SAF-RC-148
300 Area D4 Waste Sites –
Soil Full Protocol
FINAL VALIDATION PACKAGE

COMPLETE COPY OF FINAL VALIDATION PACKAGE TO:

No Distribution Required KW 3/30/16
INITIAL/DATE

COMMENTS:

SDG JP1035 SAF-RC-148

Sample Location/Waste Site: 300-288:2 ESA 2

Date: 21 March 2016
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 300 Area D4 Waste Sites – Soil Full Protocol – Waste Site 300-288:2 ESA 2
Subject: Diesel Range Organic - Data Package No. JP1035-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP1035 prepared by TestAmerica Inc. (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
J1V8H9	3/1/16	Soil	C	See note 1
J1V8J0	3/1/16	Soil	C	See note 1
J1V8J1	3/1/16	Soil	C	See note 1
J1V8J2	3/1/16	Soil	C	See note 1
J1V8J3	3/1/16	Soil	C	See note 1
J1V8J4	3/1/16	Soil	C	See note 1
J1V8J5	3/1/16	Soil	C	See note 1
J1V8J6	3/1/16	Soil	C	See note 1
J1V8J7	3/1/16	Soil	C	See note 1
J1V8J8	3/1/16	Soil	C	See note 1
J1V8J9	3/1/16	Soil	C	See note 1
J1V8K0	3/1/16	Soil	C	See note 1
J1V8K1	3/1/16	Soil	C	See note 1

1 – NWTPH-Dx.

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 300 Area Remedial Action Sampling and Analysis Plan (DOE/RL-2001-48, Rev. 4). Appendices 1 through 6 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

· Holding Times

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

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

All holding times were acceptable.

· Method Blanks

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

All method blank results were acceptable.

Field Blanks

No field blanks were submitted for analysis.

· Accuracy

Matrix Spike/Matrix Spike Duplicate & Blank Spike Recoveries

Matrix spike/matrix spike duplicate analyses are used to assess the analytical accuracy of the reported data and the effect of the matrix on the ability to accurately quantify sample concentrations. Matrix spike/matrix spike duplicate analyses are performed in

duplicate using five compounds for which percent recoveries must be within a range of 50-150% or within laboratory control limits. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Undetected sample results with spike recoveries below control limits are qualified as estimates and flagged "UJ". Undetected sample results are not qualified if the spike recovery is above control limits. Sample results greater than five times the spike concentration require no qualification.

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

All surrogate results were acceptable.

- **Precision**

Matrix Spike/Matrix Spike Duplicate Samples

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

All laboratory results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1V8J1/J1V8K1) 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. No RQLs were specified

- **Completeness**

Data package No. JP1035 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

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

DOE/RL-2001-48, Rev. 4, *300 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, November 2014.

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: JP1035	REVIEWER: ELR	Project: 300-288:2 ESA 2	PAGE_1_OF_1
COMMENTS: No qualifiers assigned			

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

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8H9**

Lab Sample ID: 280-80411-1
Client Matrix: Solid
% Moisture: 6.3

Date Sampled: 03/01/2016 0940
Date Received: 03/04/2016 0930

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-316302	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-316062	Lab File ID:	032B3201.D
Dilution:	1.0			Initial Weight/Volume:	32.6 g
Analysis Date:	03/09/2016 2356			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2243			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		980	U	980	3900
C10-C28		670	U	670	3900

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	86		49 - 115

3/20/16

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: J1V8J0

Lab Sample ID: 280-80411-2
Client Matrix: Solid
% Moisture: 5.1

Date Sampled: 03/01/2016 0920
Date Received: 03/04/2016 0930

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-316302	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-316062	Lab File ID:	035B3501.D
Dilution:	1.0			Initial Weight/Volume:	31.4 g
Analysis Date:	03/10/2016 0123			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2243			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1000	U	1000	4000
C10-C28		680	U	680	4000

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	90		49 - 115

3/20/16

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J1**

Lab Sample ID: 280-80411-3
Client Matrix: Solid
% Moisture: 5.8

Date Sampled: 03/01/2016 0953
Date Received: 03/04/2016 0930

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-316302	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-316062	Lab File ID:	036B3601.D
Dilution:	1.0			Initial Weight/Volume:	32.2 g
Analysis Date:	03/10/2016 0152			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2243			Injection Volume:	1 uL

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

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	87		49 - 115

VL 3/20/16

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J2**

Lab Sample ID: 280-80411-4
Client Matrix: Solid
% Moisture: 6.2

Date Sampled: 03/01/2016 0905
Date Received: 03/04/2016 0930

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-316302	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-316062	Lab File ID:	037B3701.D
Dilution:	1.0			Initial Weight/Volume:	31.0 g
Analysis Date:	03/10/2016 0221			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2243			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	90		49 - 115

3/20/16

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J3**

Lab Sample ID: 280-80411-5
Client Matrix: Solid
% Moisture: 5.5

Date Sampled: 03/01/2016 1029
Date Received: 03/04/2016 0930

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-316302	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-316062	Lab File ID:	039B3901.D
Dilution:	1.0			Initial Weight/Volume:	31.3 g
Analysis Date:	03/10/2016 0319			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2243			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	86		49 - 115

3/20/16

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J4**

Lab Sample ID: 280-80411-6
Client Matrix: Solid

% Moisture: 4.8

Date Sampled: 03/01/2016 1045
Date Received: 03/04/2016 0930

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-316302	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-316062	Lab File ID:	040B4001.D
Dilution:	1.0			Initial Weight/Volume:	30.0 g
Analysis Date:	03/10/2016 0347			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2258			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1600	J	1000	4200
C10-C28		1100	J	710	4200

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	83		49 - 115

3/20/16

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J5**

Lab Sample ID: 280-80411-7
Client Matrix: Solid
% Moisture: 5.2

Date Sampled: 03/01/2016 0840
Date Received: 03/04/2016 0930

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-316302	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-316062	Lab File ID:	041B4101.D
Dilution:	1.0			Initial Weight/Volume:	30.1 g
Analysis Date:	03/10/2016 0416			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2243			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	81		49 - 115

3/20/16

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J6**

Lab Sample ID: 280-80411-8
Client Matrix: Solid
% Moisture: 6.2

Date Sampled: 03/01/2016 1058
Date Received: 03/04/2016 0930

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-316302	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-316062	Lab File ID:	042B4201.D
Dilution:	1.0			Initial Weight/Volume:	31.3 g
Analysis Date:	03/10/2016 0445			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2243			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		1400	J	1000	4100
C10-C28		1200	J	690	4100

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	86		49 - 115

3/20/16

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: J1V8J7

Lab Sample ID: 280-80411-9
Client Matrix: Solid
% Moisture: 7.2

Date Sampled: 03/01/2016 1118
Date Received: 03/04/2016 0930

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-316302	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-316062	Lab File ID:	043B4301.D
Dilution:	1.0			Initial Weight/Volume:	30.1 g
Analysis Date:	03/10/2016 0514			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2243			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		2300	J	1100	4300
C10-C28		1600	J	730	4300

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	86		49 - 115

3/20/16

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J8**

Lab Sample ID: 280-80411-10
Client Matrix: Solid
% Moisture: 5.1

Date Sampled: 03/01/2016 1135
Date Received: 03/04/2016 0930

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-316302	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-316062	Lab File ID:	044B4401.D
Dilution:	1.0			Initial Weight/Volume:	30.1 g
Analysis Date:	03/10/2016 0543			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2243			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	83		49 - 115

3/20/16

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: J1V8J9

Lab Sample ID: 280-80411-11
Client Matrix: Solid

% Moisture: 4.6

Date Sampled: 03/01/2016 1156
Date Received: 03/04/2016 0930

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-316302	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-316062	Lab File ID:	045B4501.D
Dilution:	1.0			Initial Weight/Volume:	30.1 g
Analysis Date:	03/10/2016 0612			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2243			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	84		49 - 115

3/20/16

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8K0**

Lab Sample ID: 280-80411-12
Client Matrix: Solid

% Moisture: 7.2

Date Sampled: 03/01/2016 0852
Date Received: 03/04/2016 0930

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-316302	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-316062	Lab File ID:	046B4601.D
Dilution:	1.0			Initial Weight/Volume:	32.7 g
Analysis Date:	03/10/2016 0640			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2243			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	88		49 - 115

3/20/16

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8K1**

Lab Sample ID: 280-80411-13
Client Matrix: Solid % Moisture: 5.3

Date Sampled: 03/01/2016 0953
Date Received: 03/04/2016 0930

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

Analysis Method:	NWTPH-Dx	Analysis Batch:	280-316302	Instrument ID:	SGC_U
Prep Method:	3550C	Prep Batch:	280-316062	Lab File ID:	047B4701.D
Dilution:	1.0			Initial Weight/Volume:	32.2 g
Analysis Date:	03/10/2016 0709			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2243			Injection Volume:	1 uL

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
C10-C36		2100	J	980	3900
C10-C28		1300	J	670	3900

Surrogate	%Rec	Qualifier	Acceptance Limits
o-Terphenyl	85		49 - 115

3/20/14

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Job Number: 280-80411-1

SDG #: JP1035
SAF#: RC-148

Date SDG Closed: March 4, 2016
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V8H9	280-80411-1	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J0	280-80411-2	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J1	280-80411-3	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J2	280-80411-4	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J3	280-80411-5	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J4	280-80411-6	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J5	280-80411-7	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J6	280-80411-8	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J7	280-80411-9	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J8	280-80411-10	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J9	280-80411-11	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8K0	280-80411-12	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8K1	280-80411-13	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C

The Uranium 6020 method substitution noted above, as agreed to by all parties, has no technical impact on the data.

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 3/4/2016 9:30 AM; the samples arrived intact and on ice. The temperatures of the 4 coolers at receipt time were 0.0° C, 0.4° C, 0.7° C and 1.2° C. It was not noted which samples were in the cooler received at a temperature of 0.0° C. The client was notified on 3/4/2016.

GC/MS SEMIVOLATILES - SW846 8270C
No anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs
The laboratory noted that the samples presented in this report contained small stones that were not used in extraction.

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

The RPD between the primary and confirmation columns exceeded 25% for Aroclor 1254 in sample J1V8J5. The result has been flagged with a "P".

No other anomalies were encountered.

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

TOTAL METALS - SW846 6010B/6020/7471A
Serial dilution of a digestate in batch 280-315923 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. Sample J1V8H9 required a 2X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Lead, Magnesium, Tin, Vanadium and Zinc to minimize the interference caused by the Titanium concentration greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Barium, Calcium, Chromium, Strontium and Magnesium are present in the method blank associated with batch 280-315923. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, 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 J1V8H9; therefore, control limits are not applicable.

The Matrix Spike performed on sample J1V8H9 exhibited percent recoveries outside the control limits for Tin 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.

The duplicate analysis of sample J1V8H9 exhibited RPD data outside the control limits for several elements, and the associated sample results have been flagged "M". There is no indication that the analytical systems were 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.

GENERAL CHEMISTRY - SW846 9045C - PH
SU = standard units

No anomalies were encountered.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-148-221

Collector: ETHERINGTON, TW	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Day		
Project Designation: 300 Area D4 Waste Sites	Sampling Location: 300-288:2 ESA2		SAF No.: RC-148
Ice Chest No.: TNU-052	Field Logbook No.: EL-1663-08	COA: 0328822000	Method of Shipment: Commercial Carrier
Shipped To: TestAmerica Denver	Offsite Property No.: A131449		Bill of Lading/Air Bill No.: SEE OSPC

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cool as required for preservation

Preservation	Cool <=6C	Cool <=6C	Cool <=6C	None	Cool <=6C						
Type of Container	G/P	aG	aG	G/P	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	125mL	250mL	250mL						
Sample Analysis	See Item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	pH (Soil) - 9045	Semi-VOA - 8270 (TCL); Semi-VOA -- 8270 (Add-On Tributyl phosphate)						

Sample No.	Matrix	Sample Date	Sample Time										
J1V8H9	SOIL	3-1-16	0940	✓	✓	✓	✓	✓					
J1V8J0	SOIL	3-1-16	0920	✓	✓	✓	✓	✓					
J1V8J1	SOIL	3-1-16	0953	✓	✓	✓	✓	✓					
J1V8J2	SOIL	3-1-16	0905	✓	✓	✓	✓	✓					
J1V8J3	SOIL	3-1-16	1029	✓	✓	✓	✓	✓					

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
T.R. Edmundson	3-1-16 1205	T.R. Edmundson	3-1-16 1205
T.R. Edmundson	3-1-16 1300	1060 Refer #3C	3-1-16 1300
1060 Refer #3C	3-3-16 0900	T.R. Edmundson	3-3-16 0900
T.R. Edmundson (WCH)	3-3-16 1500	Fred Ef	3-3-16 —
		TAD	3/4/16 0930

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

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

280-80411 Chain of Custody

REVIEWED BY TAD DATE 3/3/16

JP1035

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-148-221

Collector: ETHERINGTON, TW	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Day		
Project Designation: 300 Area D4 Waste Sites	Sampling Location: 300-288:2 ESA2		SAF No.: RC-148
Ice Chest No.: TNU-052	Field Logbook No.: EL-1663-08	COA: 0328822000	Method of Shipment: Commercial Carrier
Shipped To: TestAmerica Denver	Offsite Property No.: A131449		Bill of Lading/Air Bill No.: SEE OSPC

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cool as required for preservation

Preservation	Cool <=6C	Cool <=6C	Cool <=6C	None	Cool <=6C						
Type of Container	G/P	aG	aG	G/P	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	125mL	250mL	250mL						
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	pH (Soil) - 9045	Semi-VOA - 8270 (TCL); Semi-VOA - 8270 (Add-On Tributyl phosphate)						

Sample No.	Matrix	Sample Date	Sample Time										
J1V8J4	SOIL	3-1-16	1045	✓	✓	✓	✓	✓					
J1V8J5	SOIL	3-1-16	0840	✓	✓	✓	✓	✓					
J1V8J6	SOIL	3-1-16	1058	✓	✓	✓	✓	✓					
J1V8J7	SOIL	3-1-16	1118	✓	✓	✓	✓	✓					
J1V8J8	SOIL	3-1-16	1135	✓	✓	✓	✓	✓					

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
T. Etherington	3-1-16 1205	T.R. Edmundson J.R. Edmundson	3-1-16 1205
T.R. Edmundson J.R. Edmundson	3-1-16 1300	1060 Refer #3C	3-1-16 1300
1060 Refer #3C	3-3-16 0900	T.R. Edmundson J.R. Edmundson	3-3-16 0900
T.R. Edmundson J.R. Edmundson	3-3-16 1500	T.R. Edmundson J.R. Edmundson	3-3-16 1500 Fed Ex
		TAD	3/4/16 0930

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

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

REVIEWED BY TAD DATE 3/3/16

JP1035

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-148-221

Collector: ETHERINGTON, TW	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Day		
Project Designation: 300 Area D4 Waste Sites	Sampling Location: 300-288:2 ESA2		SAF No.: RC-148
Ice Chest No.: TNV-052	Field Logbook No.: EL-1663-08	COA: 0328822000	Method of Shipment: Commercial Carrier
Shipped To: TestAmerica Denver	Offsite Property No.: A131449		Bill of Lading/Air Bill No.: SEE OSPC

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cool as required for preservation

Preservation	Cool <=6C	Cool <=6C	Cool <=6C	None	Cool <=6C							
Type of Container	G/P	aG	aG	G/P	aG							
No. of Container(s)	1	1	1	1	1							
Volume	250mL	250mL	125mL	250mL	250mL							
Sample Analysis	See Item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	pH (Soil) - 9045	Semi-VOA - 8270 (TCL); Semi-VOA – 8270 (Add-On Tributyl phosphate)							

Sample No.	Matrix	Sample Date	Sample Time										
31V8J9	SOIL	3-1-16	1156	✓	✓	✓	✓	✓					
31V8K0	SOIL	3-1-16	0852	✓	✓	✓	✓	✓					
31V8K1	SOIL	3-1-16	0953	✓	✓	✓	✓	✓					

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CHAIN OF POSSESSION

Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
T. Etherington	3-1-16 1205	T.R. Edmundson	3-1-16 1205
T.R. Edmundson	3-1-16 1300	1060 Refer #3C	3-1-16 1300
1060 Refer #3C	3-3-16 0900	T.R. Edmundson	3-3-16 0900
T.R. Edmundson WCH	3-3-16 1500	Fed Ex	3-3-16
		TAD	3/4/16 0930

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FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

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

REVIEWED BY DAS

DATE 3/3/16

JP1035

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GENERAL ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 300-288:2 FSA 2			DATA PACKAGE: JP1035		
VALIDATOR: ELR		LAB: TAL		DATE: 3/19/11	
			SDG: JP1035		
ANALYSES PERFORMED					
8015	8021	8141	8151	8315	
		WTPH-HCID	WTPH-G	WTPH-D	
SAMPLES/MATRIX:					
J1V8H9	J1V8J0	J1V8J1	J1V8J2	J1V8J3	
J1V8J4	J1V8J5	J1V8J6	J1V8J7	J1V8J8	
J1V8J9	J1V8K0	J1V8K1			
					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: 280-80411-1
Sdg Number: JP1035

Method Blank - Batch: 280-316062

Method: NWTPH-Dx
Preparation: 3550C

Lab Sample ID:	MB 280-316062/1-A	Analysis Batch:	280-316302	Instrument ID:	SGC_U
Client Matrix:	Solid	Prep Batch:	280-316062	Lab File ID:	029B2901.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30 g
Analysis Date:	03/09/2016 2229	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2243			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
C10-C36	1000	U	1000	4000
C10-C28	680	U	680	4000

Surrogate	% Rec	Acceptance Limits
o-Terphenyl	85	49 - 115

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 280-316062

Method: NWTPH-Dx
Preparation: 3550C

LCS Lab Sample ID:	LCS 280-316062/2-A	Analysis Batch:	280-316302	Instrument ID:	SGC_U
Client Matrix:	Solid	Prep Batch:	280-316062	Lab File ID:	030B3001.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30 g
Analysis Date:	03/09/2016 2258	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2243			Injection Volume:	1 uL
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 280-316062/3-A	Analysis Batch:	280-316302	Instrument ID:	SGC_U
Client Matrix:	Solid	Prep Batch:	280-316062	Lab File ID:	031B3101.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30 g
Analysis Date:	03/09/2016 2327	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2243			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	% Rec. LCS	% Rec. LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
C10-C36	93	91	57 - 115	2	23		
C10-C28	92	90	53 - 115	2	23		

