorobenzene		29	U	29	330
Hexachlorobutadiene		10	U	10	330
Hexachlorocyclopentadiene		51	U	51	330
Hexachloroethane		22	U J	22	330
Indeno[1,2,3-cd]pyrene		22	U	22	330
Isophorone		17	U	17	330
2-Methylnaphthalene		19	U	19	330

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L5**

Lab Sample ID: 280-64290-13
Client Matrix: Solid

% Moisture: 5.1

Date Sampled: 01/07/2015 1222
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8541.D
Dilution:	1.0			Initial Weight/Volume:	31.3 g
Analysis Date:	01/15/2015 0047			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

V 2/16/15

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		13	U	13	330
3 & 4 Methylphenol		33	U	33	330
Naphthalene		31	U	31	330
2-Nitroaniline		51	U	51	330
3-Nitroaniline		74	U	74	330
4-Nitroaniline		73	U	73	330
Nitrobenzene		22	U	22	330
2-Nitrophenol		10	U	10	330
4-Nitrophenol		98	U	98	670
N-Nitrosodi-n-propylamine		31	U	31	330
N-Nitrosodiphenylamine		21	U	21	330
Pentachlorophenol		330	U	330	670
Phenanthrene		17	U	17	330
Phenol		18	U	18	330
Pyrene		12	U	12	330
1,2,4-Trichlorobenzene		28	U	28	330
2,4,5-Trichlorophenol		10	U	10	330
2,4,6-Trichlorophenol		10	U	10	330

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	72		50 - 120
2-Fluorophenol	70		53 - 120
Nitrobenzene-d5	69		50 - 120
Phenol-d5	72		52 - 120
Terphenyl-d14	81		55 - 120
2,4,6-Tribromophenol	69		51 - 120

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Client Sample ID: **J1V2L5**

Lab Sample ID: 280-64290-13
Client Matrix: Solid

% Moisture: 5.1

Date Sampled: 01/07/2015 1222
Date Received: 01/12/2015 0900

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Prep Method:	3550C	Prep Batch:	280-259970	Lab File ID:	D8541.D
Dilution:	1.0			Initial Weight/Volume:	31.3 g
Analysis Date:	01/15/2015 0047			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL

Tentatively Identified Compounds **Number TIC's Found:** 3

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	1.62	1000	J N
	Unknown	3.19	6900	J N
107-70-0	2-Pentanone, 4-methoxy-4-methyl-	3.79	140	N J

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Job Number: 280-64290-1

SDG #: JP0891
SAF#: RC-075

Date SDG Closed: January 12, 2015
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V2K3	280-64290-1	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K4	280-64290-2	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K5	280-64290-3	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K6	280-64290-4	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K7	280-64290-5	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K8	280-64290-6	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2K9	280-64290-7	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L0	280-64290-8	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L1	280-64290-9	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L2	280-64290-10	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L3	280-64290-11	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L4	280-64290-12	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx
J1V2L5	280-64290-13	6010/7471/8082/8270/8310/WTPH-D+	6010B/7471A/8082/8270C/8310/NWTPH-Dx

I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed in this Case Narrative. 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 signature on the Report Cover.

With exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. All laboratory quality control samples analyzed in conjunction with the samples in this project were within established control limits, with any exceptions noted. Calculations are performed before rounding to avoid round-off errors in calculated results.

This report includes reporting limits (RLs) less than TestAmerica Denver's practical quantitation limits. These reporting limits are being used specifically at the client's request to meet the needs of this project. Please note that data are not normally reported to these levels without qualification, since they are inherently less reliable and potentially less defensible than required by the current NELAC standards.

The results, RLs and MDLs included in this report have been adjusted for dry weight, as appropriate.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT
The samples were received on 1/12/2015 9:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 3 coolers at receipt time were 2.6° C, 2.8° C and 5.7° C.

GC/MS SEMIVOLATILES - SW846 8270C
Compounds Benzo(b)fluoranthene and Benzo(k)fluoranthene were unresolved in sample J1V2L0 due to matrix interferences. It can be noted that these compounds were adequately resolved in associated standards, indicating the instrument is achieving separation. The combined peak was reported as Benzo(b)fluoranthene, while Benzo(k)fluoranthene was reported as undetected even though it may be present. Associated results have been flagged with a "K".

The MS aliquot of the MS/MSD performed on sample J1V2K4 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "T". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs
The laboratory noted that a Sulfuric Acid clean-up was performed on the samples presented in this report to reduce matrix interferences.

Surrogate Decachlorobiphenyl was recovered outside the control limits, biased low, in sample J1V2L3. The laboratory noted that evidence of matrix interference is present; therefore, corrective action is deemed unnecessary. The laboratory noted that the sample chromatogram shows large non-target peaks present in the area where the surrogate elutes interfering with recovery and quantitation of the surrogate.

Samples J1V2L3 and J1V2L4 contained a combination of Aroclor 1254 and Aroclor 1260 with insufficient separation to quantify individually. The samples have been quantified and reported as the predominant Aroclor.

No other anomalies were encountered.

GC SEMIVOLATILES - NWTPH-Dx - DRO
No anomalies were encountered.

HPLC - SW846 8310 - PAHs
The LCS associated with batch 280-259915 exhibited the percent recovery outside the control limits for Benzo[k]fluoranthene at 84% (lower limit 85%), and associated sample results have been flagged "N". Although Benzo[k]fluoranthene was recovered outside current historical control limits, the recovery was within the allowed Marginal Exceedance control limits (lower limit 80%). This marginal exceedance has been determined to be sporadic, not systematic; therefore, corrective action is deemed unnecessary.

It should be noted that the low level estimated detection reported for Benzo[b]fluoranthene in sample J1V2L4 was not confirmed on the confirmation column (result was ND), and Benzo[b]fluoranthene was recovered outside the control limits, biased low, in the associated LCS on the confirmation column at 74% (lower limit is 85%). The LCS was in control on the primary column; therefore, Benzo[b]fluoranthene in sample J1V2L4 has been reported from the primary column.

The RPD between the primary and confirmation columns exceeded 40% for analytes in samples J1V2L3 and J1V2L4. The lower of the two values has been reported, as matrix interference is evident on both columns. Associated results have been flagged with an "X".

The MSD aliquot of the MS/MSD performed on sample J1V2L5 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "N". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-259902 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the methods. In some cases, samples required a 2X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Iron, Lead and Vanadium to minimize the interference caused by Titanium concentrations greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Calcium, Copper and Magnesium are present in the method blank associated with batch 280-259902. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, corrective action is deemed unnecessary.

Low levels of Iron, a common laboratory contaminant, are present at a level greater than half the reporting limit in the method blank associated with batch 280-259902. As the associated sample amounts are twenty times greater than the method blank concentration, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1V2K3; therefore, control limits are not applicable.