Surrogate	LCS % Rec	LCSD % Rec	Acceptance Limits
o-Terphenyl	88	83	49 - 115

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Laboratory Control/
Laboratory Duplicate Data Report - Batch: 280-316062

Method: NWTPH-Dx
Preparation: 3550C

LCS Lab Sample ID:	LCS 280-316062/2-A	Units: ug/Kg	LCSD Lab Sample ID:	LCSD 280-316062/3-A
Client Matrix:	Solid		Client Matrix:	Solid
Dilution:	1.0		Dilution:	1.0
Analysis Date:	03/09/2016 2258		Analysis Date:	03/09/2016 2327
Prep Date:	03/07/2016 2243		Prep Date:	03/07/2016 2243
Leach Date:	N/A		Leach Date:	N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
C10-C36	66700	66700	61900	60400
C10-C28	66700	66700	61500	60200

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-316062

Method: NWTPH-Dx
Preparation: 3550C

MS Lab Sample ID:	280-80411-1	Analysis Batch:	280-316302	Instrument ID:	SGC_U
Client Matrix:	Solid	Prep Batch:	280-316062	Lab File ID:	033B3301.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.1 g
Analysis Date:	03/10/2016 0025			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2243			Injection Volume:	1 uL
Leach Date:	N/A				

MSD Lab Sample ID:	280-80411-1	Analysis Batch:	280-316302	Instrument ID:	SGC_U
Client Matrix:	Solid	Prep Batch:	280-316062	Lab File ID:	034B3401.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	32.1 g
Analysis Date:	03/10/2016 0054			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2243			Injection Volume:	1 uL
Leach Date:	N/A				

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
C10-C36	92	88	57 - 115	7	23		
C10-C28	91	88	56 - 115	7	23		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
o-Terphenyl	84	80	49 - 115

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-316062

Method: NWTPH-Dx
Preparation: 3550C

MS Lab Sample ID:	280-80411-1	Units: ug/Kg	
Client Matrix:	Solid		
Dilution:	1.0		
Analysis Date:	03/10/2016 0025		
Prep Date:	03/07/2016 2243		
Leach Date:	N/A		

MSD Lab Sample ID:	280-80411-1
Client Matrix:	Solid
Dilution:	1.0
Analysis Date:	03/10/2016 0054
Prep Date:	03/07/2016 2243
Leach Date:	N/A

Analyte	Sample Result/Qual		MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
C10-C36	980	U	68600	66500	62900	58800
C10-C28	670	U	68600	66500	62300	58300

Date: 21 March 2016
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 300 Area D4 Waste Sites – Soil Full Protocol – Waste Site 300-288:2 ESA 2
Subject: Inorganic - Data Package No. JP1035-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP1035 prepared by TestAmerica Inc. (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
J1V8H9	3/1/16	Soil	C	See note 1
J1V8J0	3/1/16	Soil	C	See note 1
J1V8J1	3/1/16	Soil	C	See note 1
J1V8J2	3/1/16	Soil	C	See note 1
J1V8J3	3/1/16	Soil	C	See note 1
J1V8J4	3/1/16	Soil	C	See note 1
J1V8J5	3/1/16	Soil	C	See note 1
J1V8J6	3/1/16	Soil	C	See note 1
J1V8J7	3/1/16	Soil	C	See note 1
J1V8J8	3/1/16	Soil	C	See note 1
J1V8J9	3/1/16	Soil	C	See note 1
J1V8K0	3/1/16	Soil	C	See note 1
J1V8K1	3/1/16	Soil	C	See note 1

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

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 300 Area Remedial Action Sampling and Analysis Plan (DOE/RL-2001-48, Rev. 4). Appendices 1 through 6 provide the following information as indicated below:

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

DATA QUALITY PARAMETERS

Holding Times

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

All holding times were acceptable.

- **Preparation (Method) Blanks**

Preparation Blanks

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

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

All preparation blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

Matrix Spike and Laboratory Control Sample

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

Due to a matrix spike recovery outside QC limits, all calcium (165%), antimony (49%), tin (68%), zinc (47%) and silicon (25%) results were qualified as estimates and flagged "J".

Due to an LCS recovery outside QC limits, all silicon (11%) 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.

Due to an RPD outside QC limits, all calcium (36%), zirconium (33%) and vanadium (35%) results were qualified as estimates and flagged "J".

All other laboratory duplicate results were acceptable.

Field Duplicate

One set of field duplicates (J1V8J1/J1V8K1) were submitted for analysis. Laboratory duplicates are compared using the same criteria as for laboratory duplicates. The RPDs for aluminum (33%) and silicon (41%) were outside QC limits. Under the WCH statement of work, no qualification is required. All other field duplicate results were acceptable.

- **Analytical Detection Levels**

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

- **Completeness**

Data package No. JP1035 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 calcium (165%), antimony (49%), tin (68%), zinc (47%) and silicon (25%) results were qualified as estimates and flagged "J".

- Due to an LCS recovery outside QC limits, all silicon (11%) results were qualified as estimates and flagged "J".

- Due to an RPD outside QC limits, all calcium (36%), zirconium (33%) and vanadium (35%) results were qualified as estimates and flagged "J".

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

REFERENCES

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

DOE/RL-2001-48, Rev. 4, *300 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, November 2014.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

INORGANICS DATA QUALIFICATION SUMMARY*

SDG: JP1035	**REVIEWER: ELR**	**Project: 300-1288:2 ESA 2**	**PAGE_1_OF_1**
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Calcium Antimony Tin Zinc Silicon	J	All	MS recovery
Silicon	J	All	LCS recovery
Calcium Zirconium Vanadium	J	All	RPD

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

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: J1V8H9

Lab Sample ID: 280-80411-1
Client Matrix: Solid
% Moisture: 6.3

Date Sampled: 03/01/2016 0940
Date Received: 03/04/2016 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-316401	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25C030916.asc
Dilution:	1.0			Initial Weight/Volume:	1.382 g
Analysis Date:	03/09/2016 1708			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

K 3/20/16

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		3610	X	1.2	3.9
Arsenic		0.74	B	0.51	0.77
Barium		46.1	X	0.059	0.39
Boron		0.76	U	0.76	1.5
Cadmium		0.090	B M	0.032	0.15
Calcium		3670	X M J	10.9	38.6
Chromium		4.8	X	0.045	0.15
Iron		17400	X	2.9	3.9
Lithium		4.1		0.70	1.9
Molybdenum		0.44	B M	0.20	1.5
Nickel		6.6	X	0.095	3.1
Potassium		575		31.7	232
Silicon		135	J	4.4	7.7
Strontium		20.5	X	0.028	0.77
Zirconium		17.3	X M J	0.27	1.9

Analysis Method:	6010B	Analysis Batch:	280-316563	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25A031016.asc
Dilution:	1.0			Initial Weight/Volume:	1.382 g
Analysis Date:	03/10/2016 1242			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Manganese		215	X	0.077	0.77
Selenium		0.66	U	0.66	0.77
Silver		0.12	U	0.12	0.15
Sodium		201	M	45.6	92.7

Analysis Method:	6010B	Analysis Batch:	280-316563	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25A031016.asc
Dilution:	2.0			Initial Weight/Volume:	1.382 g
Analysis Date:	03/10/2016 1311			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.59	U J	0.59	0.93
Beryllium		0.13	B	0.051	0.31
Cobalt		5.8	M	0.15	1.5
Copper		10.9		0.34	1.5
Lead		1.7		0.42	0.77
Magnesium		3430		5.7	30.9
Tin		1.4	U N J	1.4	15.4
Vanadium		57.2	M J	0.15	3.1

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Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8H9**

Lab Sample ID: 280-80411-1
Client Matrix: Solid

% Moisture: 6.3

3/20/16

Date Sampled: 03/01/2016 0940
Date Received: 03/04/2016 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-316615	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25Z031116.asc
Dilution:	2.0			Initial Weight/Volume:	1.382 g
Analysis Date:	03/11/2016 1108			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Zinc		38.0	N X J	0.61	1.5

6020 Metals (ICP/MS)

Analysis Method:	6020	Analysis Batch:	280-316306	Instrument ID:	MT_078
Prep Method:	3050B	Prep Batch:	280-315924	Lab File ID:	111SMPL.d
Dilution:	1.0			Initial Weight/Volume:	1.124 g
Analysis Date:	03/09/2016 0153			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Uranium		0.32	M	0.0015	0.095

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-316366	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-315991	Lab File ID:	160308be.txt
Dilution:	1.0			Initial Weight/Volume:	0.53 g
Analysis Date:	03/09/2016 0143			Final Weight/Volume:	50 mL
Prep Date:	03/08/2016 1155				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.030	M	0.0067	0.021

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J0**

Lab Sample ID: 280-80411-2
Client Matrix: Solid
% Moisture: 5.1

Date Sampled: 03/01/2016 0920
Date Received: 03/04/2016 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-316401	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25C030916.asc
Dilution:	1.0			Initial Weight/Volume:	1.142 g
Analysis Date:	03/09/2016 1718			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

3/20/16

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4350	X	1.4	4.6
Arsenic		1.1		0.61	0.92
Barium		65.7	X	0.070	0.46
Boron		0.90	U	0.90	1.8
Cadmium		0.12	B	0.038	0.18
Calcium		5340	X J	13.0	46.1
Chromium		7.0	X	0.054	0.18
Iron		22000	X	3.5	4.6
Lithium		4.2		0.84	2.3
Molybdenum		0.51	B	0.24	1.8
Nickel		10.8	X	0.11	3.7
Potassium		480	J	37.8	277
Silicon		160		5.2	9.2
Strontium		22.1	X	0.033	0.92
Zirconium		21.4	X J	0.33	2.3

Analysis Method:	6010B	Analysis Batch:	280-316563	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25A031016.asc
Dilution:	1.0			Initial Weight/Volume:	1.142 g
Analysis Date:	03/10/2016 1253			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.35	U J	0.35	0.55
Beryllium		0.15	B	0.030	0.18
Cobalt		6.7		0.092	0.92
Copper		13.5		0.20	0.92
Lead		1.6		0.25	0.46
Magnesium		4230		3.4	18.5
Manganese		276	X	0.092	0.92
Selenium		0.79	U	0.79	0.92
Silver		0.15	U	0.15	0.18
Sodium		240		54.4	111
Tin		0.84	U J	0.84	9.2
Vanadium		69.3	J	0.087	1.8

Analysis Method:	6010B	Analysis Batch:	280-316615	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25Z031116.asc
Dilution:	1.0			Initial Weight/Volume:	1.142 g
Analysis Date:	03/11/2016 1015			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Zinc		39.0	X J	0.37	0.92

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Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J0**

Lab Sample ID: 280-80411-2
Client Matrix: Solid

% Moisture: 5.1

3/20/16

Date Sampled: 03/01/2016 0920
Date Received: 03/04/2016 0930

6010B Metals (ICP)

6020 Metals (ICP/MS)

Analysis Method:	6020	Analysis Batch:	280-316306	Instrument ID:	MT_078
Prep Method:	3050B	Prep Batch:	280-315924	Lab File ID:	116SMPL.d
Dilution:	1.0			Initial Weight/Volume:	1.222 g
Analysis Date:	03/09/2016 0211			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Uranium		0.32		0.0014	0.086

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-316366	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-315991	Lab File ID:	160308be.txt
Dilution:	1.0			Initial Weight/Volume:	0.59 g
Analysis Date:	03/09/2016 0150			Final Weight/Volume:	50 mL
Prep Date:	03/08/2016 1155				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.022		0.0059	0.018

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J1**

Lab Sample ID: 280-80411-3
Client Matrix: Solid

% Moisture: 5.8

Date Sampled: 03/01/2016 0953
Date Received: 03/04/2016 0930

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 03/09/2016 1721
Prep Date: 03/08/2016 0810

Analysis Batch: 280-316401
Prep Batch: 280-315923

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Instrument ID: MT_025
Lab File ID: 25C030916.asc
Initial Weight/Volume: 1.062 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		3030	X	1.5	5.0
Arsenic		0.66	U	0.66	1.0
Barium		40.2	X	0.076	0.50
Boron		0.98	U	0.98	2.0
Cadmium		0.11	B	0.041	0.20
Calcium		3720	X J	14.1	50.0
Chromium		4.1	X	0.058	0.20
Iron		17900	X	3.8	5.0
Lithium		2.5		0.91	2.5
Molybdenum		0.26	U	0.26	2.0
Nickel		6.0	X	0.12	4.0
Potassium		405		41.0	300
Silicon		129	J	5.7	10
Strontium		13.4	X	0.036	1.0
Zirconium		17.6	X J	0.35	2.5

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 03/10/2016 1255
Prep Date: 03/08/2016 0810

Analysis Batch: 280-316563
Prep Batch: 280-315923

Instrument ID: MT_025
Lab File ID: 25A031016.asc
Initial Weight/Volume: 1.062 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.38	U J	0.38	0.60
Beryllium		0.10	B	0.033	0.20
Cobalt		5.5		0.10	1.0
Copper		9.1		0.22	1.0
Lead		1.5		0.27	0.50
Magnesium		3010		3.7	20.0
Manganese		210	X	0.10	1.0
Selenium		0.86	U	0.86	1.0
Silver		0.16	U	0.16	0.20
Sodium		207		59.0	120
Tin		0.91	U J	0.91	10
Vanadium		54.1	J	0.094	2.0

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 03/11/2016 1018
Prep Date: 03/08/2016 0810

Analysis Batch: 280-316615
Prep Batch: 280-315923

Instrument ID: MT_025
Lab File ID: 25Z031116.asc
Initial Weight/Volume: 1.062 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Zinc		32.8	X J	0.40	1.0

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J1**

Lab Sample ID: 280-80411-3
Client Matrix: Solid

% Moisture: 5.8

3/20/16

Date Sampled: 03/01/2016 0953
Date Received: 03/04/2016 0930

6010B Metals (ICP)

6020 Metals (ICP/MS)

Analysis Method:	6020	Analysis Batch:	280-316306	Instrument ID:	MT_078
Prep Method:	3050B	Prep Batch:	280-315924	Lab File ID:	117SMPL.d
Dilution:	1.0			Initial Weight/Volume:	1.162 g
Analysis Date:	03/09/2016 0214			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Uranium		0.39		0.0014	0.091

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-316366	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-315991	Lab File ID:	160308be.txt
Dilution:	1.0			Initial Weight/Volume:	0.59 g
Analysis Date:	03/09/2016 0153			Final Weight/Volume:	50 mL
Prep Date:	03/08/2016 1155				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.023		0.0060	0.018

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: J1V8J2

Lab Sample ID: 280-80411-4
Client Matrix: Solid
% Moisture: 6.2

Date Sampled: 03/01/2016 0905
Date Received: 03/04/2016 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-316401	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25C030916.asc
Dilution:	1.0			Initial Weight/Volume:	1.106 g
Analysis Date:	03/09/2016 1724			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5350	X	1.5	4.8
Arsenic		1.2		0.64	0.96
Barium		68.4	X	0.073	0.48
Boron		0.94	U	0.94	1.9
Cadmium		0.13	B	0.040	0.19
Calcium		5730	X J	13.6	48.2
Chromium		5.7	X	0.056	0.19
Iron		22000	X	3.7	4.8
Lithium		4.4		0.88	2.4
Molybdenum		0.28	B	0.25	1.9
Nickel		8.0	X	0.12	3.9
Potassium		730		39.5	289
Silicon		180	J	5.5	9.6
Strontium		23.1	X	0.035	0.96
Zirconium		25.5	X J	0.34	2.4

Analysis Method:	6010B	Analysis Batch:	280-316563	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25A031016.asc
Dilution:	1.0			Initial Weight/Volume:	1.106 g
Analysis Date:	03/10/2016 1258			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.37	U J	0.37	0.58
Beryllium		0.20		0.032	0.19
Cobalt		6.8		0.096	0.96
Copper		14.9		0.21	0.96
Lead		3.0		0.26	0.48
Magnesium		3690		3.6	19.3
Manganese		289	X	0.096	0.96
Selenium		0.83	U	0.83	0.96
Silver		0.15	U	0.15	0.19
Sodium		286		56.8	116
Tin		0.88	U J	0.88	9.6
Vanadium		66.0	J	0.091	1.9

Analysis Method:	6010B	Analysis Batch:	280-316615	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25Z031116.asc
Dilution:	1.0			Initial Weight/Volume:	1.106 g
Analysis Date:	03/11/2016 1020			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Zinc		40.2	X J	0.38	0.96

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J2**

Lab Sample ID: 280-80411-4
Client Matrix: Solid
% Moisture: 6.2

Date Sampled: 03/01/2016 0905
Date Received: 03/04/2016 0930

6010B Metals (ICP)

6020 Metals (ICP/MS)

Analysis Method:	6020	Analysis Batch:	280-316306	Instrument ID:	MT_078
Prep Method:	3050B	Prep Batch:	280-315924	Lab File ID:	120SMPL.d
Dilution:	1.0			Initial Weight/Volume:	1.098 g
Analysis Date:	03/09/2016 0225			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Uranium		0.40		0.0015	0.097

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-316366	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-315991	Lab File ID:	160308be.txt
Dilution:	1.0			Initial Weight/Volume:	0.51 g
Analysis Date:	03/09/2016 0155			Final Weight/Volume:	50 mL
Prep Date:	03/08/2016 1155				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.016	B	0.0069	0.021

3/20/16

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J3**

Lab Sample ID: 280-80411-5
Client Matrix: Solid
% Moisture: 5.5

Date Sampled: 03/01/2016 1029
Date Received: 03/04/2016 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-316401	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25C030916.asc
Dilution:	1.0			Initial Weight/Volume:	1.146 g
Analysis Date:	03/09/2016 1736			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

3/20/16

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4410	X	1.4	4.6
Arsenic		1.6		0.61	0.92
Barium		52.0	X	0.070	0.46
Boron		0.91	U	0.91	1.8
Cadmium		0.12	B	0.038	0.18
Calcium		5300	X J	13.0	46.2
Chromium		6.0	X	0.054	0.18
Iron		23700	X	3.5	4.6
Lithium		3.7		0.84	2.3
Molybdenum		0.30	B	0.24	1.8
Nickel		11.8	X	0.11	3.7
Potassium		462		37.9	277
Silicon		135	J	5.2	9.2
Strontium		19.3	X	0.033	0.92
Zirconium		22.9	X J	0.33	2.3

Analysis Method:	6010B	Analysis Batch:	280-316563	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25A031016.asc
Dilution:	1.0			Initial Weight/Volume:	1.146 g
Analysis Date:	03/10/2016 1336			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.35	U J	0.35	0.55
Beryllium		0.15	B	0.030	0.18
Cobalt		7.6		0.092	0.92
Copper		13.4		0.20	0.92
Lead		1.7		0.25	0.46
Magnesium		4510		3.4	18.5
Manganese		288	X	0.092	0.92
Selenium		0.79	U	0.79	0.92
Silver		0.15	U	0.15	0.18
Sodium		270		54.5	111
Tin		0.84	U J	0.84	9.2
Vanadium		75.9	J	0.087	1.8

Analysis Method:	6010B	Analysis Batch:	280-316615	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25Z031116.asc
Dilution:	1.0			Initial Weight/Volume:	1.146 g
Analysis Date:	03/11/2016 1033			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Zinc		41.6	X J	0.37	0.92

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J3**

Lab Sample ID: 280-80411-5
Client Matrix: Solid
% Moisture: 5.5

Date Sampled: 03/01/2016 1029
Date Received: 03/04/2016 0930

6010B Metals (ICP)

6020 Metals (ICP/MS)

Analysis Method:	6020	Analysis Batch:	280-316306	Instrument ID:	MT_078
Prep Method:	3050B	Prep Batch:	280-315924	Lab File ID:	121SMPL.d
Dilution:	1.0			Initial Weight/Volume:	1.207 g
Analysis Date:	03/09/2016 0229			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Uranium		0.35		0.0014	0.088

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-316366	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-315991	Lab File ID:	160308be.txt
Dilution:	1.0			Initial Weight/Volume:	0.59 g
Analysis Date:	03/09/2016 0157			Final Weight/Volume:	50 mL
Prep Date:	03/08/2016 1155				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.015	B	0.0060	0.018

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Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J4**

Lab Sample ID: 280-80411-6
Client Matrix: Solid
% Moisture: 4.8

Date Sampled: 03/01/2016 1045
Date Received: 03/04/2016 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-316401	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25C030916.asc
Dilution:	1.0			Initial Weight/Volume:	1.026 g
Analysis Date:	03/09/2016 1739			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4910	X	1.6	5.1
Arsenic		1.2		0.68	1.0
Barium		67.7	X	0.078	0.51
Boron		1.0	U	1.0	2.0
Cadmium		0.11	B	0.042	0.20
Calcium		5390	X J	14.4	51.2
Chromium		6.4	X	0.059	0.20
Iron		23700	X	3.9	5.1
Lithium		4.4		0.93	2.6
Molybdenum		0.43	B	0.27	2.0
Nickel		9.7	X	0.13	4.1
Potassium		666		42.0	307
Silicon		194	J	5.8	10.2
Strontium		20.4	X	0.037	1.0
Zirconium		24.1	X J	0.36	2.6

Analysis Method:	6010B	Analysis Batch:	280-316563	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25A031016.asc
Dilution:	1.0			Initial Weight/Volume:	1.026 g
Analysis Date:	03/10/2016 1339			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.39	U J	0.39	0.61
Beryllium		0.17	B	0.034	0.20
Cobalt		7.4		0.10	1.0
Copper		13.5		0.22	1.0
Lead		2.4		0.28	0.51
Magnesium		4210		3.8	20.5
Manganese		299	X	0.10	1.0
Selenium		0.88	U	0.88	1.0
Silver		0.16	U	0.16	0.20
Sodium		264	J	60.4	123
Tin		0.93	U J	0.93	10.2
Vanadium		72.5		0.096	2.0

Analysis Method:	6010B	Analysis Batch:	280-316615	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25Z031116.asc
Dilution:	1.0			Initial Weight/Volume:	1.026 g
Analysis Date:	03/11/2016 1036			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Zinc		43.0	X J	0.41	1.0

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J4**

Lab Sample ID: 280-80411-6
Client Matrix: Solid

% Moisture: 4.8

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Date Sampled: 03/01/2016 1045
Date Received: 03/04/2016 0930

6010B Metals (ICP)

6020 Metals (ICP/MS)

Analysis Method:	6020	Analysis Batch:	280-316306	Instrument ID:	MT_078
Prep Method:	3050B	Prep Batch:	280-315924	Lab File ID:	122SMPL.d
Dilution:	1.0			Initial Weight/Volume:	1.028 g
Analysis Date:	03/09/2016 0232			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Uranium		0.64		0.0016	0.10

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-316366	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-315991	Lab File ID:	160308be.txt
Dilution:	1.0			Initial Weight/Volume:	0.58 g
Analysis Date:	03/09/2016 0200			Final Weight/Volume:	50 mL
Prep Date:	03/08/2016 1155				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.037		0.0060	0.018

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J5**

Lab Sample ID: 280-80411-7
Client Matrix: Solid
% Moisture: 5.2

Date Sampled: 03/01/2016 0840
Date Received: 03/04/2016 0930

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 03/09/2016 1742
Prep Date: 03/08/2016 0810

Analysis Batch: 280-316401
Prep Batch: 280-315923

Instrument ID: MT_025
Lab File ID: 25C030916.asc
Initial Weight/Volume: 1.185 g
Final Weight/Volume: 100 mL

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4610	X	1.4	4.4
Arsenic		1.0		0.59	0.89
Barium		65.6	X	0.068	0.44
Boron		0.87	U	0.87	1.8
Cadmium		0.11	B	0.036	0.18
Calcium		5350	X	12.5	44.5
Chromium		5.8	X	0.052	0.18
Iron		22600	X	3.4	4.4
Lithium		4.1		0.81	2.2
Molybdenum		0.23	B	0.23	1.8
Nickel		10.6	X	0.11	3.6
Potassium		632		36.5	267
Silicon		186	J	5.0	8.9
Strontium		23.5	X	0.032	0.89
Zirconium		22.5	X J	0.32	2.2

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 03/10/2016 1342
Prep Date: 03/08/2016 0810

Analysis Batch: 280-316563
Prep Batch: 280-315923

Instrument ID: MT_025
Lab File ID: 25A031016.asc
Initial Weight/Volume: 1.185 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.34	U J	0.34	0.53
Beryllium		0.18		0.029	0.18
Cobalt		8.3		0.089	0.89
Copper		13.1		0.19	0.89
Lead		2.1		0.24	0.44
Magnesium		4080		3.3	17.8
Manganese		321	X	0.089	0.89
Selenium		0.77	U	0.77	0.89
Silver		0.14	U	0.14	0.18
Sodium		328		52.5	107
Tin		0.81	U J	0.81	8.9
Vanadium		66.4	J	0.084	1.8

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 03/11/2016 1039
Prep Date: 03/08/2016 0810

Analysis Batch: 280-316615
Prep Batch: 280-315923

Instrument ID: MT_025
Lab File ID: 25Z031116.asc
Initial Weight/Volume: 1.185 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Zinc		39.0	X J	0.35	0.89

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J5**

Lab Sample ID: 280-80411-7
Client Matrix: Solid

% Moisture: 5.2

Date Sampled: 03/01/2016 0840
Date Received: 03/04/2016 0930

6010B Metals (ICP)

6020 Metals (ICP/MS)

Analysis Method: 6020
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 03/09/2016 0236
Prep Date: 03/08/2016 0810

Analysis Batch: 280-316306
Prep Batch: 280-315924

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Instrument ID: MT_078
Lab File ID: 123SMPL.d
Initial Weight/Volume: 1.138 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Uranium		0.33		0.0015	0.093

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 03/09/2016 0207
Prep Date: 03/08/2016 1155

Analysis Batch: 280-316366
Prep Batch: 280-315991

Instrument ID: MT_034
Lab File ID: 160308be.txt
Initial Weight/Volume: 0.54 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.020		0.0065	0.020

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J6**

Lab Sample ID: 280-80411-8
Client Matrix: Solid
% Moisture: 6.2

Date Sampled: 03/01/2016 1058
Date Received: 03/04/2016 0930

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 03/09/2016 1744
Prep Date: 03/08/2016 0810

Analysis Batch: 280-316401
Prep Batch: 280-315923

Instrument ID: MT_025
Lab File ID: 25C030916.asc
Initial Weight/Volume: 1.101 g
Final Weight/Volume: 100 mL

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4070	X	1.5	4.8
Arsenic		1.3		0.64	0.97
Barium		63.1	X	0.074	0.48
Boron		0.95	U	0.95	1.9
Cadmium		0.11	B	0.040	0.19
Calcium		5660	X J	13.6	48.4
Chromium		4.3	X	0.056	0.19
Iron		24800	X	3.7	4.8
Lithium		3.5		0.88	2.4
Molybdenum		0.27	B	0.25	1.9
Nickel		8.9	X	0.12	3.9
Potassium		522		39.7	290
Silicon		171	J	5.5	9.7
Strontium		18.9	X	0.035	0.97
Zirconium		24.2	X J	0.34	2.4

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 03/10/2016 1345
Prep Date: 03/08/2016 0810

Analysis Batch: 280-316563
Prep Batch: 280-315923

Instrument ID: MT_025
Lab File ID: 25A031016.asc
Initial Weight/Volume: 1.101 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.37	U J	0.37	0.58
Beryllium		0.17	B	0.032	0.19
Cobalt		8.4		0.097	0.97
Copper		14.5		0.21	0.97
Lead		2.0		0.26	0.48
Magnesium		4400		3.6	19.4
Manganese		329	X	0.097	0.97
Selenium		0.83	U	0.83	0.97
Silver		0.15	U	0.15	0.19
Sodium		269		57.1	116
Tin		0.88	U J	0.88	9.7
Vanadium		73.6	J	0.091	1.9

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 03/11/2016 1041
Prep Date: 03/08/2016 0810

Analysis Batch: 280-316615
Prep Batch: 280-315923

Instrument ID: MT_025
Lab File ID: 25Z031116.asc
Initial Weight/Volume: 1.101 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Zinc		42.7	X J	0.39	0.97

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J6**

Lab Sample ID: 280-80411-8
Client Matrix: Solid
% Moisture: 6.2

Date Sampled: 03/01/2016 1058
Date Received: 03/04/2016 0930

6010B Metals (ICP)

6020 Metals (ICP/MS)

Analysis Method:	6020	Analysis Batch:	280-316306	Instrument ID:	MT_078
Prep Method:	3050B	Prep Batch:	280-315924	Lab File ID:	124SMPL.d
Dilution:	1.0			Initial Weight/Volume:	1.177 g
Analysis Date:	03/09/2016 0240			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Uranium		0.35		0.0014	0.091

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-316366	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-315991	Lab File ID:	160308be.txt
Dilution:	1.0			Initial Weight/Volume:	0.60 g
Analysis Date:	03/09/2016 0209			Final Weight/Volume:	50 mL
Prep Date:	03/08/2016 1155				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.017	B	0.0059	0.018

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Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J7**

Lab Sample ID: 280-80411-9
Client Matrix: Solid
% Moisture: 7.2

Date Sampled: 03/01/2016 1118
Date Received: 03/04/2016 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-316401	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25C030916.asc
Dilution:	1.0			Initial Weight/Volume:	1.043 g
Analysis Date:	03/09/2016 1747			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5310	X	1.6	5.2
Arsenic		1.4		0.68	1.0
Barium		65.7	X	0.079	0.52
Boron		1.0	U	1.0	2.1
Cadmium		0.12	B J	0.042	0.21
Calcium		5090	X J	14.6	51.7
Chromium		8.9	X	0.060	0.21
Iron		21900	X	3.9	5.2
Lithium		4.8		0.94	2.6
Molybdenum		0.27	U	0.27	2.1
Nickel		9.7	X	0.13	4.1
Potassium		778		42.4	310
Silicon		194	J	5.9	10.3
Strontium		23.7	X	0.037	1.0
Zirconium		22.8	X J	0.37	2.6

Analysis Method:	6010B	Analysis Batch:	280-316563	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25A031016.asc
Dilution:	1.0			Initial Weight/Volume:	1.043 g
Analysis Date:	03/10/2016 1348			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.39	U J	0.39	0.62
Beryllium		0.21		0.034	0.21
Cobalt		6.6		0.10	1.0
Copper		13.1		0.22	1.0
Lead		2.3		0.28	0.52
Magnesium		4230		3.8	20.7
Manganese		282	X	0.10	1.0
Selenium		0.89	U	0.89	1.0
Silver		0.17	U	0.17	0.21
Sodium		276		61.0	124
Tin		0.94	U J	0.94	10.3
Vanadium		67.0	J	0.097	2.1

Analysis Method:	6010B	Analysis Batch:	280-316615	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25Z031116.asc
Dilution:	1.0			Initial Weight/Volume:	1.043 g
Analysis Date:	03/11/2016 1044			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Zinc		40.9	X J	0.41	1.0

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J7**

Lab Sample ID: 280-80411-9
Client Matrix: Solid
% Moisture: 7.2

Date Sampled: 03/01/2016 1118
Date Received: 03/04/2016 0930

6010B Metals (ICP)

6020 Metals (ICP/MS)

Analysis Method:	6020	Analysis Batch:	280-316306	Instrument ID:	MT_078
Prep Method:	3050B	Prep Batch:	280-315924	Lab File ID:	125SMPL.d
Dilution:	1.0			Initial Weight/Volume:	1.151 g
Analysis Date:	03/09/2016 0243			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Uranium		0.52		0.0015	0.094

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-316366	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-315991	Lab File ID:	160308be.txt
Dilution:	1.0			Initial Weight/Volume:	0.60 g
Analysis Date:	03/09/2016 0211			Final Weight/Volume:	50 mL
Prep Date:	03/08/2016 1155				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.019		0.0060	0.018

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Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J8**

Lab Sample ID: 280-80411-10
Client Matrix: Solid
% Moisture: 5.1

Date Sampled: 03/01/2016 1135
Date Received: 03/04/2016 0930

6010B Metals (ICP)

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 03/09/2016 1750
Prep Date: 03/08/2016 0810

Analysis Batch: 280-316401
Prep Batch: 280-315923

Instrument ID: MT_025
Lab File ID: 25C030916.asc
Initial Weight/Volume: 1.157 g
Final Weight/Volume: 100 mL

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Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4110	X	1.4	4.6
Arsenic		0.66	B	0.60	0.91
Barium		53.6	X	0.069	0.46
Boron		0.89	U	0.89	1.8
Cadmium		0.12	B	0.037	0.18
Calcium		6720	X J	12.8	45.5
Chromium		6.2	X	0.053	0.18
Iron		23500	X	3.5	4.6
Lithium		3.6		0.83	2.3
Molybdenum		0.24	B	0.24	1.8
Nickel		10.8	X	0.11	3.6
Potassium		470		37.3	273
Silicon		157	J	5.2	9.1
Strontium		20.7	X	0.033	0.91
Zirconium		24.1	X J	0.32	2.3

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 03/10/2016 1350
Prep Date: 03/08/2016 0810

Analysis Batch: 280-316563
Prep Batch: 280-315923

Instrument ID: MT_025
Lab File ID: 25A031016.asc
Initial Weight/Volume: 1.157 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.35	U J	0.35	0.55
Beryllium		0.16	B	0.030	0.18
Cobalt		7.6		0.091	0.91
Copper		13.0		0.20	0.91
Lead		1.7		0.25	0.46
Magnesium		4360		3.4	18.2
Manganese		287	X	0.091	0.91
Selenium		0.78	U	0.78	0.91
Silver		0.15	U	0.15	0.18
Sodium		289		53.7	109
Tin		0.83	U J	0.83	9.1
Vanadium		74.8	J	0.086	1.8

Analysis Method: 6010B
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 03/11/2016 1047
Prep Date: 03/08/2016 0810

Analysis Batch: 280-316615
Prep Batch: 280-315923

Instrument ID: MT_025
Lab File ID: 25Z031116.asc
Initial Weight/Volume: 1.157 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Zinc		41.0	X J	0.36	0.91

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J8**

Lab Sample ID: 280-80411-10
Client Matrix: Solid

% Moisture: 5.1

Date Sampled: 03/01/2016 1135
Date Received: 03/04/2016 0930

6010B Metals (ICP)

6020 Metals (ICP/MS)

Analysis Method: 6020
Prep Method: 3050B
Dilution: 1.0
Analysis Date: 03/09/2016 0247
Prep Date: 03/08/2016 0810

Analysis Batch: 280-316306
Prep Batch: 280-315924

Instrument ID: MT_078
Lab File ID: 126SMPL.d
Initial Weight/Volume: 1.156 g
Final Weight/Volume: 100 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Uranium		0.36		0.0014	0.091

7471A Mercury (CVAA)

Analysis Method: 7471A
Prep Method: 7471A
Dilution: 1.0
Analysis Date: 03/09/2016 0214
Prep Date: 03/08/2016 1155

Analysis Batch: 280-316366
Prep Batch: 280-315991

Instrument ID: MT_034
Lab File ID: 160308be.txt
Initial Weight/Volume: 0.54 g
Final Weight/Volume: 50 mL

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.014	B	0.0065	0.020

3/20/16

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J9**

Lab Sample ID: 280-80411-11
Client Matrix: Solid
% Moisture: 4.6

Date Sampled: 03/01/2016 1156
Date Received: 03/04/2016 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-316401	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25C030916.asc
Dilution:	1.0			Initial Weight/Volume:	1.231 g
Analysis Date:	03/09/2016 1753			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