The Matrix Spike performed on sample J1V2K3 exhibited percent recoveries outside the control limits for Arsenic, Boron, Molybdenum, Selenium and Zinc, and the associated sample results have been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

DWS 1/7/15

Page 1 of 3 — 4

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Data Turnaround: 7 days

Collector: Q. Stowe

Project Designation: 100-D/DR Field Remediation

Chest No.: AFS-04-121

Shipped To: TestAmerica Denver

Other Labs Shipped To: TestAmerica Richland

RCF 38670

Company Contact: Joan Kessner

Telephone No.: 375-4688

Sampling Location: 100-D-86:1, VER, Deep Zone

Field Logbook No.: EL-1862-03

COA: 01D8612000

Offsite Property No.: A131312

Project Coordinator: KESSNER, JH

Price Code: 8B

SAF No.: RC-075

Method of Shipment: Commercial Carrier \ Fed Ex

Bill of Lading/Air Bill No.: See OSPS

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	250mL	250mL	125mL						
Sample Analysis	See Item (1) in Special Instructions	PCBs - 8082	Semi-VOA - 8270 (TCL)	PAHs - 8310	TPH-Diesel Range - WTPH-D +						

Sample No.	Matrix	Sample Date	Sample Time										
J1V2K3	SOIL	01/07/15	1215	X	X	X	X	X					
J1V2K4	SOIL	01/07/15	0926	X	X	X	X	X	DWS 1/7/15				
J1V2K5	SOIL	01/07/15	1241	X	X	X	X	X					
J1V2K6	SOIL	01/07/15	1218	X	X	X	X	X					
J1V2K7	SOIL	01/07/15	1222	X	X	X	X	X					

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1-7-15 1324	WCH DWSHOSHA	1/7/15 1324
DWSHOSHA	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	1060 Battelle fridge #28	1-7-15 1640
1060 Battelle fridge #28	1-8-15 0430	C. Bingham	1-8-15 0430
C. Bingham WCH	1-8-15 0515	fed EX	
			1-12-15 900

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | 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) (Mercury)

280-64290 Chain of Custody

5.2, 2.1, 2.3 SR 5.2.0.5 Turnaround 1/12/15

JP0891

REVIEWED BY

DATE 01/08/15

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page 4 of 4 1-7-15 CMB

Collector: D. Stowe

Project Designation: 100-D/DR Field Remediation

Ice Chest No.: AFS-04-121

Shipped To: TestAmerica Denver

Other Labs Shipped To: TestAmerica Richland

RCF 38670

Company Contact: Joan Kessner

Telephone No.: 375-4688

Project Coordinator: KESSNER, JH

Price Code: 8B

Data Turnaround: 7 days

Sampling Location: 100-D-86:1, VER, Deep Zone

SAF No.: RC-075

Field Logbook No.: EL-1662-03

COA: 01D8612000

Method of Shipment: Commercial Carrier / Fed Ex

Offsite Property No.: A131312

Bill of Lading/Air Bill No.: See ESRC

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	250mL	250mL	125mL						
Sample Analysis	See Item (1) in Special Instructions	PCBs - 8082	Semi-VOA - 8270 (TCL)	PAHs - 8310	TPH-Diesel Range - WTPH-D +						

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

Cooling as required

Sample No.	Matrix	Sample Date	Sample Time										
J1V2K3	SOIL			01/07/15									
J1V2K4	SOIL	01/07/15	0926	X	X	X	X	X					
J1V2K5	SOIL												
J1V2K6	SOIL												
J1V2K7	SOIL												

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Danny Stowe	1-7-15 0953	WCH Dwsheadwsheea	1/7/15 0955
Dwsheadwsheea	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	1060 Battelle, Fridge #2B	1-7-15 1640
1060 Battelle, Fridge #2B	1-8-15 0430	C. Bingham	1-8-15 0430
C. Bingham WCH	1-8-15 0515	Fed Ex	
			1-12-15 9:00

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) (Mercury)

REVIEWED BY DAS DATE 01/07/15

JP0891

FINAL SAMPLE DISPOSITION

Disposal Method

Disposed By

Date/Time

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page 2 of 8 - 4

Data Turnaround: 7 days

Price Code: 8B

Collector	Q. Stowe
Project Designation	100-D/DR Field Remediation
Chest No.	AFS-04-121
Shipped To	TestAmerica Denver
Other Labs Shipped To	TestAmerica Richland
	RCF 38670
Company Contact	Joan Kessner
Telephone No.	375-4688
Sampling Location	100-D-86:1, VER, Deep Zone
Field Logbook No.	EL-1662-03
COA	01D8612000
Offsite Property No.	A131312
Project Coordinator	KESSNER, JH
SAF No.	RC-075
Method of Shipment	Commercial Carrier \ Fed Ex
Bill of Lading/Air Bill No.	See OSRC

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

Cooling as required

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis									
				Cool 4C	G/P	1	250mL	See Item (1) in Special Instructions	Cool 4C	G	1	250mL	PCBs - 8082	Cool 4C	G	1	250mL	Semi-VOA - 8270 (TCL)	Cool 4C	G	1	250mL	PAHs - 8310	Cool 4C	G	1	125mL	TPH-Diesel Range - WTPH-D +
1V2K8	SOIL	01/07/15	1236	X	X	X	X	X									
1V2K9	SOIL	01/07/15	1245	X	X	X	X	X									
1V2L0	SOIL	01/07/15	1230	X	X	X	X	X									
1V2L1	SOIL	01/07/15	1252	X	X	X	X	X									
1V2L2	SOIL	01/07/15	1302	X	X	X	X	X									

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1-7-15 1324	(WCH) Joshua Dwosh	1/7/15 1324
Joshua Dwosh	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	R. Lewis 1060 Bartlett, Trucks #28	1-7-15 1640
1060 Bartlett, Trucks #28	1-8-15 0430	C. Bingham	1-8-15 0430
C. Bingham WCH	1-8-15 0515	Fed EX	
			1-12-15 9:00

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | 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) (Mercury)

REVIEWED BY DAS DATE 01/08/15

JP0891

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page 3 of 3 — 4
DWS 1/7/15

Collector: Q. Stowe

Project Designation: 100-D/DR Field Remediation

Ice Chest No.: AFS-04-121

Shipped To: TestAmerica Denver

Other Labs Shipped To: TestAmerica Richland

RCF 38670

Company Contact: Joan Kessner

Telephone No.: 375-4688

Sampling Location: 100-D-86:1, VER, Deep Zone

Field Logbook No.: EL-1662-03

COA: 01D8612000

Offsite Property No.: A13/312

Project Coordinator: KESSNER, JH

SAF No.: RC-075

Method of Shipment: Commercial Carrier / Fed Ex

Bill of Lading/Air Bill No.: See OSPC

Price Code: 8B

Data Turnaround: 7 days

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

Cooling as required

Preservation	Cool 4C	Cool 4C	Cool 4C	Cool 4C	Cool 4C						
Type of Container	G/P	aG	aG	aG	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	250mL	250mL	125mL						
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	Semi-VOA - 8270 (TCL)	PAHs - 8310	TPH-Diesel Range - WTPH-D +						

Sample No.	Matrix	Sample Date	Sample Time										
11V2L3	SOIL	01/07/15	1255	X	X	X	X	X					
11V2L4	SOIL	01/07/15	1309	X	X	X	X	X					
11V2L5	SOIL	01/07/15	1222	X	X	X	X	X					

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1-7-15 1324	DWSHEA DWSHEA (WCH)	1/7/15 1324
DWSHEA DWSHEA	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	1060 Battelle, fridge #213	1-7-15 1640
1060 Battelle, fridge #213	1-8-15 0430	C. Bingham	1-8-15 0430
C. Bingham WCH	1-8-15 0515	Fed Ex	
			1-12-15 900