3/20/16

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		3950	X	1.3	4.3
Arsenic		0.56	U	0.56	0.85
Barium		52.4	X	0.065	0.43
Boron		0.83	U	0.83	1.7
Cadmium		0.11	B	0.035	0.17
Calcium		5020	X J	12.0	42.6
Chromium		6.0	X	0.049	0.17
Iron		23400	X	3.2	4.3
Lithium		3.5		0.77	2.1
Molybdenum		0.26	B	0.22	1.7
Nickel		8.6	X	0.10	3.4
Potassium		569		34.9	255
Silicon		138	J	4.8	8.5
Strontium		17.6	X	0.031	0.85
Zirconium		23.1	X J	0.30	2.1

Analysis Method:	6010B	Analysis Batch:	280-316563	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25A031016.asc
Dilution:	1.0			Initial Weight/Volume:	1.231 g
Analysis Date:	03/10/2016 1353			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.32	U J	0.32	0.51
Beryllium		0.14	B	0.028	0.17
Cobalt		7.2		0.085	0.85
Copper		13.4		0.18	0.85
Lead		1.9		0.23	0.43
Magnesium		3980		3.1	17.0
Manganese		281	X	0.085	0.85
Selenium		0.73	U	0.73	0.85
Silver		0.14	U	0.14	0.17
Sodium		315		50.2	102
Tin		0.78	U J	0.78	8.5
Vanadium		71.0	J	0.080	1.7

Analysis Method:	6010B	Analysis Batch:	280-316615	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25Z031116.asc
Dilution:	1.0			Initial Weight/Volume:	1.231 g
Analysis Date:	03/11/2016 1050			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Zinc		41.1	X J	0.34	0.85

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J9**

Lab Sample ID: 280-80411-11
Client Matrix: Solid
% Moisture: 4.6

Date Sampled: 03/01/2016 1156
Date Received: 03/04/2016 0930

6010B Metals (ICP)

6020 Metals (ICP/MS)

Analysis Method:	6020	Analysis Batch:	280-316306	Instrument ID:	MT_078
Prep Method:	3050B	Prep Batch:	280-315924	Lab File ID:	127SMPL.d
Dilution:	1.0			Initial Weight/Volume:	1.139 g
Analysis Date:	03/09/2016 0251			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Uranium		0.32		0.0014	0.092

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-316366	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-315991	Lab File ID:	160308be.txt
Dilution:	1.0			Initial Weight/Volume:	0.58 g
Analysis Date:	03/09/2016 0216			Final Weight/Volume:	50 mL
Prep Date:	03/08/2016 1155				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.012	B	0.0060	0.018

3/20/16

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: J1V8K0

Lab Sample ID: 280-80411-12
Client Matrix: Solid
% Moisture: 7.2

Date Sampled: 03/01/2016 0852
Date Received: 03/04/2016 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-316401	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25C030916.asc
Dilution:	1.0			Initial Weight/Volume:	1.136 g
Analysis Date:	03/09/2016 1755			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

N 3/26/16

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		5660	X	1.5	4.7
Arsenic		1.4		0.63	0.95
Barium		67.4	X	0.072	0.47
Boron		0.93	U	0.93	1.9
Cadmium		0.11	B	0.039	0.19
Calcium		5200	X J	13.4	47.4
Chromium		6.3	X	0.055	0.19
Iron		23600	X	3.6	4.7
Lithium		5.2		0.86	2.4
Molybdenum		0.33	B	0.25	1.9
Nickel		9.6	X	0.12	3.8
Potassium		906		38.9	285
Silicon		192	J	5.4	9.5
Strontium		21.3	X	0.034	0.95
Zirconium		24.1	X J	0.34	2.4

Analysis Method:	6010B	Analysis Batch:	280-316563	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25A031016.asc
Dilution:	1.0			Initial Weight/Volume:	1.136 g
Analysis Date:	03/10/2016 1356			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.36	U J	0.36	0.57
Beryllium		0.23		0.031	0.19
Cobalt		8.4		0.095	0.95
Copper		14.3		0.21	0.95
Lead		3.0		0.26	0.47
Magnesium		4250		3.5	19.0
Manganese		310	X	0.095	0.95
Selenium		0.82	U	0.82	0.95
Silver		0.15	U	0.15	0.19
Sodium		275		56.0	114
Tin		0.87	U J	0.87	9.5
Vanadium		66.9	J	0.089	1.9

Analysis Method:	6010B	Analysis Batch:	280-316615	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25Z031116.asc
Dilution:	1.0			Initial Weight/Volume:	1.136 g
Analysis Date:	03/11/2016 1052			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Zinc		43.1	X J	0.38	0.95

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8K0**

Lab Sample ID: 280-80411-12
Client Matrix: Solid

% Moisture: 7.2

Date Sampled: 03/01/2016 0852
Date Received: 03/04/2016 0930

6010B Metals (ICP)

6020 Metals (ICP/MS)

Analysis Method:	6020	Analysis Batch:	280-316306	Instrument ID:	MT_078
Prep Method:	3050B	Prep Batch:	280-315924	Lab File ID:	128SMPL.d
Dilution:	1.0			Initial Weight/Volume:	1.073 g
Analysis Date:	03/09/2016 0254			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Uranium		0.39		0.0016	0.10

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-316366	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-315991	Lab File ID:	160308be.txt
Dilution:	1.0			Initial Weight/Volume:	0.52 g
Analysis Date:	03/09/2016 0218			Final Weight/Volume:	50 mL
Prep Date:	03/08/2016 1155				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.013	B	0.0069	0.021

3/20/14

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: J1V8K1

Lab Sample ID: 280-80411-13
Client Matrix: Solid
% Moisture: 5.3

Date Sampled: 03/01/2016 0953
Date Received: 03/04/2016 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-316401	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25C030916.asc
Dilution:	1.0			Initial Weight/Volume:	1.082 g
Analysis Date:	03/09/2016 1758			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

3/20/16

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4210	X	1.5	4.9
Arsenic		1.1		0.64	0.98
Barium		52.7	X	0.074	0.49
Boron		0.96	U	0.96	2.0
Cadmium		0.11	B	0.040	0.20
Calcium		4850	X J	13.8	48.8
Chromium		6.0	X	0.057	0.20
Iron		22800	X	3.7	4.9
Lithium		3.8		0.89	2.4
Molybdenum		0.26	B	0.25	2.0
Nickel		9.1	X	0.12	3.9
Potassium		586		40.0	293
Silicon		197	J	5.5	9.8
Strontium		18.4	X	0.035	0.98
Zirconium		23.1	X J	0.35	2.4

Analysis Method:	6010B	Analysis Batch:	280-316563	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25A031016.asc
Dilution:	1.0			Initial Weight/Volume:	1.082 g
Analysis Date:	03/10/2016 1359			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.37	U J	0.37	0.59
Beryllium		0.16	B	0.032	0.20
Cobalt		7.5		0.098	0.98
Copper		12.9		0.21	0.98
Lead		2.2		0.26	0.49
Magnesium		4130		3.6	19.5
Manganese		278	X	0.098	0.98
Selenium		0.84	U	0.84	0.98
Silver		0.16	U	0.16	0.20
Sodium		283		57.6	117
Tin		0.89	U J	0.89	9.8
Vanadium		71.5	J	0.092	2.0

Analysis Method:	6010B	Analysis Batch:	280-316615	Instrument ID:	MT_025
Prep Method:	3050B	Prep Batch:	280-315923	Lab File ID:	25Z031116.asc
Dilution:	1.0			Initial Weight/Volume:	1.082 g
Analysis Date:	03/11/2016 1055			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Zinc		41.7	X J	0.39	0.98

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8K1**

Lab Sample ID: 280-80411-13
Client Matrix: Solid

% Moisture: 5.3

Date Sampled: 03/01/2016 0953
Date Received: 03/04/2016 0930

6010B Metals (ICP)

6020 Metals (ICP/MS)

Analysis Method:	6020	Analysis Batch:	280-316306	Instrument ID:	MT_078
Prep Method:	3050B	Prep Batch:	280-315924	Lab File ID:	129SMPL.d
Dilution:	1.0			Initial Weight/Volume:	1.209 g
Analysis Date:	03/09/2016 0258			Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Uranium		0.47		0.0014	0.087

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-316366	Instrument ID:	MT_034
Prep Method:	7471A	Prep Batch:	280-315991	Lab File ID:	160308be.txt
Dilution:	1.0			Initial Weight/Volume:	0.59 g
Analysis Date:	03/09/2016 0221			Final Weight/Volume:	50 mL
Prep Date:	03/08/2016 1155				

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Mercury		0.019		0.0059	0.018

3/28/16

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Job Number: 280-80411-1

SDG #: JP1035
SAF#: RC-148

Date SDG Closed: March 4, 2016
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V8H9	280-80411-1	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J0	280-80411-2	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J1	280-80411-3	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J2	280-80411-4	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J3	280-80411-5	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J4	280-80411-6	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J5	280-80411-7	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J6	280-80411-8	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J7	280-80411-9	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J8	280-80411-10	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J9	280-80411-11	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8K0	280-80411-12	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8K1	280-80411-13	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C

The Uranium 6020 method substitution noted above, as agreed to by all parties, has no technical impact on the data.

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 3/4/2016 9:30 AM; the samples arrived intact and on ice. The temperatures of the 4 coolers at receipt time were 0.0° C, 0.4° C, 0.7° C and 1.2° C. It was not noted which samples were in the cooler received at a temperature of 0.0° C. The client was notified on 3/4/2016.

GC/MS SEMIVOLATILES - SW846 8270C
No anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs
The laboratory noted that the samples presented in this report contained small stones that were not used in extraction.

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

The RPD between the primary and confirmation columns exceeded 25% for Aroclor 1254 in sample J1V8J5. The result has been flagged with a "P".

No other anomalies were encountered.

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

TOTAL METALS - SW846 6010B/6020/7471A
Serial dilution of a digestate in batch 280-315923 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. Sample J1V8H9 required a 2X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Lead, Magnesium, Tin, Vanadium and Zinc to minimize the interference caused by the Titanium concentration greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Barium, Calcium, Chromium, Strontium and Magnesium are present in the method blank associated with batch 280-315923. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, 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 J1V8H9; therefore, control limits are not applicable.

The Matrix Spike performed on sample J1V8H9 exhibited percent recoveries outside the control limits for Tin 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.

The duplicate analysis of sample J1V8H9 exhibited RPD data outside the control limits for several elements, and the associated sample results have been flagged "M". There is no indication that the analytical systems were 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.

GENERAL CHEMISTRY - SW846 9045C - PH
SU = standard units

No anomalies were encountered.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-148-221

Collector: ETHERINGTON, TW	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 300 Area D4 Waste Sites	Sampling Location: 300-288:2 ESA2		SAF No.: RC-148
Ice Chest No.: TNU-052	Field Logbook No.: EL-1663-08	COA: 0328822000	Method of Shipment: Commercial Carrier
Shipped To: TestAmerica Denver	Offsite Property No.: A131449		Bill of Lading/Air Bill No.: SEE OSPC
Other Labs Shipped To: TestAmerica Richland			

Price Code: 8B

Data Turnaround: 7 Day

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cool as required for preservation

Preservation	Cool <=6C	Cool <=6C	Cool <=6C	None	Cool <=6C					
Type of Container	G/P	aG	aG	G/P	aG					
No. of Container(s)	1	1	1	1	1					
Volume	250mL	250mL	125mL	250mL	250mL					
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	pH (Soil) - 9045	Semi-VOA - 8270 (TCL); Semi-VOA -- 8270 (Add-On Tributyl phosphate)					

Sample No.	Matrix	Sample Date	Sample Time										
J1V8H9	SOIL	3-1-16	0940	✓	✓	✓	✓	✓					
J1V8J0	SOIL	3-1-16	0920	✓	✓	✓	✓	✓					
J1V8J1	SOIL	3-1-16	0953	✓	✓	✓	✓	✓					
J1V8J2	SOIL	3-1-16	0905	✓	✓	✓	✓	✓					
J1V8J3	SOIL	3-1-16	1029	✓	✓	✓	✓	✓					

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
T. Etherington [signature]	3-1-16 1205	T.R. Edmundson J.R. Edmundson	3-1-16 1205
T.R. Edmundson J.R. Edmundson	3-1-16 1300	1060 Refer #3C	3-1-16 1300
1060 Refer #3C	3-3-16 0900	T.R. Edmundson J.R. Edmundson	3-3-16 0900
T.R. Edmundson J.R. Edmundson WCH	3-3-16 1500	Fed Ex	3-3-16 —
		[signature] TAD	3/4/16 0930

FINAL SAMPLE DISPOSITION — Disposal Method — Disposed By — Date/Time

SPECIAL INSTRUCTIONS

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

280-80411 Chain of Custody

REVIEWED BY [initials] DATE 3/3/16

JP1035

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-148-221

Collector: ETHERINGTON, TW	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 300 Area D4 Waste Sites	Sampling Location: 300-288:2 ESA2		SAF No.: RC-148
Ice Chest No.: TNU-052	Field Logbook No.: EL-1663-08	COA: 0328822000	Method of Shipment: Commercial Carrier
Shipped To: TestAmerica Denver	Offsite Property No.: A131449		Bill of Lading/Air Bill No.: SEE OSPC
Other Labs Shipped To: TestAmerica Richland			

Price Code: 8B

Data Turnaround: 7 Day

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cool as required for preservation

Sample No.	Matrix	Sample Date	Sample Time	Preservation: Cool <=6C	Cool <=6C	Cool <=6C	None	Cool <=6C					
				Type of Container: G/P	aG	aG	G/P	aG					
				No. of Container(s): 1	1	1	1	1					
				Volume: 250mL	250mL	125mL	250mL	250mL					
				Sample Analysis: See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	pH (Soil) - 9045	Semi-VOA - 8270 (TCL); Semi-VOA – 8270 (Add-On Tributyl phosphate)					
J1V8J4	SOIL	3-1-16	1045	✓	✓	✓	✓	✓					
J1V8J5	SOIL	3-1-16	0840	✓	✓	✓	✓	✓					
J1V8J6	SOIL	3-1-16	1058	✓	✓	✓	✓	✓					
J1V8J7	SOIL	3-1-16	1118	✓	✓	✓	✓	✓					
J1V8J8	SOIL	3-1-16	1135	✓	✓	✓	✓	✓					

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
T.R. Edmundson	3-1-16 1205	T.R. Edmundson	3-1-16 1205
T.R. Edmundson	3-1-16 1300	1060 Refer #3C	3-1-16 1300
1060 Refer #3C	3-3-16 0900	T.R. Edmundson	3-3-16 0900
T.R. Edmundson (WCH)	3-3-16 1500	T.R. Edmundson (WCH) / Red Exp	3-3-16 1500
		TAD	3/4/16 0930

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

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

REVIEWED BY [illegible] DATE 3/3/16

JP1035

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-148-221

Collector: ETHERINGTON, TW	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 300 Area D4 Waste Sites	Sampling Location: 300-288:2 ESA2		SAF No.: RC-148
Ice Chest No.: TNV-052	Field Logbook No.: EL-1663-08	COA: 0328822000	Method of Shipment: Commercial Carrier
Shipped To: TestAmerica Denver	Offsite Property No.: A131449		Bill of Lading/Air Bill No.: SEE OSPC
Other Labs Shipped To: TestAmerica Richland			

Price Code: 8B

Data Turnaround: 7 Day

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cool as required for preservation

Preservation	Cool <=6C	Cool <=6C	Cool <=6C	None	Cool <=6C						
Type of Container	G/P	aG	aG	G/P	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	125mL	250mL	250mL						
Sample Analysis	See Item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	pH (Soil) - 9045	Semi-VOA - 8270 (TCL); Semi-VOA -- 8270 (Add-On Tributyl phosphate)						

Sample No.	Matrix	Sample Date	Sample Time											
31V8J9	SOIL	3-1-16	1156	✓	✓	✓	✓	✓						
31V8K0	SOIL	3-1-16	0852	✓	✓	✓	✓	✓						
31V8K1	SOIL	3-1-16	0953	✓	✓	✓	✓	✓						

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
T. Etherington	3-1-16 1205	T.R. Edmundson	3-1-16 1205
T.R. Edmundson	3-1-16 1300	1060 Refer #3C	3-1-16 1300
1060 Refer #3C	3-3-16 0900	T.R. Edmundson	3-3-16 0900
T.R. Edmundson	3-3-16 1500	Fed Ex	3-3-16 —
		Dan Allen TAD	3/4/16 0930

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

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

REVIEWED BY DAS DATE 3/3/16

JP1035

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 300-288:2 ESA2			DATA PACKAGE: JP1035		
VALIDATOR: ELR		LAB: TAL		DATE: 3/19/16	
			SDG: JP1035		
ANALYSES PERFORMED					
SW-846/ICP	SW-846/GFAA	SW-846/Hg	SW-846 Cyanide		
SAMPLES/MATRIX					
J1V8H9	J1V8J0	J1V8J1	J1V8J2	J1V8J3	
J1V8J4	J1V8J5	J1V8J6	J1V8J7	J1V8J8	
J1V8J9	J1V8K0	J1V8K1			
				Soil	

1. DATA PACKAGE COMPLETENESS AND CASE NARRATIVE

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

Comments:

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

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

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

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

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

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

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

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

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

Comments:

INORGANIC ANALYSIS DATA VALIDATION CHECKLIST

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

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

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

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

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

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

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

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

Comments: no FB

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

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

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

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

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

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

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

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

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

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

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

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

Comments: MS - calcium (165%) silicon (25%) antimony (25%)
tin (69%) zinc (47%) - J all

LCS - silicon - 11% - J all

no RPs

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: Calcium (36%) zirconium (33%) sodium (31%)

al - 33% silicon (41%) FD

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: 280-80411-1
Sdg Number: JP1035

Method Blank - Batch: 280-315923

Method: 6010B
Preparation: 3050B

Lab Sample ID:	MB 280-315923/1-A	Analysis Batch:	280-316401	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-315923	Lab File ID:	25C030916.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	03/09/2016 1703	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Aluminum	1.6	U	1.6	5.0
Arsenic	0.66	U	0.66	1.0
Barium	0.147	B	0.076	0.50
Boron	0.98	U	0.98	2.0
Cadmium	0.041	U	0.041	0.20
Calcium	14.46	B	14.1	50.0
Chromium	0.0960	B	0.058	0.20
Iron	3.8	U	3.8	5.0
Lithium	0.91	U	0.91	2.5
Molybdenum	0.26	U	0.26	2.0
Nickel	0.12	U	0.12	4.0
Potassium	41.0	U	41.0	300
Silicon	5.7	U	5.7	10.0
Strontium	0.0440	B	0.036	1.0
Zirconium	0.35	U	0.35	2.5

Method Blank - Batch: 280-315923

Method: 6010B
Preparation: 3050B

Lab Sample ID:	MB 280-315923/1-A	Analysis Batch:	280-316563	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-315923	Lab File ID:	25A031016.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	03/10/2016 1237	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Antimony	0.38	U	0.38	0.60
Beryllium	0.033	U	0.033	0.20
Cobalt	0.10	U	0.10	1.0
Copper	0.22	U	0.22	1.0
Lead	0.27	U	0.27	0.50
Magnesium	4.43	B	3.7	20.0
Manganese	0.10	U	0.10	1.0
Selenium	0.86	U	0.86	1.0
Silver	0.16	U	0.16	0.20
Sodium	59.0	U	59.0	120
Tin	0.91	U	0.91	10.0
Vanadium	0.094	U	0.094	2.0

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Method Blank - Batch: 280-315923

Method: 6010B
Preparation: 3050B

Lab Sample ID:	MB 280-315923/1-A	Analysis Batch:	280-316615	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-315923	Lab File ID:	25Z031116.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	03/11/2016 0958	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Zinc	0.40	U	0.40	1.0

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Lab Control Sample - Batch: 280-315923

Method: 6010B
Preparation: 3050B

Lab Sample ID:	LCS 280-315923/2-A	Analysis Batch:	280-316401	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-315923	Lab File ID:	25C030916.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	03/09/2016 1705	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	200	196.4	98	82 - 116	
Arsenic	100	99.67	100	85 - 110	
Barium	200	192.0	96	87 - 112	
Boron	100	93.80	94	80 - 120	
Cadmium	10.0	9.46	95	87 - 110	
Calcium	5000	4694	94	82 - 114	
Chromium	20.0	19.50	98	84 - 114	
Iron	100	105.8	106	87 - 120	
Lithium	100	96.87	97	90 - 110	
Molybdenum	100	100.3	100	86 - 110	
Nickel	50.0	47.80	96	87 - 110	
Potassium	5000	4833	97	89 - 110	
Silicon	1000	106.7	11	10 - 70	
Strontium	100	96.08	96	89 - 110	
Zirconium	50.0	48.24	96	90 - 110	

Lab Control Sample - Batch: 280-315923

Method: 6010B
Preparation: 3050B

Lab Sample ID:	LCS 280-315923/2-A	Analysis Batch:	280-316563	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-315923	Lab File ID:	25A031016.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	03/10/2016 1240	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Antimony	50.0	47.97	96	82 - 110	
Beryllium	5.00	4.72	94	84 - 114	
Cobalt	50.0	46.90	94	87 - 110	
Copper	25.0	23.91	96	88 - 110	
Lead	50.0	47.47	95	86 - 110	
Magnesium	5000	4749	95	90 - 110	
Manganese	50.0	46.95	94	88 - 110	
Selenium	200	189.2	95	83 - 110	
Silver	5.00	4.87	97	87 - 114	
Sodium	5000	4816	96	90 - 112	
Tin	200	189.4	95	84 - 110	
Vanadium	50.0	47.32	95	88 - 110	

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Lab Control Sample - Batch: 280-315923

Method: 6010B
Preparation: 3050B

Lab Sample ID:	LCS 280-315923/2-A	Analysis Batch:	280-316615	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-315923	Lab File ID:	25Z031116.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	03/11/2016 1001	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Zinc	50.0	46.10	92	76 - 114	

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Matrix Spike - Batch: 280-315923

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-80411-1	Analysis Batch:	280-316401	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-315923	Lab File ID:	25C030916.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.368 g
Analysis Date:	03/09/2016 1716	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	3610		156	5757	1374	50 - 200	4
Arsenic	0.74	B	78.0	68.21	86	76 - 111	
Barium	46.1		156	198.1	97	52 - 159	
Boron	0.76	U	78.0	63.06	81	80 - 120	
Cadmium	0.090	B	7.80	7.04	89	40 - 130	
Calcium	3670		3900	10100	165	43 - 165	
Chromium	4.8		15.6	21.40	106	70 - 200	
Iron	17400		78.0	24430	9060	70 - 200	4
Lithium	4.1		78.0	75.34	91	84 - 109	
Molybdenum	0.44	B	78.0	68.57	87	75 - 103	
Nickel	6.6		39.0	42.39	92	61 - 126	
Potassium	575		3900	4148	92	56 - 172	
Silicon	135		780	329.0	25	20 - 200	
Strontium	20.5		78.0	93.44	93	81 - 125	
Zirconium	17.3		39.0	60.81	111	75 - 125	

Matrix Spike - Batch: 280-315923

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-80411-1	Analysis Batch:	280-316563	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-315923	Lab File ID:	25A031016.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.368 g
Analysis Date:	03/10/2016 1250	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Manganese	215		39.0	350.0	347	40 - 200	4
Selenium	0.66	U	156	136.1	87	76 - 104	
Silver	0.12	U	3.90	3.53	90	75 - 141	
Sodium	201		3900	4069	99	78 - 111	

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Matrix Spike - Batch: 280-315923

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-80411-1	Analysis Batch:	280-316563	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-315923	Lab File ID:	25A031016.asc
Dilution:	2.0	Leach Batch:	N/A	Initial Weight/Volume:	1.368 g
Analysis Date:	03/10/2016 1319	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Antimony	0.59	U	39.0	19.07	49	20 - 200	
Beryllium	0.13	B	3.90	3.13	77	72 - 105	
Cobalt	5.8		39.0	36.69	79	72 - 106	
Copper	10.9		19.5	26.29	79	37 - 187	
Lead	1.7		39.0	32.07	78	70 - 200	
Magnesium	3430		3900	7262	98	64 - 145	
Tin	1.4	U	156	106.8	68	77 - 126	N
Vanadium	57.2		39.0	99.71	109	50 - 169	

Matrix Spike - Batch: 280-315923

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-80411-1	Analysis Batch:	280-316615	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-315923	Lab File ID:	25Z031116.asc
Dilution:	2.0	Leach Batch:	N/A	Initial Weight/Volume:	1.368 g
Analysis Date:	03/11/2016 1117	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Zinc	38.0	39.0	56.38	47	70 - 200	N

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Duplicate - Batch: 280-315923

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-80411-1	Analysis Batch:	280-316401	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-315923	Lab File ID:	25C030916.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.287 g
Analysis Date:	03/09/2016 1713	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Aluminum	3610		4643	25	40	
Arsenic	0.74	B	0.828	12	30	B
Barium	46.1		56.57	20	30	
Boron	0.76	U	0.81	NC	30	U
Cadmium	0.090	B	0.140	44	30	B M
Calcium	3670		5310	36	30	M
Chromium	4.8		4.84	0.5	40	
Iron	17400		23500	30	40	
Lithium	4.1		3.88	6	30	
Molybdenum	0.44	B	0.281	45	30	B M
Nickel	6.6		8.22	22	30	
Potassium	575		538.4	7	40	
Silicon	135		165.5	20	40	
Strontium	20.5		20.16	2	30	
Zirconium	17.3		24.06	33	30	M

Duplicate - Batch: 280-315923

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-80411-1	Analysis Batch:	280-316563	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-315923	Lab File ID:	25A031016.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.287 g
Analysis Date:	03/10/2016 1247	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Manganese	215		285.7	28	40	
Selenium	0.66	U	0.71	NC	30	U
Silver	0.12	U	0.13	NC	30	U
Sodium	201		275.5	31	30	M

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Duplicate - Batch: 280-315923

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-80411-1	Analysis Batch:	280-316563	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-315923	Lab File ID:	25A031016.asc
Dilution:	2.0	Leach Batch:	N/A	Initial Weight/Volume:	1.287 g
Analysis Date:	03/10/2016 1316	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Antimony	0.59	U	0.63	NC	40	U
Beryllium	0.13	B	0.164	20	30	B
Cobalt	5.8		8.19	34	30	M
Copper	10.9		14.78	30	30	
Lead	1.7		2.07	18	40	
Magnesium	3430		4608	29	30	
Tin	1.4	U	1.5	NC	30	U
Vanadium	57.2		81.57	35	30	M

Duplicate - Batch: 280-315923

Method: 6010B
Preparation: 3050B

Lab Sample ID:	280-80411-1	Analysis Batch:	280-316615	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-315923	Lab File ID:	25Z031116.asc
Dilution:	2.0	Leach Batch:	N/A	Initial Weight/Volume:	1.287 g
Analysis Date:	03/11/2016 1114	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Zinc	38.0	38.01	0.1	40	

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Method Blank - Batch: 280-315924

Method: 6020
Preparation: 3050B

Lab Sample ID:	MB 280-315924/1-A	Analysis Batch:	280-316306	Instrument ID:	MT_078
Client Matrix:	Solid	Prep Batch:	280-315924	Lab File ID:	109_BLK.d
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	03/09/2016 0146	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Uranium	0.0016	U	0.0016	0.10

Lab Control Sample - Batch: 280-315924

Method: 6020
Preparation: 3050B

Lab Sample ID:	LCS 280-315924/2-A	Analysis Batch:	280-316306	Instrument ID:	MT_078
Client Matrix:	Solid	Prep Batch:	280-315924	Lab File ID:	110LCS.d
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	03/09/2016 0149	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Uranium	20.0	17.46	87	85 - 123	

Matrix Spike - Batch: 280-315924

Method: 6020
Preparation: 3050B

Lab Sample ID:	280-80411-1	Analysis Batch:	280-316306	Instrument ID:	MT_078
Client Matrix:	Solid	Prep Batch:	280-315924	Lab File ID:	114SMPL.d
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.000 g
Analysis Date:	03/09/2016 0204	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Uranium	0.32	21.3	20.82	96	85 - 123	

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Duplicate - Batch: 280-315924

Method: 6020
Preparation: 3050B

Lab Sample ID:	280-80411-1	Analysis Batch:	280-316306	Instrument ID:	MT_078
Client Matrix:	Solid	Prep Batch:	280-315924	Lab File ID:	113SMPL.d
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.165 g
Analysis Date:	03/09/2016 0200	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/08/2016 0810				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Uranium	0.32	0.509	47	20	M

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Method Blank - Batch: 280-315991

Method: 7471A
Preparation: 7471A

Lab Sample ID:	MB 280-315991/1-A	Analysis Batch:	280-316366	Instrument ID:	MT_034
Client Matrix:	Solid	Prep Batch:	280-315991	Lab File ID:	160308be.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.6 g
Analysis Date:	03/09/2016 0139	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	03/08/2016 1155				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Mercury	0.0055	U	0.0055	0.017

Lab Control Sample - Batch: 280-315991

Method: 7471A
Preparation: 7471A

Lab Sample ID:	LCS 280-315991/2-A	Analysis Batch:	280-316366	Instrument ID:	MT_034
Client Matrix:	Solid	Prep Batch:	280-315991	Lab File ID:	160308be.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.6 g
Analysis Date:	03/09/2016 0141	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	03/08/2016 1155				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.417	0.418	100	87 - 111	

Matrix Spike - Batch: 280-315991

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-80411-1	Analysis Batch:	280-316366	Instrument ID:	MT_034
Client Matrix:	Solid	Prep Batch:	280-315991	Lab File ID:	160308be.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.52 g
Analysis Date:	03/09/2016 0148	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	03/08/2016 1155				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.030	0.513	0.583	108	87 - 111	

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Duplicate - Batch: 280-315991

Method: 7471A
Preparation: 7471A

Lab Sample ID:	280-80411-1	Analysis Batch:	280-316366	Instrument ID:	MT_034
Client Matrix:	Solid	Prep Batch:	280-315991	Lab File ID:	160308be.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	0.59 g
Analysis Date:	03/09/2016 0146	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	03/08/2016 1155				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Mercury	0.030	0.0242	22	20	M

Date: 21 March 2016
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 300 Area D4 Waste Sites – Soil Full Protocol – Waste Site 300-288:2 ESA 2
Subject: PCB- Data Package No. JP1035-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP1035 prepared by TestAmerica Inc. (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
J1V8H9	3/1/16	Soil	C	See note 1
J1V8J0	3/1/16	Soil	C	See note 1
J1V8J1	3/1/16	Soil	C	See note 1
J1V8J2	3/1/16	Soil	C	See note 1
J1V8J3	3/1/16	Soil	C	See note 1
J1V8J4	3/1/16	Soil	C	See note 1
J1V8J5	3/1/16	Soil	C	See note 1
J1V8J6	3/1/16	Soil	C	See note 1
J1V8J7	3/1/16	Soil	C	See note 1
J1V8J8	3/1/16	Soil	C	See note 1
J1V8J9	3/1/16	Soil	C	See note 1
J1V8K0	3/1/16	Soil	C	See note 1
J1V8K1	3/1/16	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 300 Area Remedial Action Sampling and Analysis Plan (DOE/RL-2001-48, Rev. 4). Appendices 1 through 6 provide the following information as indicated below:

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

DATA QUALITY OBJECTIVES

Holding Times

Holding times are not applicable 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 50% to 150%. If spike recoveries are outside control limits, detected sample results less than five times the spike concentration are qualified as estimates and flagged "J". Non-detected sample results with spike recoveries outside control limits are qualified as estimates and flagged "UJ". Sample results greater than five times the spike concentration require no qualification.

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 duplicate results were acceptable.

Field Duplicate Samples

One set of field duplicates (J1V8J1/J1V8K1) 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 300 Area RQLs to ensure that laboratory detection levels meet the required criteria. All results met the RQL.

- **Completeness**

Data Package No. JP1035 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

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

DOE/RL-2001-48, Rev. 4, *300 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, November 2014.

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: JP1035	**REVIEWER: ELR**	**Project: 300-288:2 ESA 2**	**PAGE_1_OF_1**
COMMENTS: No qualifiers assigned			

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

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8H9**

Lab Sample ID: 280-80411-1
Client Matrix: Solid
% Moisture: 6.3

Date Sampled: 03/01/2016 0940
Date Received: 03/04/2016 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-316264	Instrument ID:	SGC_P3
Prep Method:	3550C	Prep Batch:	280-316182	Initial Weight/Volume:	30.7 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	03/09/2016 1844			Injection Volume:	1 uL
Prep Date:	03/08/2016 2107			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.9	U	2.9	10
Aroclor 1221		8.4	U	8.4	17
Aroclor 1232		2.1	U	2.1	10
Aroclor 1242		4.9	U	4.9	10
Aroclor 1248		4.9	U	4.9	10
Aroclor 1254		2.7	U	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	97		59 - 130
Tetrachloro-m-xylene	94		53 - 128

r 3/20/16

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J0**

Lab Sample ID: 280-80411-2
Client Matrix: Solid
% Moisture: 5.1

Date Sampled: 03/01/2016 0920
Date Received: 03/04/2016 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-316264	Instrument ID:	SGC_P3
Prep Method:	3550C	Prep Batch:	280-316182	Initial Weight/Volume:	31.4 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	03/09/2016 1905			Injection Volume:	1 uL
Prep Date:	03/08/2016 2107			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	94		59 - 130
Tetrachloro-m-xylene	93		53 - 128

3/20/16

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J1**

Lab Sample ID: 280-80411-3
Client Matrix: Solid
% Moisture: 5.8

Date Sampled: 03/01/2016 0953
Date Received: 03/04/2016 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-316264	Instrument ID:	SGC_P3
Prep Method:	3550C	Prep Batch:	280-316182	Initial Weight/Volume:	31.6 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	03/09/2016 2010			Injection Volume:	1 uL
Prep Date:	03/08/2016 2107			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		13		2.6	10
Aroclor 1260		2.6	U	2.6	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	93		59 - 130
Tetrachloro-m-xylene	90		53 - 128

3/20/16

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: J1V8J2

Lab Sample ID: 280-80411-4
Client Matrix: Solid
% Moisture: 6.2

Date Sampled: 03/01/2016 0905
Date Received: 03/04/2016 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-316264	Instrument ID:	SGC_P3
Prep Method:	3550C	Prep Batch:	280-316182	Initial Weight/Volume:	30.3 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	03/09/2016 2032			Injection Volume:	1 uL
Prep Date:	03/08/2016 2107			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.9	U	2.9	11
Aroclor 1221		8.5	U	8.5	17
Aroclor 1232		2.1	U	2.1	11
Aroclor 1242		4.9	U	4.9	11
Aroclor 1248		4.9	U	4.9	11
Aroclor 1254		2.7	U	2.7	11
Aroclor 1260		2.7	U	2.7	11

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	94		59 - 130
Tetrachloro-m-xylene	90		53 - 128

3/20/16

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J3**

Lab Sample ID: 280-80411-5
Client Matrix: Solid
% Moisture: 5.5

Date Sampled: 03/01/2016 1029
Date Received: 03/04/2016 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-316264	Instrument ID:	SGC_P3
Prep Method:	3550C	Prep Batch:	280-316182	Initial Weight/Volume:	30.1 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	03/09/2016 2054			Injection Volume:	1 uL
Prep Date:	03/08/2016 2107			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.9	U	2.9	11
Aroclor 1221		8.5	U	8.5	17
Aroclor 1232		2.1	U	2.1	11
Aroclor 1242		4.9	U	4.9	11
Aroclor 1248		4.9	U	4.9	11
Aroclor 1254		2.7	U	2.7	11
Aroclor 1260		2.7	U	2.7	11

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	98		59 - 130
Tetrachloro-m-xylene	100		53 - 128