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) (Mercury)

REVIEWED BY
DATE 01/07/15

JP0891

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-861			DATA PACKAGE: JP0891		
VALIDATOR: ECR		LAB: FAL		DATE: ~~JP0891~~ 2/15/15	
			SDG: JP0891		

ANALYSES PERFORMED

SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)

SAMPLES/MATRIX

J1V2K3	J1V2K4	J1V2K5	J1V2K6	J1V2K7
J1V2K8	J1V2K9	J1V2L0	J1V2L1	J1V2L2
J1V2L3	J1V2L4	J1V2L5		
				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: MS-1111 — J all

no DAS

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: _____

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:

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

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Method Blank - Batch: 280-259970

Method: 8270C
Preparation: 3550C

Lab Sample ID:	MB 280-259970/1-A	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Client Matrix:	Solid	Prep Batch:	280-259970	Lab File ID:	D8521.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	32.2 g
Analysis Date:	01/14/2015 1455	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Acenaphthene	9.6	U	9.6	310
Acenaphthylene	16	U	16	310
Anthracene	16	U	16	310
Benzo[a]anthracene	19	U	19	310
Benzo[a]pyrene	19	U	19	310
Benzo[b]fluoranthene	24	U	24	310
Benzo[ghi]perylene	15	U	15	310
Benzo[k]fluoranthene	37	U	37	310
Bis(2-chloroethoxy)methane	21	U	21	310
Bis(2-chloroethyl)ether	15	U	15	310
bis (2-chloroisopropyl) ether	21	U	21	310
Bis(2-ethylhexyl) phthalate	43	U	43	310
4-Bromophenyl phenyl ether	18	U	18	310
Butyl benzyl phthalate	40	U	40	310
Carbazole	34	U	34	310
4-Chloroaniline	76	U	76	310
4-Chloro-3-methylphenol	61	U	61	310
2-Chloronaphthalene	9.3	U	9.3	310
2-Chlorophenol	20	U	20	310
4-Chlorophenyl phenyl ether	20	U	20	310
Chrysene	25	U	25	310
Dibenz(a,h)anthracene	18	U	18	310
Dibenzofuran	19	U	19	310
1,2-Dichlorobenzene	20	U	20	310
1,3-Dichlorobenzene	11	U	11	310
1,4-Dichlorobenzene	13	U	13	310
3,3'-Dichlorobenzidine	84	U	84	610
2,4-Dichlorophenol	9.3	U	9.3	310
Diethyl phthalate	24	U	24	310
2,4-Dimethylphenol	61	U	61	310
Dimethyl phthalate	21	U	21	310
Di-n-butyl phthalate	27	U	27	310
4,6-Dinitro-2-methylphenol	310	U	310	610
2,4-Dinitrophenol	310	U	310	770
2,4-Dinitrotoluene	61	U	61	310
2,6-Dinitrotoluene	26	U	26	310
Di-n-octyl phthalate	13	U	13	310
Fluoranthene	34	U	34	310
Fluorene	17	U	17	310
Hexachlorobenzene	27	U	27	310
Hexachlorobutadiene	9.3	U	9.3	310
Hexachlorocyclopentadiene	47	U	47	310
Hexachloroethane	20	U	20	310
Indeno[1,2,3-cd]pyrene	20	U	20	310
Isophorone	16	U	16	310

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Method Blank - Batch: 280-259970

Method: 8270C
Preparation: 3550C

Lab Sample ID:	MB 280-259970/1-A	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Client Matrix:	Solid	Prep Batch:	280-259970	Lab File ID:	D8521.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	32.2 g
Analysis Date:	01/14/2015 1455	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
2-Methylnaphthalene	18	U	18	310
2-Methylphenol	12	U	12	310
3 & 4 Methylphenol	31	U	31	310
Naphthalene	29	U	29	310
2-Nitroaniline	47	U	47	310
3-Nitroaniline	68	U	68	310
4-Nitroaniline	68	U	68	310
Nitrobenzene	20	U	20	310
2-Nitrophenol	9.3	U	9.3	310
4-Nitrophenol	90	U	90	610
N-Nitrosodi-n-propylamine	29	U	29	310
N-Nitrosodiphenylamine	20	U	20	310
Pentachlorophenol	310	U	310	610
Phenanthrene	16	U	16	310
Phenol	17	U	17	310
Pyrene	11	U	11	310
1,2,4-Trichlorobenzene	26	U	26	310
2,4,5-Trichlorophenol	9.3	U	9.3	310
2,4,6-Trichlorophenol	9.3	U	9.3	310

Surrogate	% Rec	Acceptance Limits
2-Fluorobiphenyl	77	50 - 120
2-Fluorophenol	75	53 - 120
Nitrobenzene-d5	72	50 - 120
Phenol-d5	78	52 - 120
Terphenyl-d14	85	55 - 120
2,4,6-Tribromophenol	77	51 - 120

Method Blank TICs- Batch: 280-259970

Cas Number	Analyte	RT	Est. Result (ug/K	Qual
	Tentatively Identified Compound		None	
126-73-8	Tributyl phosphate	8.25	129	J N

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Lab Control Sample - Batch: 280-259970

Method: 8270C
Preparation: 3550C

Lab Sample ID:	LCS 280-259970/2-A	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Client Matrix:	Solid	Prep Batch:	280-259970	Lab File ID:	D8522.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.2 g
Analysis Date:	01/14/2015 1525	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Acenaphthene	2650	2160	82	60 - 120	
Acenaphthylene	2650	2090	79	64 - 120	
Anthracene	2650	2390	90	63 - 120	
Benzo[a]anthracene	2650	2400	90	65 - 120	
Benzo[a]pyrene	2650	2430	92	59 - 120	
Benzo[b]fluoranthene	2650	2420	91	47 - 129	
Benzo[ghi]perylene	2650	2490	94	55 - 126	
Benzo[k]fluoranthene	2650	2430	92	48 - 130	
Bis(2-chloroethoxy)methane	2650	1900	72	56 - 120	
Bis(2-chloroethyl)ether	2650	1800	68	51 - 120	
bis (2-chloroisopropyl) ether	2650	1830	69	49 - 120	
Bis(2-ethylhexyl) phthalate	2650	2470	93	65 - 120	
4-Bromophenyl phenyl ether	2650	2400	91	64 - 120	
Butyl benzyl phthalate	2650	2420	91	65 - 120	
Carbazole	2650	2480	94	64 - 120	
4-Chloroaniline	2650	1700	64	28 - 120	
4-Chloro-3-methylphenol	2650	2220	84	63 - 120	
2-Chloronaphthalene	2650	2050	77	59 - 120	
2-Chlorophenol	2650	2000	75	57 - 120	
4-Chlorophenyl phenyl ether	2650	2220	84	64 - 120	
Chrysene	2650	2420	92	64 - 120	
Dibenz(a,h)anthracene	2650	2510	95	50 - 133	
Dibenzofuran	2650	2230	84	61 - 120	
1,2-Dichlorobenzene	2650	1880	71	53 - 120	
1,3-Dichlorobenzene	2650	1850	70	52 - 120	
1,4-Dichlorobenzene	2650	1840	70	52 - 120	
3,3'-Dichlorobenzidine	2650	2130	81	30 - 120	
2,4-Dichlorophenol	2650	2070	78	60 - 120	
Diethyl phthalate	2650	2320	88	66 - 120	
2,4-Dimethylphenol	2650	1930	73	54 - 120	
Dimethyl phthalate	2650	2290	87	65 - 120	
Di-n-butyl phthalate	2650	2500	95	67 - 120	
4,6-Dinitro-2-methylphenol	5300	4510	85	57 - 120	
2,4-Dinitrophenol	5300	4300	81	46 - 120	
2,4-Dinitrotoluene	2650	2490	94	68 - 120	
2,6-Dinitrotoluene	2650	2400	91	64 - 120	
Di-n-octyl phthalate	2650	2390	90	66 - 120	
Fluoranthene	2650	2490	94	66 - 120	
Fluorene	2650	2280	86	64 - 120	
Hexachlorobenzene	2650	2460	93	62 - 120	
Hexachlorobutadiene	2650	1850	70	53 - 120	
Hexachlorocyclopentadiene	2650	1680	63	47 - 120	
Hexachloroethane	2650	1820	69	51 - 120	
Indeno[1,2,3-cd]pyrene	2650	2460	93	63 - 120	
Isophorone	2650	1860	70	56 - 120	
2-Methylnaphthalene	2650	1970	74	57 - 120	