3/20/16

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J4**

Lab Sample ID: 280-80411-6
Client Matrix: Solid
% Moisture: 4.8

Date Sampled: 03/01/2016 1045
Date Received: 03/04/2016 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-316264	Instrument ID:	SGC_P3
Prep Method:	3550C	Prep Batch:	280-316182	Initial Weight/Volume:	32.8 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	03/09/2016 2115			Injection Volume:	1 uL
Prep Date:	03/08/2016 2107			Result Type:	PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Aroclor 1016		2.7	U	2.7	9.6
Aroclor 1221		7.7	U	7.7	16
Aroclor 1232		1.9	U	1.9	9.6
Aroclor 1242		4.5	U	4.5	9.6
Aroclor 1248		4.5	U	4.5	9.6
Aroclor 1254		7.2	J	2.5	9.6
Aroclor 1260		2.5	U	2.5	9.6

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	93		59 - 130
Tetrachloro-m-xylene	90		53 - 128

3/20/16

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J5**

Lab Sample ID: 280-80411-7
Client Matrix: Solid
% Moisture: 5.2

Date Sampled: 03/01/2016 0840
Date Received: 03/04/2016 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-316264	Instrument ID:	SGC_P3
Prep Method:	3550C	Prep Batch:	280-316182	Initial Weight/Volume:	32.2 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	03/09/2016 2137			Injection Volume:	1 uL
Prep Date:	03/08/2016 2107			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		6.0	J P	2.6	9.8
Aroclor 1260		2.6	U	2.6	9.8

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	81		59 - 130
Tetrachloro-m-xylene	89		53 - 128

3/20/16

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J6**

Lab Sample ID: 280-80411-8
Client Matrix: Solid
% Moisture: 6.2

Date Sampled: 03/01/2016 1058
Date Received: 03/04/2016 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-316264	Instrument ID:	SGC_P3
Prep Method:	3550C	Prep Batch:	280-316182	Initial Weight/Volume:	31.1 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	03/09/2016 2159			Injection Volume:	1 uL
Prep Date:	03/08/2016 2107			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	100		59 - 130
Tetrachloro-m-xylene	98		53 - 128

3/20/16

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: J1V8J7

Lab Sample ID: 280-80411-9
Client Matrix: Solid
% Moisture: 7.2

Date Sampled: 03/01/2016 1118
Date Received: 03/04/2016 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-316264	Instrument ID:	SGC_P3
Prep Method:	3550C	Prep Batch:	280-316182	Initial Weight/Volume:	31.6 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	03/09/2016 2220			Injection Volume:	1 uL
Prep Date:	03/08/2016 2107			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		3.9	J	2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	93		59 - 130
Tetrachloro-m-xylene	93		53 - 128

3/20/16

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J8**

Lab Sample ID: 280-80411-10
Client Matrix: Solid

% Moisture: 5.1

Date Sampled: 03/01/2016 1135
Date Received: 03/04/2016 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method: 8082
Prep Method: 3550C
Dilution: 1.0
Analysis Date: 03/09/2016 2242
Prep Date: 03/08/2016 2107

Analysis Batch: 280-316264
Prep Batch: 280-316182

Instrument ID: SGC_P3
Initial Weight/Volume: 32.0 g
Final Weight/Volume: 5 mL
Injection Volume: 1 uL
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	100		59 - 130
Tetrachloro-m-xylene	96		53 - 128

3/20/16

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: J1V8J9

Lab Sample ID: 280-80411-11
Client Matrix: Solid
% Moisture: 4.6

Date Sampled: 03/01/2016 1156
Date Received: 03/04/2016 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-316264	Instrument ID:	SGC_P3
Prep Method:	3550C	Prep Batch:	280-316182	Initial Weight/Volume:	30.8 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	03/09/2016 2303			Injection Volume:	1 uL
Prep Date:	03/08/2016 2107			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	99		59 - 130
Tetrachloro-m-xylene	99		53 - 128

3/20/16

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8K0**

Lab Sample ID: 280-80411-12
Client Matrix: Solid
% Moisture: 7.2

Date Sampled: 03/01/2016 0852
Date Received: 03/04/2016 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-316264	Instrument ID:	SGC_P3
Prep Method:	3550C	Prep Batch:	280-316182	Initial Weight/Volume:	30.2 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	03/09/2016 2325			Injection Volume:	1 uL
Prep Date:	03/08/2016 2107			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		2.8	U	2.8	11
Aroclor 1260		2.8	U	2.8	11

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	99		59 - 130
Tetrachloro-m-xylene	96		53 - 128

3/20/16

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8K1**

Lab Sample ID: 280-80411-13
Client Matrix: Solid
% Moisture: 5.3

Date Sampled: 03/01/2016 0953
Date Received: 03/04/2016 0930

8082 Polychlorinated Biphenyls (PCBs) by Gas Chromatography

Analysis Method:	8082	Analysis Batch:	280-316264	Instrument ID:	SGC_P3
Prep Method:	3550C	Prep Batch:	280-316182	Initial Weight/Volume:	30.9 g
Dilution:	1.0			Final Weight/Volume:	5 mL
Analysis Date:	03/09/2016 2347			Injection Volume:	1 uL
Prep Date:	03/08/2016 2107			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		12		2.7	10
Aroclor 1260		2.7	U	2.7	10

Surrogate	%Rec	Qualifier	Acceptance Limits
Decachlorobiphenyl	98		59 - 130
Tetrachloro-m-xylene	96		53 - 128

3/20/16

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Job Number: 280-80411-1

SDG #: JP1035
SAF#: RC-148

Date SDG Closed: March 4, 2016
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V8H9	280-80411-1	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J0	280-80411-2	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J1	280-80411-3	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J2	280-80411-4	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J3	280-80411-5	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J4	280-80411-6	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J5	280-80411-7	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J6	280-80411-8	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J7	280-80411-9	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J8	280-80411-10	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J9	280-80411-11	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8K0	280-80411-12	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8K1	280-80411-13	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C

The Uranium 6020 method substitution noted above, as agreed to by all parties, has no technical impact on the data.

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 3/4/2016 9:30 AM; the samples arrived intact and on ice. The temperatures of the 4 coolers at receipt time were 0.0° C, 0.4° C, 0.7° C and 1.2° C. It was not noted which samples were in the cooler received at a temperature of 0.0° C. The client was notified on 3/4/2016.

GC/MS SEMIVOLATILES - SW846 8270C
No anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs
The laboratory noted that the samples presented in this report contained small stones that were not used in extraction.

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

The RPD between the primary and confirmation columns exceeded 25% for Aroclor 1254 in sample J1V8J5. The result has been flagged with a "P".

No other anomalies were encountered.

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

TOTAL METALS - SW846 6010B/6020/7471A
Serial dilution of a digestate in batch 280-315923 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. Sample J1V8H9 required a 2X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Lead, Magnesium, Tin, Vanadium and Zinc to minimize the interference caused by the Titanium concentration greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Barium, Calcium, Chromium, Strontium and Magnesium are present in the method blank associated with batch 280-315923. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, 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 J1V8H9; therefore, control limits are not applicable.

The Matrix Spike performed on sample J1V8H9 exhibited percent recoveries outside the control limits for Tin 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.

The duplicate analysis of sample J1V8H9 exhibited RPD data outside the control limits for several elements, and the associated sample results have been flagged "M". There is no indication that the analytical systems were 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.

GENERAL CHEMISTRY - SW846 9045C - PH
SU = standard units

No anomalies were encountered.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-148-221

Collector: ETHERINGTON, TW	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 300 Area D4 Waste Sites	Sampling Location: 300-288:2 ESA2		SAF No.: RC-148
Ice Chest No.: TNU-052	Field Logbook No.: EL-1663-08	COA: 0328822000	Method of Shipment: Commercial Carrier
Shipped To: TestAmerica Denver	Offsite Property No.: A131449		Bill of Lading/Air Bill No.: SEE OSPC

Price Code: 8B

Data Turnaround: 7 Day

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cool as required for preservation

Preservation	Cool <=6C	Cool <=6C	Cool <=6C	None	Cool <=6C
Type of Container	G/P	aG	aG	G/P	aG
No. of Container(s)	1	1	1	1	1
Volume	250mL	250mL	125mL	250mL	250mL
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	pH (Soil) - 9045	Semi-VOA - 8270 (TCL); Semi-VOA – 8270 (Add-On Tributyl phosphate)

Sample No.	Matrix	Sample Date	Sample Time					
J1V8H9	SOIL	3-1-16	0940	✓	✓	✓	✓	✓
J1V8J0	SOIL	3-1-16	0920	✓	✓	✓	✓	✓
J1V8J1	SOIL	3-1-16	0953	✓	✓	✓	✓	✓
J1V8J2	SOIL	3-1-16	0905	✓	✓	✓	✓	✓
J1V8J3	SOIL	3-1-16	1029	✓	✓	✓	✓	✓

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
T.Etherington [signature]	3-1-16 1205	T.R. Edmundson T.R. Edmundson	3-1-16 1205
T.R. Edmundson T.R. Edmundson	3-1-16 1300	1060 Refer #3C	3-1-16 1300
1060 Refer #3C	3-3-16 0900	T.R. Edmundson T.R. Edmundson	3-3-16 0900
WCH T.R. Edmundson T.R. Edmundson	3-3-16 1500	Fed Ex	3-3-16 —
		[signature] TAD	3/4/16 0930

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

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

280-80411 Chain of Custody

REVIEWED BY [initials] DATE 3/3/16

JP1035

WCH-EE-011

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Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-148-221

Collector: ETHERINGTON, TW	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Day		
Project Designation: 300 Area D4 Waste Sites	Sampling Location: 300-288:2 ESA2		SAF No.: RC-148
Ice Chest No.: TNU-052	Field Logbook No.: EL-1663-08	COA: 0328822000	Method of Shipment: Commercial Carrier
Shipped To: TestAmerica Denver	Offsite Property No.: AB1449		Bill of Lading/Air Bill No.: SEE OSPC

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cool as required for preservation

Preservation	Cool <=6C	Cool <=6C	Cool <=6C	None	Cool <=6C						
Type of Container	G/P	aG	aG	G/P	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	125mL	250mL	250mL						
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	pH (Soil) - 9045	Semi-VOA - 8270 (TCL); Semi-VOA – 8270 (Add-On Tributyl phosphate)						

Sample No.	Matrix	Sample Date	Sample Time										
J1V8J4	SOIL	3-1-16	1045	✓	✓	✓	✓	✓					
J1V8J5	SOIL	3-1-16	0840	✓	✓	✓	✓	✓					
J1V8J6	SOIL	3-1-16	1058	✓	✓	✓	✓	✓					
J1V8J7	SOIL	3-1-16	1118	✓	✓	✓	✓	✓					
J1V8J8	SOIL	3-1-16	1135	✓	✓	✓	✓	✓					

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
T. Etherington	3-1-16 1205	T.R. Edmundson	3-1-16 1205
T.R. Edmundson	3-1-16 1300	1060 Refer #3C	3-1-16 1300
1060 Refer #3C	3-3-16 0900	T.R. Edmundson	3-3-16 0900
T.R. Edmundson (WCH)	3-3-16 1500	T.R. Edmundson (Fed Ex)	3-3-16 1500
		TAD	3/4/16 0930

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

SPECIAL INSTRUCTIONS

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

REVIEWED BY TAD DATE 3/3/16

JP1035

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-148-221

Collector: ETHERINGTON, TW	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Day		
Project Designation: 300 Area D4 Waste Sites	Sampling Location: 300-288:2 ESA2		SAF No.: RC-148
Ice Chest No.: TNV-052	Field Logbook No.: EL-1663-08	COA: 0328822000	Method of Shipment: Commercial Carrier
Shipped To: TestAmerica Denver	Offsite Property No.: A131449		Bill of Lading/Air Bill No.: SEE OSPC

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cool as required for preservation

Preservation	Cool <=6C	Cool <=6C	Cool <=6C	None	Cool <=6C						
Type of Container	G/P	aG	aG	G/P	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	125mL	250mL	250mL						
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	pH (Soil) - 9045	Semi-VOA - 8270 (TCL); Semi-VOA – 8270 (Add-On Tributyl phosphate)						

Sample No.	Matrix	Sample Date	Sample Time										
31V8J9	SOIL	3-1-16	1156	✓	✓	✓	✓	✓					
31V8K0	SOIL	3-1-16	0852	✓	✓	✓	✓	✓					
31V8K1	SOIL	3-1-16	0953	✓	✓	✓	✓	✓					

CHAIN OF POSSESSION

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
T. ETHERINGTON	3-1-16 1205	T.R. Edmundson	3-1-16 1205
T.R. Edmundson	3-1-16 1300	1060 Refer #3C	3-1-16 1300
1060 Refer #3C	3-3-16 0900	T.R. Edmundson	3-3-16 0900
T.R. Edmundson (WEH)	3-3-16 1500	Fed Ex	3-3-16 —
		TAD	3/4/16 0930

Sign/Print Names

SPECIAL INSTRUCTIONS

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

REVIEWED BY DAB DATE 3/3/16

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

JP1035

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

PCB DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 300-288:2 BSA 2			DATA PACKAGE: JP1035		
VALIDATOR: BLR		LAB: TAL		DATE: 3/19/16	
			SDG: JP1035		
ANALYSES PERFORMED					
SW-846 8081	SW-846 8081 (TCLP)	SW-846 8082	SW-846 8081 (TCLP)		
SAMPLES/MATRIX					
J1V8H9	J1V8J0	J1V8J1	J1V8J2	J1V8J3	
J1V8J4	J1V8J5	J1V8J6	J1V8J7	J1V8J8	
J1V8J9	J1V8K0	J1V8K1			
					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 PAT

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: 280-80411-1
Sdg Number: JP1035

Method Blank - Batch: 280-316182

Method: 8082
Preparation: 3550C

Lab Sample ID:	MB 280-316182/1-A	Analysis Batch:	280-316264	Instrument ID:	SGC_P3
Client Matrix:	Solid	Prep Batch:	280-316182	Lab File ID:	03091627.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.0 g
Analysis Date:	03/09/2016 1800	Units:	ug/Kg	Final Weight/Volume:	5 mL
Prep Date:	03/08/2016 2107			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Result	Qual	MDL	RL
Aroclor 1016	2.8	U	2.8	10
Aroclor 1221	8.0	U	8.0	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	Acceptance Limits
Decachlorobiphenyl	103	59 - 130
Tetrachloro-m-xylene	101	53 - 128

Lab Control Sample - Batch: 280-316182

Method: 8082
Preparation: 3550C

Lab Sample ID:	LCS 280-316182/2-A	Analysis Batch:	280-316264	Instrument ID:	SGC_P3
Client Matrix:	Solid	Prep Batch:	280-316182	Lab File ID:	03091628.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30.0 g
Analysis Date:	03/09/2016 1822	Units:	ug/Kg	Final Weight/Volume:	5 mL
Prep Date:	03/08/2016 2107			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aroclor 1016	33.3	31.1	93	54 - 132	
Aroclor 1260	33.3	34.5	103	62 - 129	

Surrogate	% Rec	Acceptance Limits
Decachlorobiphenyl	99	59 - 130
Tetrachloro-m-xylene	98	53 - 128

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-316182

Method: 8082
Preparation: 3550C

MS Lab Sample ID:	280-80411-2	Analysis Batch:	280-316264	Instrument ID:	SGC_P3
Client Matrix:	Solid	Prep Batch:	280-316182	Lab File ID:	03091631.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.0 g
Analysis Date:	03/09/2016 1927			Final Weight/Volume:	5 mL
Prep Date:	03/08/2016 2107			Injection Volume:	1 uL
Leach Date:	N/A			Column ID:	PRIMARY

MSD Lab Sample ID:	280-80411-2	Analysis Batch:	280-316264	Instrument ID:	SGC_P3
Client Matrix:	Solid	Prep Batch:	280-316182	Lab File ID:	03091632.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.8 g
Analysis Date:	03/09/2016 1949			Final Weight/Volume:	5 mL
Prep Date:	03/08/2016 2107			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	91	90	54 - 132	3	26		
Aroclor 1260	102	102	62 - 129	2	26		

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
Decachlorobiphenyl	99	96	59 - 130
Tetrachloro-m-xylene	93	93	53 - 128

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-316182

Method: 8082
Preparation: 3550C

MS Lab Sample ID:	280-80411-2	Units:	ug/Kg	MSD Lab Sample ID:	280-80411-2
Client Matrix:	Solid			Client Matrix:	Solid
Dilution:	1.0			Dilution:	1.0
Analysis Date:	03/09/2016 1927			Analysis Date:	03/09/2016 1949
Prep Date:	03/08/2016 2107			Prep Date:	03/08/2016 2107
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	34.0	33.1	30.9	30.0
Aroclor 1260	2.6	U	34.0	33.1	34.6	33.8

Date: 21 March 2016
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 300 Area D4 Waste Sites – Soil Full Protocol – Waste Site 300-288:2 ESA 2
Subject: Radiochemistry - Data Package No. JP1035-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP1035 prepared by TestAmerica Inc. (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
J1V8H9	3/1/16	Soil	C	See note 1
J1V8J0	3/1/16	Soil	C	See note 1
J1V8J1	3/1/16	Soil	C	See note 1
J1V8J2	3/1/16	Soil	C	See note 1
J1V8J3	3/1/16	Soil	C	See note 1
J1V8J4	3/1/16	Soil	C	See note 1
J1V8J5	3/1/16	Soil	C	See note 1
J1V8J6	3/1/16	Soil	C	See note 1
J1V8J7	3/1/16	Soil	C	See note 1
J1V8J8	3/1/16	Soil	C	See note 1
J1V8J9	3/1/16	Soil	C	See note 1
J1V8K0	3/1/16	Soil	C	See note 1
J1V8K1	3/1/16	Soil	C	See note 1

1 – Alpha spectroscopy and gamma spectroscopy.

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 300 Area Remedial Action Sampling and Analysis Plan (DOE/RL-2001-48, Rev. 4). Appendices 1 through 6 provide the following information as indicated below:

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

DATA QUALITY PARAMETERS

- **Holding Times**

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

All holding times were acceptable.

- **Preparation (Method) Blanks**

Laboratory Blanks

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

All laboratory blank results were acceptable.

Field (Equipment) Blank

No field blanks were submitted for analysis.

- **Accuracy**

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

Due to the lack of an LCS analysis, all uranium-235 (aspec) 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 (J1V8J1/J1V8K1) were submitted for analysis. Laboratory 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. JP1035 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to the lack of an LCS analysis, all uranium-235 (aspec) 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-2001-48, Rev. 4, *300 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, November 2014.