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Lab Control Sample - Batch: 280-259970

Method: 8270C
Preparation: 3550C

Lab Sample ID:	LCS 280-259970/2-A	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Client Matrix:	Solid	Prep Batch:	280-259970	Lab File ID:	D8522.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.2 g
Analysis Date:	01/14/2015 1525	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
2-Methylphenol	2650	2000	76	56 - 120	
3 & 4 Methylphenol	2650	2060	78	53 - 120	
Naphthalene	2650	1920	72	57 - 120	
2-Nitroaniline	2650	2320	88	63 - 120	
3-Nitroaniline	2650	2130	80	47 - 120	
4-Nitroaniline	2650	2360	89	64 - 120	
Nitrobenzene	2650	1890	71	54 - 120	
2-Nitrophenol	2650	2020	76	56 - 120	
4-Nitrophenol	5300	4910	93	63 - 121	
N-Nitrosodi-n-propylamine	2650	2010	76	51 - 120	
N-Nitrosodiphenylamine	2650	2370	89	61 - 120	
Pentachlorophenol	5300	3810	72	56 - 120	
Phenanthrene	2650	2410	91	64 - 120	
Phenol	2650	1980	75	56 - 120	
Pyrene	2650	2380	90	64 - 120	
1,2,4-Trichlorobenzene	2650	1890	71	52 - 120	
2,4,5-Trichlorophenol	2650	2340	88	64 - 120	
2,4,6-Trichlorophenol	2650	2210	83	61 - 120	

Surrogate	% Rec	Acceptance Limits
2-Fluorobiphenyl	77	50 - 120
2-Fluorophenol	73	53 - 120
Nitrobenzene-d5	71	50 - 120
Phenol-d5	76	52 - 120
Terphenyl-d14	85	55 - 120
2,4,6-Tribromophenol	91	51 - 120

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-259970

Method: 8270C
Preparation: 3550C

MS Lab Sample ID:	280-64290-2	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Client Matrix:	Solid	Prep Batch:	280-259970	Lab File ID:	D8529.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.9 g
Analysis Date:	01/14/2015 1852			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL
Leach Date:	N/A				

MSD Lab Sample ID:	280-64290-2	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Client Matrix:	Solid	Prep Batch:	280-259970	Lab File ID:	D8530.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.0 g
Analysis Date:	01/14/2015 1921			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL
Leach Date:	N/A				

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Acenaphthene	71	80	60 - 120	11	30		
Acenaphthylene	70	78	64 - 120	11	30		
Anthracene	79	87	63 - 120	9	30		
Benzo[a]anthracene	82	89	65 - 120	8	30		
Benzo[a]pyrene	83	90	59 - 120	8	30		
Benzo[b]fluoranthene	81	89	47 - 129	8	44		
Benzo[ghi]perylene	80	87	55 - 126	8	31		
Benzo[k]fluoranthene	83	90	48 - 130	7	30		
Bis(2-chloroethoxy)methane	61	65	56 - 120	5	30		
Bis(2-chloroethyl)ether	51	53	51 - 120	4	30		
bis (2-chloroisopropyl) ether	53	56	49 - 120	5	30		
Bis(2-ethylhexyl) phthalate	84	92	65 - 120	9	30		
4-Bromophenyl phenyl ether	79	87	64 - 120	9	30		
Butyl benzyl phthalate	84	90	65 - 120	7	30		
Carbazole	84	90	64 - 120	7	30		
4-Chloroaniline	62	64	28 - 120	3	30		
4-Chloro-3-methylphenol	74	81	63 - 120	9	30		
2-Chloronaphthalene	68	75	59 - 120	9	30		
2-Chlorophenol	62	62	57 - 120	1	30		
4-Chlorophenyl phenyl ether	75	83	64 - 120	11	30		
Chrysene	83	89	64 - 120	7	35		
Dibenz(a,h)anthracene	82	88	50 - 133	7	30		
Dibenzofuran	75	83	61 - 120	9	30		
1,2-Dichlorobenzene	47	54	53 - 120	14	30	T	
1,3-Dichlorobenzene	44	52	52 - 120	17	32	T	
1,4-Dichlorobenzene	46	53	52 - 120	14	30	T	
3,3'-Dichlorobenzidine	79	84	30 - 120	5	30		
2,4-Dichlorophenol	70	74	60 - 120	6	30		
Diethyl phthalate	79	88	66 - 120	10	30		
2,4-Dimethylphenol	64	70	54 - 120	8	30		
Dimethyl phthalate	79	85	65 - 120	7	30		
Di-n-butyl phthalate	83	89	67 - 120	7	30		
4,6-Dinitro-2-methylphenol	74	81	57 - 120	9	30		

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-259970

Method: 8270C
Preparation: 3550C

MS Lab Sample ID:	280-64290-2	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Client Matrix:	Solid	Prep Batch:	280-259970	Lab File ID:	D8529.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.9 g
Analysis Date:	01/14/2015 1852			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL
Leach Date:	N/A				

MSD Lab Sample ID:	280-64290-2	Analysis Batch:	280-260178	Instrument ID:	SMS_D
Client Matrix:	Solid	Prep Batch:	280-259970	Lab File ID:	D8530.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.0 g
Analysis Date:	01/14/2015 1921			Final Weight/Volume:	1 mL
Prep Date:	01/13/2015 1100			Injection Volume:	0.5 uL
Leach Date:	N/A				

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
2,4-Dinitrophenol	59	65	46 - 120	10	34		
2,4-Dinitrotoluene	85	92	68 - 120	7	30		
2,6-Dinitrotoluene	81	92	64 - 120	12	30		
Di-n-octyl phthalate	83	89	66 - 120	7	30		
Fluoranthene	84	91	66 - 120	7	30		
Fluorene	76	85	64 - 120	10	30		
Hexachlorobenzene	82	90	62 - 120	9	30		
Hexachlorobutadiene	51	57	53 - 120	10	30	T	
Hexachlorocyclopentadiene	51	56	47 - 120	9	30		
Hexachloroethane	44	51	51 - 120	15	30	T	
Indeno[1,2,3-cd]pyrene	80	89	63 - 120	10	30		
Isophorone	61	67	56 - 120	9	30		
2-Methylnaphthalene	64	69	57 - 120	6	30		
2-Methylphenol	66	67	56 - 120	0	30		
3 & 4 Methylphenol	69	71	53 - 120	1	30		
Naphthalene	59	61	57 - 120	4	30		
2-Nitroaniline	79	87	63 - 120	10	30		
3-Nitroaniline	80	83	47 - 120	3	30		
4-Nitroaniline	84	91	64 - 120	8	30		
Nitrobenzene	56	60	54 - 120	6	30		
2-Nitrophenol	63	66	56 - 120	5	30		
4-Nitrophenol	82	87	63 - 121	6	30		
N-Nitrosodi-n-propylamine	64	67	51 - 120	4	30		
N-Nitrosodiphenylamine	79	86	61 - 120	8	36		
Pentachlorophenol	64	70	56 - 120	8	30		
Phenanthrene	80	88	64 - 120	10	30		
Phenol	65	65	56 - 120	0	30		
Pyrene	82	89	64 - 120	8	38		
1,2,4-Trichlorobenzene	55	60	52 - 120	8	30		
2,4,5-Trichlorophenol	76	87	64 - 120	13	30		
2,4,6-Trichlorophenol	74	82	61 - 120	11	30		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
2-Fluorobiphenyl	68	74	50 - 120

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
2-Fluorophenol	59	58	53 - 120
Nitrobenzene-d5	56	59	50 - 120
Phenol-d5	66	66	52 - 120
Terphenyl-d14	77	83	55 - 120
2,4,6-Tribromophenol	76	88	51 - 120

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-259970

Method: 8270C
Preparation: 3550C

MS Lab Sample ID:	280-64290-2	Units: ug/Kg	MSD Lab Sample ID:	280-64290-2
Client Matrix:	Solid		Client Matrix:	Solid
Dilution:	1.0		Dilution:	1.0
Analysis Date:	01/14/2015 1852		Analysis Date:	01/14/2015 1921
Prep Date:	01/13/2015 1100		Prep Date:	01/13/2015 1100
Leach Date:	N/A		Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual		MSD Result/Qual
Acenaphthene	10	U	2710	2700	1920		2150
Acenaphthylene	17	U	2710	2700	1890		2100
Anthracene	17	U	2710	2700	2140		2340
Benzo[a]anthracene	20	U	2710	2700	2220		2400
Benzo[a]pyrene	20	U	2710	2700	2240		2420
Benzo[b]fluoranthene	27	U	2710	2700	2200		2390
Benzo[ghi]perylene	16	U	2710	2700	2170		2340
Benzo[k]fluoranthene	41	U	2710	2700	2260		2420
Bis(2-chloroethoxy)methane	23	U	2710	2700	1660		1760
Bis(2-chloroethyl)ether	17	U	2710	2700	1380		1430
bis (2-chloroisopropyl) ether	23	U	2710	2700	1420		1500
Bis(2-ethylhexyl) phthalate	47	U	2710	2700	2270		2480
4-Bromophenyl phenyl ether	19	U	2710	2700	2130		2350
Butyl benzyl phthalate	44	U	2710	2700	2270		2440
Carbazole	37	U	2710	2700	2260		2420
4-Chloroaniline	83	U	2710	2700	1670		1730
4-Chloro-3-methylphenol	67	U	2710	2700	2000		2180
2-Chloronaphthalene	10	U	2710	2700	1850		2010
2-Chlorophenol	21	U	2710	2700	1680		1670
4-Chlorophenyl phenyl ether	21	U	2710	2700	2020		2250
Chrysene	27	U	2710	2700	2240		2400
Dibenz(a,h)anthracene	19	U	2710	2700	2220		2390
Dibenzofuran	20	U	2710	2700	2040		2240
1,2-Dichlorobenzene	22	U	2710	2700	1260	T	1450
1,3-Dichlorobenzene	12	U	2710	2700	1200	T	1410
1,4-Dichlorobenzene	14	U	2710	2700	1240	T	1440
3,3'-Dichlorobenzidine	92	U	2710	2700	2140		2250
2,4-Dichlorophenol	10	U	2710	2700	1890		2010
Diethyl phthalate	26	U	2710	2700	2150		2370
2,4-Dimethylphenol	67	U	2710	2700	1740		1890
Dimethyl phthalate	23	U	2710	2700	2140		2300
Di-n-butyl phthalate	30	U	2710	2700	2250		2410
4,6-Dinitro-2-methylphenol	340	U	5410	5400	3990		4360
2,4-Dinitrophenol	340	U	5410	5400	3210		3530
2,4-Dinitrotoluene	67	U	2710	2700	2310		2470
2,6-Dinitrotoluene	29	U	2710	2700	2200		2470
Di-n-octyl phthalate	15	U	2710	2700	2240		2390
Fluoranthene	37	U	2710	2700	2270		2440
Fluorene	18	U	2710	2700	2070		2280
Hexachlorobenzene	30	U	2710	2700	2220		2420
Hexachlorobutadiene	10	U	2710	2700	1390	T	1530
Hexachlorocyclopentadiene	51	U	2710	2700	1390		1520
Hexachloroethane	22	U	2710	2700	1190	T	1380

Client: Washington Closure Hanford

Job Number: 280-64290-1
Sdg Number: JP0891

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-259970

Method: 8270C
Preparation: 3550C

MS Lab Sample ID:	280-64290-2	Units: ug/Kg	
Client Matrix:	Solid		
Dilution:	1.0		
Analysis Date:	01/14/2015 1852		
Prep Date:	01/13/2015 1100		
Leach Date:	N/A		

MSD Lab Sample ID:	280-64290-2
Client Matrix:	Solid
Dilution:	1.0
Analysis Date:	01/14/2015 1921
Prep Date:	01/13/2015 1100
Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Indeno[1,2,3-cd]pyrene	22	U	2710	2700	2180	2400
Isophorone	17	U	2710	2700	1650	1810
2-Methylnaphthalene	19	U	2710	2700	1740	1860
2-Methylphenol	13	U	2710	2700	1800	1810
3 & 4 Methylphenol	34	U	2710	2700	1880	1900
Naphthalene	32	U	2710	2700	1590	1650
2-Nitroaniline	51	U	2710	2700	2130	2350
3-Nitroaniline	74	U	2710	2700	2180	2250
4-Nitroaniline	74	U	2710	2700	2270	2460
Nitrobenzene	22	U	2710	2700	1520	1610
2-Nitrophenol	10	U	2710	2700	1700	1780
4-Nitrophenol	99	U	5410	5400	4450	4710
N-Nitrosodi-n-propylamine	32	U	2710	2700	1730	1800
N-Nitrosodiphenylamine	21	U	2710	2700	2150	2330
Pentachlorophenol	340	U	5410	5400	3480	3760
Phenanthrene	17	U	2710	2700	2170	2390
Phenol	18	U	2710	2700	1760	1770
Pyrene	12	U	2710	2700	2220	2400
1,2,4-Trichlorobenzene	29	U	2710	2700	1480	1610
2,4,5-Trichlorophenol	10	U	2710	2700	2050	2340
2,4,6-Trichlorophenol	10	U	2710	2700	1990	2220