Appendix 1

Glossary of Data Reporting Qualifiers

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

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

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

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

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

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

Appendix 2

Summary of Data Qualification

RADIOCHEMISTRY DATA QUALIFICATION SUMMARY*

SDG: JP1035	**REVIEWER: ELR**	**Project: 300-288:2 ESA-2**	**PAGE_1_OF_1**
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
Uranium-235 (aspec)	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

Sample Results Summary

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Date: 10-Mar-16

Report No. : 68249

3/20/16

SDG No: JP1035

Batch	Client Id Work Order	Parameter	Result +- CSU (2 s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
6084017 UISO_IE_PLATE_AEA									
J1V8H9									
	M79TV1AA	U-234	1.68E-01 +- 1.0E-01		pCi/g	98%	4.74E-02	1.00E+00	
		U-235	1.40E-02 +- 2.8E-02	U J	pCi/g	98%	4.74E-02	1.00E+00	
		U-238	6.73E-02 +- 6.4E-02		pCi/g	98%	5.90E-02	1.00E+00	
J1V8J0									
	M79TW1AA	U-234	9.51E-02 +- 8.0E-02		pCi/g	84%	5.40E-02	1.00E+00	
		U-235	1.53E-02 +- 3.2E-02	U J	pCi/g	84%	5.40E-02	1.00E+00	
		U-238	7.92E-02 +- 7.3E-02		pCi/g	84%	5.40E-02	1.00E+00	
J1V8J0 DUP									
	M79TW1AD	U-234	6.52E-02 +- 5.9E-02		pCi/g	105%	4.22E-02	1.00E+00	37.3
		U-235	2.56E-02 +- 3.7E-02	U	pCi/g	105%	4.22E-02	1.00E+00	50.1
		U-238	7.78E-02 +- 6.5E-02		pCi/g	105%	4.22E-02	1.00E+00	1.8
J1V8J1									
	M79TX1AA	U-234	4.13E-01 +- 1.8E-01		pCi/g	85%	6.06E-02	1.00E+00	
		U-235	-6.63E-04 +- 3.3E-02	U J	pCi/g	85%	5.60E-02	1.00E+00	
		U-238	4.80E-01 +- 2.0E-01		pCi/g	85%	5.60E-02	1.00E+00	
J1V8J2									
	M79T01AA	U-234	2.56E-01 +- 1.4E-01		pCi/g	85%	6.24E-02	1.00E+00	
		U-235	0.00E+00 +- 3.2E-02	U J	pCi/g	85%	5.45E-02	1.00E+00	
		U-238	2.41E-01 +- 1.3E-01		pCi/g	85%	5.45E-02	1.00E+00	
J1V8J3									
	M79T11AA	U-234	2.32E-01 +- 1.3E-01		pCi/g	84%	5.68E-02	1.00E+00	
		U-235	1.55E-02 +- 3.1E-02	U J	pCi/g	84%	5.25E-02	1.00E+00	
		U-238	2.64E-01 +- 1.4E-01		pCi/g	84%	5.25E-02	1.00E+00	
J1V8J4									
	M79T21AA	U-234	6.72E-01 +- 2.4E-01		pCi/g	81%	5.93E-02	1.00E+00	
		U-235	1.41E-02 +- 3.1E-02	U J	pCi/g	81%	5.61E-02	1.00E+00	
		U-238	7.48E-01 +- 2.5E-01		pCi/g	81%	6.21E-02	1.00E+00	
J1V8J5									
	M79T31AA	U-234	1.59E-01 +- 1.0E-01		pCi/g	87%	5.32E-02	1.00E+00	
		U-235	0.00E+00 +- 2.9E-02	U J	pCi/g	87%	4.91E-02	1.00E+00	
		U-238	1.45E-01 +- 9.6E-02		pCi/g	87%	4.91E-02	1.00E+00	
J1V8J6									
	M79T51AA	U-234	2.83E-01 +- 1.5E-01		pCi/g	76%	6.80E-02	1.00E+00	
		U-235	-1.34E-03 +- 3.4E-02	U J	pCi/g	76%	6.14E-02	1.00E+00	
		U-238	2.83E-01 +- 1.5E-01		pCi/g	76%	6.50E-02	1.00E+00	
J1V8J7									
	M79T61AA	U-234	3.76E-01 +- 1.7E-01		pCi/g	81%	5.29E-02	1.00E+00	

TestAmerica Inc

rptTALRchSaSummary2 V5.4.1
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.

Sample Results Summary

Date: 10-Mar-16

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 68249 V 3/20/16 **SDG No:** JP1035

Batch	Client Id Work Order	Parameter	Result +- CSU (2 s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
6064017 UISO_IE_PLATE_AEA									
J1V8J7									
	M79T61AA	U-235	1.44E-02 +- 3.1E-02	U J	pCi/g	81%	5.73E-02	1.00E+00	
		U-238	2.03E-01 +- 1.2E-01		pCi/g	81%	5.29E-02	1.00E+00	
J1V8J8									
	M79T71AA	U-234	1.91E-01 +- 1.1E-01		pCi/g	92%	6.29E-02	1.00E+00	
		U-235	1.43E-02 +- 3.0E-02	U J	pCi/g	92%	5.05E-02	1.00E+00	
		U-238	2.23E-01 +- 1.2E-01		pCi/g	92%	5.47E-02	1.00E+00	
J1V8J9									
	M79T81AA	U-234	1.35E-01 +- 9.9E-02		pCi/g	83%	8.19E-02	1.00E+00	
		U-235	-1.92E-03 +- 3.2E-02	U J	pCi/g	83%	6.18E-02	1.00E+00	
		U-238	2.36E-01 +- 1.3E-01		pCi/g	83%	6.95E-02	1.00E+00	
J1V8K0									
	M79T91AA	U-234	3.06E-01 +- 1.5E-01		pCi/g	86%	6.41E-02	1.00E+00	
		U-235	-5.89E-04 +- 2.9E-02	U J	pCi/g	86%	4.98E-02	1.00E+00	
		U-238	1.46E-01 +- 9.7E-02		pCi/g	86%	5.39E-02	1.00E+00	
J1V8K1									
	M79VA1AA	U-234	3.20E-01 +- 1.5E-01		pCi/g	82%	5.42E-02	1.00E+00	
		U-235	0.00E+00 +- 3.2E-02	U J	pCi/g	82%	5.42E-02	1.00E+00	
		U-238	5.61E-01 +- 2.2E-01		pCi/g	82%	5.42E-02	1.00E+00	
6064016 GAMMA_GS									
J1V8H9									
	M79TV1AC	AMERICIUM 241	1.05E-02 +- 7.1E-02	U	pCi/g		1.26E-01		
		CE-144	2.33E-02 +- 5.1E-02	U	pCi/g		9.01E-02		
		CO-60	-5.97E-03 +- 1.2E-02	U	pCi/g		1.97E-02	5.00E-02	
		CS-134	2.48E-02 +- 1.2E-02	U	pCi/g		2.35E-02		
		CS-137	2.65E-03 +- 1.0E-02	U	pCi/g		1.81E-02	1.00E-01	
		EU-152	-4.14E-03 +- 2.6E-02	U	pCi/g		4.42E-02	1.00E-01	
		EU-154	1.76E-02 +- 3.5E-02	U	pCi/g		6.52E-02	1.00E-01	
		EU-155	2.54E-02 +- 3.0E-02	U	pCi/g		5.26E-02	1.00E-01	
		K-40	9.19E+00 +- 1.2E+00		pCi/g		1.70E-01		
		RA-226	2.85E-01 +- 5.5E-02		pCi/g		3.40E-02		
		RA-228	4.24E-01 +- 9.9E-02		pCi/g		6.87E-02		
		RU-106	-4.89E-02 +- 7.9E-02	U	pCi/g		1.32E-01		
		SB-125	-2.09E-03 +- 2.4E-02	U	pCi/g		4.17E-02		
		U-235	1.15E-02 +- 5.4E-02	U	pCi/g		9.37E-02	1.00E+00	
		U-238	5.23E-02 +- 5.7E-01	U	pCi/g		9.79E-01		
		ZN-65	-1.85E-02 +- 2.7E-02	U	pCi/g		3.65E-02		
J1V8H9 DUP									

TestAmerica Inc

rptTALRchSaSummary2 V5.4.1
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.

11

Sample Results Summary

Date: 10-Mar-16

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 68249

3/20/16

SDG No: JP1035

Batch	Client Id Work Order	Parameter	Result +- CSU (2 s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
6064016 GAMMA_GS									
J1V8H9 DUP									
	M79TV1AD	AMERICIUM 241	-1.92E-02 +- 6.0E-02	U	pCi/g		9.93E-02		-682.3
		CE-144	-5.57E-02 +- 8.1E-02	U	pCi/g		1.32E-01		-487.2
		CO-60	-1.24E-02 +- 1.3E-02	U	pCi/g		2.09E-02	5.00E-02	-70.0
		CS-134	8.23E-03 +- 1.4E-02	U	pCi/g		2.49E-02		100.5
		CS-137	-5.32E-03 +- 1.3E-02	U	pCi/g		2.13E-02	1.00E-01	-595.1
		EU-152	-5.76E-02 +- 6.2E-02	U	pCi/g		5.92E-02	1.00E-01	-173.2
		EU-154	-1.59E-02 +- 4.0E-02	U	pCi/g		6.91E-02	1.00E-01	3837.0
		EU-155	2.71E-02 +- 4.2E-02	U	pCi/g		7.14E-02	1.00E-01	6.5
		K-40	8.87E+00 +- 1.1E+00		pCi/g		1.71E-01		3.6
		RA-226	2.69E-01 +- 5.9E-02		pCi/g		4.24E-02		5.7
		RA-228	3.73E-01 +- 9.2E-02		pCi/g		8.28E-02		12.6
		RU-106	-3.10E-02 +- 1.1E-01	U	pCi/g		1.93E-01		-44.8
		SB-125	2.77E-02 +- 3.3E-02	U	pCi/g		5.85E-02		232.6
		U-235	1.40E-02 +- 8.0E-02	U	pCi/g		1.36E-01	1.00E+00	19.8
		U-238	5.12E-01 +- 5.2E-01	U	pCi/g		8.85E-01		162.9
		ZN-65	1.24E-02 +- 3.5E-02	U	pCi/g		5.29E-02		-1005.5
J1V8J0									
	M79TW1AC	AMERICIUM 241	-7.06E-02 +- 6.4E-02	U	pCi/g		1.02E-01		
		CE-144	-2.23E-02 +- 8.4E-02	U	pCi/g		1.41E-01		
		CO-60	2.84E-03 +- 1.4E-02	U	pCi/g		2.53E-02	5.00E-02	
		CS-134	1.48E-02 +- 1.6E-02	U	pCi/g		2.86E-02		
		CS-137	-3.65E-03 +- 1.3E-02	U	pCi/g		2.23E-02	1.00E-01	
		EU-152	-2.78E-02 +- 5.4E-02	U	pCi/g		6.56E-02	1.00E-01	
		EU-154	1.49E-02 +- 4.4E-02	U	pCi/g		7.93E-02	1.00E-01	
		EU-155	-8.99E-03 +- 4.4E-02	U	pCi/g		7.39E-02	1.00E-01	
		K-40	1.01E+01 +- 1.3E+00		pCi/g		2.32E-01		
		RA-226	2.90E-01 +- 6.0E-02		pCi/g		4.55E-02		
		RA-228	4.33E-01 +- 1.2E-01		pCi/g		8.18E-02		
		RU-106	-1.19E-01 +- 1.1E-01	U	pCi/g		1.78E-01		
		SB-125	1.82E-02 +- 3.5E-02	U	pCi/g		6.16E-02		
		U-235	3.70E-02 +- 8.3E-02	U	pCi/g		1.42E-01	1.00E+00	
		U-238	4.47E-01 +- 5.3E-01	U	pCi/g		9.17E-01		
		ZN-65	-5.86E-02 +- 3.6E-02	U	pCi/g		5.59E-02		
J1V8J1									
	M79TX1AC	AMERICIUM 241	-4.07E-03 +- 1.1E-02	U	pCi/g		1.91E-02		
		CE-144	7.01E-03 +- 3.6E-02	U	pCi/g		6.18E-02		

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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.

Sample Results Summary

Date: 10-Mar-16

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 68249 3/20/16 **SDG No:** JP1035

Batch	Client Id Work Order	Parameter	Result +- CSU (2 s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
6064016 GAMMA_GS									
J1V8J1									
	M79TX1AC	CO-60	-3.68E-03 +- 1.0E-02	U	pCi/g		1.71E-02	5.00E-02	
		CS-134	5.12E-03 +- 1.1E-02	U	pCi/g		1.99E-02		
		CS-137	-9.05E-03 +- 9.8E-03	U	pCi/g		1.61E-02	1.00E-01	
		EU-152	-8.27E-03 +- 2.1E-02	U	pCi/g		3.55E-02	1.00E-01	
		EU-154	1.36E-02 +- 3.2E-02	U	pCi/g		5.91E-02	1.00E-01	
		EU-155	1.67E-02 +- 1.8E-02	U	pCi/g		3.20E-02	1.00E-01	
		K-40	9.42E+00 +- 1.2E+00		pCi/g		1.82E-01		
		RA-226	2.88E-01 +- 5.6E-02		pCi/g		2.93E-02		
		RA-228	5.09E-01 +- 1.1E-01		pCi/g		6.42E-02		
		RU-106	2.61E-02 +- 7.5E-02	U	pCi/g		1.36E-01		
		SB-125	1.25E-02 +- 2.1E-02	U	pCi/g		3.76E-02		
		U-235	2.08E-02 +- 3.9E-02	U	pCi/g		6.66E-02	1.00E+00	
		U-238	4.35E-01 +- 1.9E-01		pCi/g		1.80E-01		
		ZN-65	1.14E-02 +- 2.7E-02	U	pCi/g		4.31E-02		
J1V8J2									
	M79T01AC	AMERICIUM 241	-6.27E-03 +- 1.4E-02	U	pCi/g		2.43E-02		
		CE-144	-4.13E-02 +- 4.8E-02	U	pCi/g		7.61E-02		
		CO-60	1.26E-03 +- 1.2E-02	U	pCi/g		2.14E-02	5.00E-02	
		CS-134	5.11E-02 +- 1.7E-02	U	pCi/g		2.55E-02		
		CS-137	2.28E-03 +- 1.1E-02	U	pCi/g		1.94E-02	1.00E-01	
		EU-152	-1.54E-02 +- 2.4E-02	U	pCi/g		3.94E-02	1.00E-01	
		EU-154	3.32E-02 +- 3.4E-02	U	pCi/g		6.52E-02	1.00E-01	
		EU-155	4.82E-02 +- 2.3E-02	U	pCi/g		4.01E-02	1.00E-01	
		K-40	9.79E+00 +- 1.2E+00		pCi/g		1.64E-01		
		RA-226	3.13E-01 +- 6.4E-02		pCi/g		3.21E-02		
		RA-228	5.05E-01 +- 1.1E-01		pCi/g		7.24E-02		
		RU-106	-3.29E-02 +- 8.3E-02	U	pCi/g		1.42E-01		
		SB-125	1.52E-02 +- 2.4E-02	U	pCi/g		4.24E-02		
		U-235	7.47E-03 +- 4.7E-02	U	pCi/g		8.11E-02	1.00E+00	
		U-238	2.56E-01 +- 1.7E-01		pCi/g		2.37E-01		
		ZN-65	-6.07E-03 +- 3.0E-02	U	pCi/g		4.33E-02		
J1V8J3									
	M79T11AC	AMERICIUM 241	-1.14E-02 +- 5.3E-02	U	pCi/g		9.08E-02		
		CE-144	-1.82E-02 +- 7.9E-02	U	pCi/g		1.34E-01		
		CO-60	3.26E-03 +- 1.6E-02	U	pCi/g		3.07E-02	5.00E-02	
		CS-134	3.33E-02 +- 2.2E-02	U	pCi/g		4.13E-02		

TestAmerica Inc

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Sample Results Summary

Date: 10-Mar-16

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 68249

3/20/16

SDG No: JP1035

Batch	Client Id Work Order	Parameter	Result +- CSU (2 s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
6064016 GAMMA_GS									
J1V8J3									
	M79T11AC	CS-137	1.48E-03 +- 1.7E-02	U	pCi/g		3.09E-02	1.00E-01	
		EU-152	3.98E-02 +- 4.8E-02	U	pCi/g		8.19E-02	1.00E-01	
		EU-154	-9.74E-03 +- 6.4E-02	U	pCi/g		1.13E-01	1.00E-01	
		EU-155	1.85E-02 +- 4.4E-02	U	pCi/g		7.21E-02	1.00E-01	
		K-40	8.91E+00 +- 1.3E+00		pCi/g		3.23E-01		
		RA-226	3.44E-01 +- 8.1E-02		pCi/g		5.88E-02		
		RA-228	4.26E-01 +- 1.5E-01		pCi/g		1.14E-01		
		RU-106	-1.22E-02 +- 1.6E-01	U	pCi/g		2.78E-01		
		SB-125	3.83E-03 +- 4.1E-02	U	pCi/g		7.01E-02		
		U-235	2.87E-03 +- 9.2E-02	U	pCi/g		1.49E-01	1.00E+00	
		U-238	5.76E-02 +- 5.2E-01	U	pCi/g		8.65E-01		
		ZN-65	-7.00E-02 +- 5.1E-02	U	pCi/g		7.87E-02		
J1V8J4									
	M79T21AC	AMERICIUM 241	-9.23E-03 +- 1.4E-02	U	pCi/g		2.24E-02		
		CE-144	-1.23E-02 +- 4.1E-02	U	pCi/g		6.83E-02		
		CO-60	7.02E-04 +- 1.2E-02	U	pCi/g		2.11E-02	5.00E-02	
		CS-134	1.65E-02 +- 1.4E-02	U	pCi/g		2.53E-02		
		CS-137	6.11E-03 +- 1.1E-02	U	pCi/g		2.03E-02	1.00E-01	
		EU-152	-1.98E-02 +- 2.5E-02	U	pCi/g		4.04E-02	1.00E-01	
		EU-154	-9.72E-03 +- 4.2E-02	U	pCi/g		7.13E-02	1.00E-01	
		EU-155	1.83E-02 +- 2.0E-02	U	pCi/g		3.54E-02	1.00E-01	
		K-40	1.04E+01 +- 1.3E+00		pCi/g		2.24E-01		
		RA-226	2.73E-01 +- 5.4E-02	U	pCi/g		7.64E-02		
		RA-228	5.06E-01 +- 1.1E-01		pCi/g		7.30E-02		
		RU-106	-3.88E-02 +- 8.5E-02	U	pCi/g		1.45E-01		
		SB-125	9.05E-03 +- 2.2E-02	U	pCi/g		4.00E-02		
		U-235	-2.48E-02 +- 4.5E-02	U	pCi/g		7.34E-02	1.00E+00	
		U-238	4.53E-01 +- 2.1E-01		pCi/g		2.38E-01		
		ZN-65	-6.32E-02 +- 3.3E-02	U	pCi/g		4.76E-02		
J1V8J5									
	M79T31AC	AMERICIUM 241	-6.50E-02 +- 6.8E-02	U	pCi/g		1.15E-01		
		CE-144	-1.89E-02 +- 4.8E-02	U	pCi/g		8.32E-02		
		CO-60	-9.27E-03 +- 1.0E-02	U	pCi/g		1.64E-02	5.00E-02	
		CS-134	6.90E-03 +- 1.2E-02	U	pCi/g		2.10E-02		
		CS-137	4.60E-04 +- 9.4E-03	U	pCi/g		1.65E-02	1.00E-01	
		EU-152	-4.92E-03 +- 2.4E-02	U	pCi/g		4.08E-02	1.00E-01	

TestAmerica Inc

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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.