Date: 16 February 2015
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 100-D/DR Burial Grounds & Remaining Sites – Soil Full Protocol - Waste Site 100-D-86:1
Subject: Wet Chemistry - Data Package No. JP0891-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP0891 prepared by TestAmerica Laboratories (TAL). 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
J1V2K3	1/7/15	Soil	C	See note 1
J1V2K4	1/7/15	Soil	C	See note 1
J1V2K5	1/7/15	Soil	C	See note 1
J1V2K6	1/7/15	Soil	C	See note 1
J1V2K7	1/7/15	Soil	C	See note 1
J1V2K8	1/7/15	Soil	C	See note 1
J1V2K9	1/7/15	Soil	C	See note 1
J1V2L0	1/7/15	Soil	C	See note 1
J1V2L1	1/7/15	Soil	C	See note 1
J1V2L2	1/7/15	Soil	C	See note 1
J1V2L3	1/7/15	Soil	C	See note 1
J1V2L4	1/7/15	Soil	C	See note 1
J1V2L5	1/7/15	Soil	C	See note 1

1 – Chromium VI by 7196.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 100 Area Remedial Action Sampling and Analysis Plan (DOE/RL-96-22, September 2009). 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: 30 days for chromium VI.

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 Blanks

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. All blank results must fall below the contract required detection limit (CRQL) to be acceptable.

All method blank results were acceptable.

Field Blanks

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.

All accuracy results were acceptable.

- **Precision**

Laboratory Duplicate Samples

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

All laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J1V2K7/J1V2L5) 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 (RQLs) to ensure that laboratory detection levels meet the required criteria. All analytes met the RQL.

- **Completeness**

Data package JP0891 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-96-22, Rev. 5, *100 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, September 2009.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

WET CHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: JP0891	REVIEWER: ELR	Project: 100-D-86:1	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

Date: 15-Jan-15

Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 64233 2/16/15 SDG No: JP0891

Batch	Client Id / Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
5008064	SRTOT_SEP_PRECIP_GPC								
	J1V2L2								
	M5WRX1AG	STRONTIUM	9.19E-02 +- 1.7E-01	U	pCi/g	100%	3.72E-01	1.00E+00	
	J1V2L3								
	M5WR01AG	STRONTIUM	8.54E-01 +- 3.1E-01		pCi/g	94%	3.58E-01	1.00E+00	
	J1V2L4								
	M5WR11AG	STRONTIUM	1.50E-01 +- 1.9E-01	U	pCi/g	92%	3.88E-01	1.00E+00	
	J1V2L5								
	M5WR21AG	STRONTIUM	3.90E-01 +- 2.3E-01		pCi/g	97%	3.88E-01	1.00E+00	
5008045	7196_CR6								
	J1V2K3								
	M5WR31AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V2K4								
	M5WRL1AA	HEXCHROME	2.30E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	M5WRL1AH	HEXCHROME	1.88E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	20.1
	J1V2K5								
	M5WR41AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V2K6								
	M5WR51AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V2K7								
	M5WR61AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V2K8								
	M5WRR1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V2K9								
	M5WRT1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V2L0								
	M5WRV1AA	HEXCHROME	1.94E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	J1V2L1								
	M5WRW1A	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V2L2								
	M5WRX1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V2L3								
	M5WR01AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V2L4								
	M5WR11AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
	J1V2L5								
	M5WR21AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A	1.55E-01	1.55E-01	
5008053	TRITIUM_DIST_LSC								
	J1V2K3								
	M5WR31AH-H-3		5.60E-02 +- 1.0E-01	U	pCi/g	100%	2.32E-01	1.00E+01	

TestAmerica Inc

rptTALRchSaSummary2 V6.3.6.4
A2002

RPD - Relative Percent Difference.
U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

Washington Hanford Closure
2620 Fermi Avenue
Richland, WA 99354

January 15, 2015

Attention: Joan Kessner

SAF Number	:	RC-075
Date SDG Closed	:	January 8, 2015
Number of Samples	:	Thirteen (13)
Sample Type	:	Soil
SDG Number	:	JP0891
Data Deliverable	:	7– Day / Summary

CASE NARRATIVE

I. Introduction

On January 8, 2015, thirteen soil samples were received at TestAmerica for radiochemical and chemistry analysis. Upon receipt, the samples were assigned the following laboratory ID number to correspond with the Washington Closure Hanford (WCH) specific ID:

WCH ID#	TARL ID#	MATRIX	DATE OF RECEIPT
J1V2K4	M5WRL	SOIL	1/08/15
J1V2K8	M5WRR	SOIL	1/08/15
J1V2K9	M5WRT	SOIL	1/08/15
J1V2L0	M5WRV	SOIL	1/08/15
J1V2L1	M5WRW	SOIL	1/08/15
J1V2L2	M5WRX	SOIL	1/08/15
J1V2L3	M5WR0	SOIL	1/08/15
J1V2L4	M5WR1	SOIL	1/08/15
J1V2L5	M5WR2	SOIL	1/08/15
J1V2K3	M5WR3	SOIL	1/08/15
J1V2K5	M5WR4	SOIL	1/08/15
J1V2K6	M5WR5	SOIL	1/08/15
J1V2K7	M5WR6	SOIL	1/08/15

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

The requested analyses were:

Alpha Spectroscopy
Plutonium-238, -239/240 by method RL-ALP-002
Uranium 234, 235 and 238 by method RL-ALP-015
Gas Proportional Counting
Strontium-90 by method RL-GPC-010
Gamma Spectroscopy
Gamma Spec by method RL-GAM-001
Liquid Scintillation Counting
Tritium by method RL-LSC-005
Carbon-14 by method RL-LSC-008
Chemical Analysis
Hexavalent Chromium by EPA method 7196A

IV. Quality Control

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

V. Comments

Alpha Spectroscopy
Plutonium-238, -239/240 by method RL-ALP-002:
Sample J1V2K3 had a slightly elevated tracer yield; it was recount for an acceptable result. Except as noted; the LCS, batch blank, samples and sample duplicate (J1V2K4) results are within contractual requirements.

Uranium 234, 235 and 238 by method RL-ALP-015:
The LCS, batch blank, samples and sample duplicate (J1V2K8) results are within contractual requirements.

Gas Proportional Counting
Strontium-90 by method RL-GPC-010:
The LCS, batch blank, samples and sample duplicate (J1V2L1) results are within contractual requirements.

Gamma Spectroscopy
Gamma Spec by method RL-GAM-001:
The LCS, batch blank, samples and sample duplicate (J1V2K9) results are within contractual requirements.

Liquid Scintillation Counting

Tritium by method RL-LSC-005:
The LCS, batch blank, samples and sample duplicate (J1V2L0) results are within contractual requirements.

Carbon-14 by method RL-LSC-008:
The LCS, batch blank, samples and sample duplicate (J1V2K4) results are within contractual requirements.

Chemical Analysis
Hexavalent Chromium by EPA method 7196A
The LCS, batch blank, samples, sample duplicate (J1V2K4) and sample matrix spike (J1V2K4) results are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for 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.

Reviewed and approved:

Rhonda Wagar
Project Manager

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page 1 of 4

Data Turnaround: DWS 1/7/15

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	SAF No.: RC-075		
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-86:1, VER, Deep Zone		
Ice Chest No.: ~~AAA~~ 1-8-15 cmB ERC-96-030	Field Logbook No.: EL-1662-03	COA: 01D8612000	Method of Shipment: Local Delivery
Shipped To: TestAmerica Richland	Offsite Property No.: n/A		Bill of Lading/Air Bill No.: n/A
Other Labs Shipped To: TestAmerica Denver RCF 38670			

7 days

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

cooling as required

Sample No.	Matrix	Sample Date	Sample Time	Preservation: Cool 4C	None	None	None	Type of Container: G/P	G/P	G/P	G/P	No. of Container(s): 1	1	1	1	Volume: 125mL	1000mL	120mL	120mL	Sample Analysis: Chromium Hex - 7196	See item (2) in Special Instructions	See item (3) in Special Instructions	Isotopic Plutonium; Isotopic Uranium
J1V2K3	SOIL																						
J1V2K4 m SWL	SOIL	01/07/15	0926	X	X	X	X																
J1V2K5	SOIL																						
J1V2K6 01/07/15	SOIL																						
J1V2K7	SOIL																						

01/07/15

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From: Quincy Stowe — Date/Time: 1-7-15 0953	Received By/Stored In: WCH Dwshea Dwshea — Date/Time: 1/7/15 0957
Relinquished By/Removed From: Dwshea Dwshea — Date/Time: 1/7/15 1618	Received By/Stored In: C. Bingham — Date/Time: 1-7-15 1618
Relinquished By/Removed From: C. Bingham — Date/Time: 1-7-15 1640	Received By/Stored In: 1060 Battelle, fridge #28 — Date/Time: 1-7-15 1640
Relinquished By/Removed From: 1060 Battelle, fridge #28 — Date/Time: 1-8-15 0430	Received By/Stored In: C. Bingham — Date/Time: 1-8-15 0430
Relinquished By/Removed From: C. Bingham WCH — Date/Time: 1-8-15 1215	Received By/Stored In: J. Bock, TARL — Date/Time: 1-8-15 1215
Relinquished By/Removed From:	Received By/Stored In:
Relinquished By/Removed From:	Received By/Stored In:

FINAL SAMPLE DISPOSITION — Disposal Method: — Disposed By: — Date/Time:

SPECIAL INSTRUCTIONS

(2) Gamma Spec (Client List) (Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

(3) Carbon-14 Low Level; Strontium-89,90 -- Total Sr; Tritium - H3 Low Level Soil

J5A080423

Due 1-15-15

REVIEWED BY — DATE 01/09/15

SDG:

JP0891

J5A080423

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page 2 of 3 Lot 4 DWS 1/7/15

Collector: Q. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-86:1, VER, Deep Zone		SAF No.: RC-075
Ice Chest No.: A1A 1-8-15 ERC-96-030	Field Logbook No.: EL-1662-03	COA: 01D6612000	Method of Shipment: Local Delivery
Shipped To: TestAmerica Richland	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A

Price Code: 8B

Data Turnaround: 7 days

Other Labs Shipped To: TestAmerica Denver

RCF 386170

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

cooling as required

Preservation	Cool 4C	None	None	None
Type of Container	G/P	G/P	G/P	G/P
No. of Container(s)	1	1	1	1
Volume	125mL	1000mL	120mL	120mL
Sample Analysis	Chromium Hex - 7196	See item (2) in Special Instructions	See item (3) in Special Instructions	Isotopic Plutonium; Isotopic Uranium

Sample No.	Matrix	Sample Date	Sample Time				
J1V2K8 MSWRR	SOIL	01/07/15	1236	X	X	X	X
J1V2K9 MSWRT	SOIL	01/07/15	1245	X	X	X	X
J1V2L0 MSWRV	SOIL	01/07/15	1270	X	X	X	X
J1V2L1 MSWRW	SOIL	01/07/15	1252	X	X	X	X
J1V2L2 MSWRX	SOIL	01/07/15	1302	X	X	X	X

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1-7-15 1324	DWSHEA DWSHEA (WCH)	1/7/15 1324
DWSHEA DWSHEA	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	1060 Battelle, Fridge #28	1-7-15 1640
1060 Battelle, Fridge #28	1-8-15 0930	C. Bingham	1-8-15 0930
C. Bingham WCH	1-8-15 1215	Jack J. Fox	1-8-15 1215

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

(2) Gamma Spec (Client List) (Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

(3) Carbon-14 Low Level; Strontium-89,90 – Total Sr; Tritium - H3 Low Level Soil

JSA050423

Due 1-15-15

REVIEWED BY [signature] DATE 01/08/15

JP0891

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Collector	Q. Stowe
Project Designation	100-D/DR Field Remediation
Ice Chest No.	ERC-96-030 ~~AIA~~ 1-8-15
Shipped To	TestAmerica Richland
Company Contact	Joan Kessner
Telephone No.	375-4688
Sampling Location	100-D-86:1, VER, Deep Zone
Field Logbook No.	EL-1662-03
COA	01D8612000
Offsite Property No.	N/A
Project Coordinator	KESSNER, JH
SAF No.	RC-075
Method of Shipment	Local Delivery
Bill of Lading/Air Bill No.	N/A
Price Code	8B
Data Turnaround	7 days
Other Labs Shipped To	TestAmerica Denver RCF 38670

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits.

Special Handling and/or Storage

cooling as required

Preservation	Cool 4C	None	None	None
Type of Container	G/P	G/P	G/P	G/P
No. of Container(s)	1	1	1	1
Volume	125mL	1000mL	120mL	120mL
Sample Analysis	Chromium Hex - 7196	See Item (2) in Special Instructions	See Item (3) in Special Instructions	Isotopic Plutonium; Isotopic + Uranium

Sample No.	Matrix	Sample Date	Sample Time				
J1V2L3 MSWR0	SOIL	01/07/15	1255	X	X	X	X
J1V2L4 MSWR1	SOIL	01/07/15	1309	X	X	X	X
J1V2L5 MSWR2	SOIL	01/07/15	1222	X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1-7-15 1304	Joshua Dwshea (WCH)	1/7/15 1324
Joshua Dwshea	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	1060 Battelle Fridge #28	1-7-15 1640
1060 Battelle Fridge #28	1-8-15 0430	C. Bingham	1-8-15 0430
C. Bingham	1-8-15 1215	J. Bock, TARL	1-8-15 1215

FINAL SAMPLE DISPOSITION — Disposal Method — Disposed By — Date/Time

SPECIAL INSTRUCTIONS

(2) Gamma Spec (Client List) (Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

(3) Carbon-14 Low Level; Strontium-89,90 – Total Sr; Tritium - H3 Low Level Soil

JSA080423
Due 1-15-15

REVIEWED BY
DATE 01/08/15

JP0891

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-075-460

Page ~~1 of 3~~ 7 of 4 DWS 1/7/15

Collector: D. Stowe	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-D/DR Field Remediation	Sampling Location: 100-D-86:1, VER, Deep Zone		SAF No.: RC-075
Ice Chest No.: ERC-96-030 N/A 1-8-15 CMB	Field Logbook No.: EL-1662-03	COA: 01D8612000	Method of Shipment: Local Delivery
Shipped To: TestAmerica Richland	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A

Price Code: 8B

Data Turnaround: 7 days

Other Labs Shipped To: TestAmerica Denver

KCF 38670

POSSIBLE SAMPLE HAZARDS/REMARKS

Potentially Radioactive but less than DOT limits

Special Handling and/or Storage

cooling as required

Preservation	Cool 4C	None	None	None
Type of Container	G/P	G/P	G/P	G/P
No. of Container(s)	1	1	1	1
Volume	125mL	1000mL	120mL	120mL
Sample Analysis	Chromium Hex - 7196	See Item (2) in Special Instructions	See Item (3) in Special Instructions	Isotopic Plutonium; Isotopic Uranium

Sample No.	Matrix	Sample Date	Sample Time				
J1V2K3 MSWR3	SOIL	01/07/15	1215	X	X	X	X
~~J1V2K4~~	~~SOIL~~	~~01/07/15~~		~~X~~	~~X~~	~~X~~	~~X~~ DWS 1/7/15
J1V2K5 MSWR4	SOIL	01/07/15	1241	X	X	X	X
J1V2K6 MSWR5	SOIL	01/07/15	1218	X	X	X	X
J1V2K7 MSWR6	SOIL	01/07/15	1222	X	X	X	X

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	1-7-15 1324	WCH DWSHEA DWSHEA	1/7/15 1324
DWSHEA DWSHEA	1/7/15 1618	C. Bingham	1-7-15 1618
C. Bingham	1-7-15 1640	1060 Battelle, Fridge #2B	1-7-15 1640
1060 Battelle, Fridge #2B	1-8-15 0430	C. Bingham	1-8-15 0430
C. Bingham WCH	1-8-15 1215	J. Bock, TARL	1-8-15 1215

FINAL SAMPLE DISPOSITION: Disposal Method — Disposed By — Date/Time

SPECIAL INSTRUCTIONS

(2) Gamma Spec (Client List) (Americium-241, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155)

(3) Carbon-14 Low Level; Strontium-89,90 – Total Sr; Tritium - H3 Low Level Soil

JSA080423
Due 1-15-15

REVIEWED BY [illegible] DATE 01/06/15

JP0891

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 100-D-861			DATA PACKAGE: JP0891		
VALIDATOR: ELR		LAB: TAL		DATE: 2/15/15	
			SDG: JP0891		

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

SAMPLES/MATRIX				
J1V2K3	J1V2K4	J1V2K5	J1V2K6	J1V2K7
J1V2K8	J1V2K9	J1V2L0	J1V2L1	J1V2L2
J1V2L3	J1V2L4	J1V2L5		
				Soil

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

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

Comments:

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: no FB

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

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

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

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

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

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

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

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

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

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

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

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

Comments: no PAS

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments:

6. HOLDING TIMES (all levels)

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

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

Comments:

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

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

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

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

Comments:

Appendix 6

Additional Documentation Requested by Client

Date: 15-Jan-15

QC Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No, QC Type,.

Report No. : 64233

SDG No.: JP0891

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
C14_CHEM_LSC								
5008055 BLANK QC, M5WWF1AA	C-14	2.18E-01 +- 2.5E-01	U	pCi/g	100%			5.24E-01
5008055 LCS, M5WWF1AC	C-14	6.82E+00 +- 6.6E-01		pCi/g	100%	95%	0.0	5.29E-01
PUISO_PLATE_AEA								
5008058 BLANK QC, M5WWP1AA	Pu-238	-2.27E-03 +- 2.8E-02	U	pCi/g	100%			6.47E-02
	PU239/40	-5.67E-04 +- 2.8E-02	U	pCi/g	100%			5.16E-02
5008058 LCS, M5WWP1A	PU239/40	7.57E+00 +- 1.5E+00		pCi/g	93%	114%	0.1	6.57E-02
UISO_IE_PLATE_AEA								
5008057 BLANK QC, M5WWL1AA	U-234	-1.40E-05 +- 2.9E-02	U	pCi/g	83%			1.04E-01
	U-235	9.59E-03 +- 2.8E-02	U	pCi/g	83%			7.53E-02
	U-238	-8.47E-03 +- 2.9E-02	U	pCi/g	83%			8.91E-02
5008057 LCS, M5WWL1AC	U-234	3.63E+00 +- 7.6E-01		pCi/g	98%	116%	0.2	9.92E-02
	U-238	3.41E+00 +- 7.2E-01		pCi/g	98%	104%	0.0	8.54E-02
GAMMA_GS								
5008056 BLANK QC, M5WWH1A	AMERICIUM 241	1.33E-03 +- 1.5E-02	U	pCi/g				2.44E-02
	CO-60	-7.91E-03 +- 1.0E-02	U	pCi/g				1.68E-02
	CS-137	-1.65E-03 +- 1.1E-02	U	pCi/g				1.92E-02
	EU-152	-6.68E-03 +- 2.7E-02	U	pCi/g				4.66E-02
	EU-154	-9.16E-03 +- 2.6E-02	U	pCi/g				4.57E-02
	EU-155	3.75E-04 +- 2.3E-02	U	pCi/g				3.95E-02
	K-40	-2.76E-01 +- 2.7E-01	U	pCi/g				5.66E-01
5008056 LCS, M5WWH1A	CS-137	9.54E-01 +- 1.2E-01		pCi/g		96%	0.0	2.74E-02
	RA-226	9.00E-01 +- 1.3E-01		pCi/g		79%	-0.2	4.40E-02
	RA-228	5.96E-01 +- 1.3E-01		pCi/g		100%	0.0	8.62E-02
	U-238	1.03E+00 +- 1.5E-01		pCi/g		86%	-0.1	4.82E-02
SRTOT_SEP_PRECIP_GPC								
5008054 BLANK QC, M5WV91AA	STRONTIUM	6.91E-02 +- 1.5E-01	U	pCi/g	95%			3.45E-01
5008054 LCS, M5WV91AC	STRONTIUM	3.72E+00 +- 9.4E-01		pCi/g	98%	109%	0.1	3.66E-01
7196_CR6								
5008045 MATRIX SPIKE, J1V2K4 M5WRL1AG	HEXCHROME	2.62E+01 +- 0.0E+00		mg/kg	N/A	85%	-0.1	1.55E-01
5008045 LCS,								

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A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.

Date: 15-Jan-15

QC Results Summary
TestAmerica Inc TARL
Ordered by Method, Batch No, QC Type,.

Report No. : 64233

SDG No.: JP0891

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
M5WVC1AC	HEXCHROME	1.85E+01 +- 0.0E+00		mg/kg	N/A	93%	-0.1	1.55E-01
5008045 BLANK QC, M5WVC1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A			1.55E-01
TRITIUM_DIST_LSC								
5008053 BLANK QC, M5WV61AA	H-3	9.14E-03 +- 4.2E-02	U	pCi/g	100%			9.91E-02
5008053 LCS, M5WV61AC	H-3	4.46E-01 +- 8.0E-02		pCi/g	100%	95%	0.0	1.18E-01

No. of Results: 28

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rptSTLRchQcSummary V5.3.6.4
A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.
U Qual - Analyzed for but not detected above limiting criteria, Mdc/Mda/Mdl, Total Uncert, RDL or not identified by gamma scan software.