Sample Results Summary

Date: 10-Mar-16

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 68249 3/20/16 **SDG No:** JP1035

Batch	Client Id Work Order	Parameter	Result +- CSU (2 s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
6064016 GAMMA_GS									
J1V8J5									
	M79T31AC	EU-154	-1.10E-02 +- 3.4E-02	U	pCi/g		5.87E-02	1.00E-01	
		EU-155	2.05E-02 +- 2.9E-02	U	pCi/g		5.09E-02	1.00E-01	
		K-40	9.55E+00 +- 1.2E+00		pCi/g		1.53E-01		
		RA-226	2.88E-01 +- 5.0E-02		pCi/g		3.20E-02		
		RA-228	4.57E-01 +- 1.1E-01		pCi/g		6.09E-02		
		RU-106	-4.98E-02 +- 7.6E-02	U	pCi/g		1.26E-01		
		SB-125	3.52E-02 +- 2.3E-02	U	pCi/g		4.32E-02		
		U-235	3.34E-02 +- 5.1E-02	U	pCi/g		9.04E-02	1.00E+00	
		U-238	8.50E-01 +- 7.4E-01	U	pCi/g		9.74E-01		
		ZN-65	-1.05E-02 +- 3.0E-02	U	pCi/g		4.26E-02		
J1V8J6									
	M79T51AC	AMERICIUM 241	-3.30E-02 +- 7.1E-02	U	pCi/g		1.22E-01		
		CE-144	3.32E-02 +- 5.1E-02	U	pCi/g		9.05E-02		
		CO-60	-1.13E-03 +- 1.1E-02	U	pCi/g		1.91E-02	5.00E-02	
		CS-134	1.86E-02 +- 1.1E-02	U	pCi/g		2.18E-02		
		CS-137	-5.06E-03 +- 9.9E-03	U	pCi/g		1.66E-02	1.00E-01	
		EU-152	-5.56E-03 +- 2.4E-02	U	pCi/g		3.96E-02	1.00E-01	
		EU-154	3.22E-02 +- 3.3E-02	U	pCi/g		6.37E-02	1.00E-01	
		EU-155	-5.37E-03 +- 2.9E-02	U	pCi/g		4.79E-02	1.00E-01	
		K-40	9.14E+00 +- 1.2E+00		pCi/g		1.52E-01		
		RA-226	2.67E-01 +- 4.8E-02		pCi/g		3.28E-02		
		RA-228	4.91E-01 +- 9.8E-02		pCi/g		6.62E-02		
		RU-106	-2.43E-02 +- 8.0E-02	U	pCi/g		1.37E-01		
		SB-125	-6.57E-03 +- 2.3E-02	U	pCi/g		3.93E-02		
		U-235	3.92E-02 +- 5.1E-02	U	pCi/g		9.13E-02	1.00E+00	
		U-238	-3.77E-02 +- 5.5E-01	U	pCi/g		9.44E-01		
		ZN-65	6.21E-03 +- 2.7E-02	U	pCi/g		4.10E-02		
J1V8J7									
	M79T61AC	AMERICIUM 241	-7.97E-04 +- 1.4E-02	U	pCi/g		2.33E-02		
		CE-144	-3.23E-02 +- 4.3E-02	U	pCi/g		7.01E-02		
		CO-60	3.77E-03 +- 1.3E-02	U	pCi/g		2.31E-02	5.00E-02	
		CS-134	2.29E-02 +- 1.3E-02	U	pCi/g		2.43E-02		
		CS-137	6.48E-03 +- 1.1E-02	U	pCi/g		2.09E-02	1.00E-01	
		EU-152	-6.01E-03 +- 2.4E-02	U	pCi/g		4.13E-02	1.00E-01	
		EU-154	-1.08E-02 +- 3.9E-02	U	pCi/g		6.79E-02	1.00E-01	
		EU-155	3.20E-02 +- 2.1E-02	U	pCi/g		3.79E-02	1.00E-01	

TestAmerica Inc

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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.

Sample Results Summary

Date: 10-Mar-16

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 68249 3/20/16 **SDG No:** JP1035

Batch	Client Id Work Order	Parameter	Result +- CSU (2 s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
6064016 GAMMA_GS									
J1V8J7									
	M79T61AC	K-40	1.14E+01 +- 1.4E+00		pCi/g		2.09E-01		
		RA-226	3.10E-01 +- 5.8E-02		pCi/g		3.09E-02		
		RA-228	4.81E-01 +- 1.3E-01		pCi/g		8.25E-02		
		RU-106	2.42E-02 +- 8.3E-02	U	pCi/g		1.52E-01		
		SB-125	-1.43E-02 +- 2.3E-02	U	pCi/g		3.81E-02		
		U-235	2.30E-02 +- 4.5E-02	U	pCi/g		7.72E-02	1.00E+00	
		U-238	4.56E-01 +- 2.1E-01		pCi/g		2.23E-01		
		ZN-65	8.75E-03 +- 3.1E-02	U	pCi/g		4.81E-02		
J1V8J8									
	M79T71AC	AMERICIUM 241	2.90E-03 +- 1.5E-02	U	pCi/g		2.51E-02		
		CE-144	2.90E-03 +- 4.8E-02	U	pCi/g		7.68E-02		
		CO-60	-1.63E-03 +- 1.2E-02	U	pCi/g		2.05E-02	5.00E-02	
		CS-134	1.58E-02 +- 1.4E-02	U	pCi/g		2.51E-02		
		CS-137	6.55E-03 +- 1.2E-02	U	pCi/g		2.21E-02	1.00E-01	
		EU-152	1.80E-02 +- 2.5E-02	U	pCi/g		4.41E-02	1.00E-01	
		EU-154	-3.95E-03 +- 3.4E-02	U	pCi/g		6.01E-02	1.00E-01	
		EU-155	2.72E-02 +- 2.3E-02	U	pCi/g		3.93E-02	1.00E-01	
		K-40	8.80E+00 +- 1.1E+00		pCi/g		1.62E-01		
		RA-226	3.43E-01 +- 6.8E-02		pCi/g		3.30E-02		
		RA-228	4.64E-01 +- 1.1E-01		pCi/g		7.31E-02		
		RU-106	4.12E-02 +- 8.3E-02	U	pCi/g		1.52E-01		
		SB-125	1.46E-02 +- 2.5E-02	U	pCi/g		4.48E-02		
		U-235	4.10E-02 +- 4.8E-02	U	pCi/g		8.32E-02	1.00E+00	
		U-238	3.29E-01 +- 2.4E-01		pCi/g		2.52E-01		
		ZN-65	8.35E-03 +- 3.0E-02	U	pCi/g		4.52E-02		
J1V8J9									
	M79T81AC	AMERICIUM 241	-2.95E-02 +- 5.3E-02	U	pCi/g		8.93E-02		
		CE-144	9.36E-03 +- 8.2E-02	U	pCi/g		1.41E-01		
		CO-60	-1.01E-02 +- 1.9E-02	U	pCi/g		3.22E-02	5.00E-02	
		CS-134	1.80E-02 +- 2.0E-02	U	pCi/g		3.66E-02		
		CS-137	2.41E-03 +- 1.7E-02	U	pCi/g		3.07E-02	1.00E-01	
		EU-152	-8.19E-03 +- 4.5E-02	U	pCi/g		7.70E-02	1.00E-01	
		EU-154	-3.19E-02 +- 6.1E-02	U	pCi/g		1.04E-01	1.00E-01	
		EU-155	2.64E-02 +- 4.3E-02	U	pCi/g		7.10E-02	1.00E-01	
		K-40	9.01E+00 +- 1.3E+00		pCi/g		2.53E-01		
		RA-226	2.21E-01 +- 7.5E-02	U	pCi/g		1.07E-01		

TestAmerica Inc

rptTALRchSaSummary2 V5.4.1 A2002

RPD - Relative Percent Difference.

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Sample Results Summary

Date: 10-Mar-16

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 68249

3/20/16

SDG No: JP1035

Batch	Client Id Work Order	Parameter	Result +- CSU (2 s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
6064016 GAMMA_GS									
J1V8J9									
	M79T81AC	RA-228	4.80E-01 +- 1.4E-01		pCi/g		1.16E-01		
		RU-106	8.66E-03 +- 1.4E-01	U	pCi/g		2.45E-01		
		SB-125	-1.52E-02 +- 4.0E-02	U	pCi/g		6.61E-02		
		U-235	-1.53E-02 +- 9.1E-02	U	pCi/g		1.46E-01	1.00E+00	
		U-238	1.71E-01 +- 5.1E-01	U	pCi/g		8.44E-01		
		ZN-65	-1.04E-01 +- 4.9E-02	U	pCi/g		6.80E-02		
J1V8K0									
	M79T91AC	AMERICIUM 241	3.01E-03 +- 1.6E-02	U	pCi/g		2.54E-02		
		CE-144	2.09E-03 +- 4.4E-02	U	pCi/g		7.32E-02		
		CO-60	-3.48E-03 +- 1.2E-02	U	pCi/g		2.14E-02	5.00E-02	
		CS-134	3.10E-02 +- 1.4E-02	U	pCi/g		2.66E-02		
		CS-137	4.72E-03 +- 1.1E-02	U	pCi/g		1.99E-02	1.00E-01	
		EU-152	-1.20E-02 +- 2.5E-02	U	pCi/g		4.16E-02	1.00E-01	
		EU-154	-3.96E-03 +- 4.2E-02	U	pCi/g		7.34E-02	1.00E-01	
		EU-155	3.08E-02 +- 2.2E-02	U	pCi/g		3.88E-02	1.00E-01	
		K-40	1.19E+01 +- 1.4E+00		pCi/g		2.09E-01		
		RA-226	3.47E-01 +- 6.2E-02		pCi/g		3.27E-02		
		RA-228	6.30E-01 +- 1.1E-01		pCi/g		7.90E-02		
		RU-106	2.15E-02 +- 8.7E-02	U	pCi/g		1.55E-01		
		SB-125	7.62E-03 +- 2.4E-02	U	pCi/g		4.32E-02		
		U-235	4.37E-02 +- 4.6E-02	U	pCi/g		7.74E-02	1.00E+00	
		U-238	5.34E-01 +- 2.5E-01		pCi/g		2.29E-01		
		ZN-65	-8.16E-02 +- 3.5E-02	U	pCi/g		5.06E-02		
J1V8K1									
	M79VA1AC	AMERICIUM 241	-3.54E-02 +- 7.4E-02	U	pCi/g		1.23E-01		
		CE-144	-1.39E-02 +- 5.3E-02	U	pCi/g		9.13E-02		
		CO-60	5.85E-03 +- 1.1E-02	U	pCi/g		2.07E-02	5.00E-02	
		CS-134	1.73E-02 +- 1.1E-02	U	pCi/g		2.15E-02		
		CS-137	-1.38E-02 +- 1.1E-02	U	pCi/g		1.68E-02	1.00E-01	
		EU-152	-3.48E-03 +- 2.6E-02	U	pCi/g		4.44E-02	1.00E-01	
		EU-154	9.37E-03 +- 3.3E-02	U	pCi/g		6.14E-02	1.00E-01	
		EU-155	3.91E-02 +- 3.1E-02	U	pCi/g		5.42E-02	1.00E-01	
		K-40	9.71E+00 +- 1.2E+00		pCi/g		1.76E-01		
		RA-226	2.84E-01 +- 5.7E-02		pCi/g		3.18E-02		
		RA-228	4.65E-01 +- 1.1E-01		pCi/g		6.74E-02		
		RU-106	-1.08E-01 +- 8.4E-02	U	pCi/g		1.32E-01		

TestAmerica Inc

rptTALRchSaSummary2 V5.4.1
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.

Sample Results Summary

Date: 10-Mar-16

TestAmerica Inc TARL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 68249

3/20/16

SDG No: JP1035

Batch	Client Id Work Order	Parameter	Result +- CSU (2 s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
6064016 GAMMA_GS									
J1V8K1									
	M79VA1AC	SB-125	7.51E-03 +- 2.4E-02	U	pCi/g		4.26E-02		
		U-235	5.27E-02 +- 5.5E-02	U	pCi/g		9.72E-02	1.00E+00	
		U-238	5.76E-01 +- 5.6E-01	U	pCi/g		1.00E+00		
		ZN-65	1.58E-02 +- 3.0E-02	U	pCi/g		4.72E-02		

No. of Results: 266

TestAmerica Inc

rptTALRchSaSummary2 V5.4.1
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

March 10, 2016

Attention: Joan Kessner

SAF Number	:	RC-148
Date SDG Closed	:	March 3, 2016
Number of Samples	:	Thirteen (13)
Sample Type	:	Soil
SDG Number	:	JP1035
Data Deliverable	:	7– Day / Summary

CASE NARRATIVE

I. Introduction

On March 3, 2016, thirteen soil samples were received at TestAmerica for radiochemical 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
J1V8H9	M79TV	SOIL	3/03/16
J1V8J0	M79TW	SOIL	3/03/16
J1V8J1	M79TX	SOIL	3/03/16
J1V8J2	M79T0	SOIL	3/03/16
J1V8J3	M79T1	SOIL	3/03/16
J1V8J4	M79T2	SOIL	3/03/16
J1V8J5	M79T3	SOIL	3/03/16
J1V8J6	M79T5	SOIL	3/03/16
J1V8J7	M79T6	SOIL	3/03/16
J1V8J8	M79T7	SOIL	3/03/16
J1V8J9	M79T8	SOIL	3/03/16
J1V8K0	M79T9	SOIL	3/03/16
J1V8K1	M79VA	SOIL	3/03/16

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
Uranium 234, 235 and 238 by method RL-ALP-015
Gamma Spectroscopy
Gamma Spec by method RL-GAM-001

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
Uranium 234, 235 and 238 by method RL-ALP-015:
The LCS, batch blank, samples and sample duplicate (J1V8J0) results are within contractual requirements.

Gamma Spectroscopy
Gamma Spec by method RL-GAM-001:
The LCS, batch blank, samples and sample duplicate (J1V8H9) 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-148-221

Collector: ETHERINGTON, TW	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Day		
Project Designation: 300 Area D4 Waste Sites	Sampling Location: 300-288:2 ESA2		SAF No.: RC-148
Ice Chest No.: ERC-96-511	Field Logbook No.: EL-1663-08	COA: 0328822000	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

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A

Special Handling and/or Storage
Cool as required for preservation

Preservation	None	None										
Type of Container	G/P	G/P										
No. of Container(s)	1	1										
Volume	1000mL	60mL										
Sample Analysis	See item (2) in Special Instructions	Isotopic Uranium										

Sample No.	Matrix	Sample Date	Sample Time										
J1V8H9 M79TV	SOIL	3-1-16	0940	✓	✓								
J1V8J0 M79TW	SOIL	3-1-16	0920	✓	✓								
J1V8J1 M79TX	SOIL	3-1-16	0953	✓	✓								
J1V8J2 M79TO	SOIL	3-1-16	0905	✓	✓								
J1V8J3 M79TJ	SOIL	3-1-16	1029	✓	✓								

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
T. ETHERINGTON	3-1-16 1205	T.R. Edmundson	3-1-16 1205
T.R. Edmundson	3-1-16 1300	1060 Refer #3C	3-1-16 1300
1060 Refer #3C	3-3-16 0900	T.R. Edmundson	3-3-16 0900
T.R. Edmundson (WCH)	3-3-16 1455	J. Bock, TARL	3-3-16 1455

FINAL SAMPLE DISPOSITION: Disposal Method | Disposed By | Date/Time

WCH-EE-011

SPECIAL INSTRUCTIONS

(2) Gamma Spec (Client List) {Americium-241, Antimony-125, Cerium-144, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238, Zinc-65}

J6C030412
Due 3-10-16

J6C030412

JP1035

REVIEWED BY DF
DATE 3/3/16

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-148-221

Collector: ETHERINGTON, TW	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Day		
Project Designation: 300 Area D4 Waste Sites	Sampling Location: 300-288:2 ESA2		SAF No.: RC-148
Ice Chest No.: ERC-96-511	Field Logbook No.: EL-1663-08	COA: 0328822000	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			

Preservation	None	None									
Type of Container	G/P	G/P									
No. of Container(s)	1	1									
Volume	1000mL	60mL									
Sample Analysis	See item (2) in Special Instructions	Isotopic Uranium									

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cool as required for preservation

Sample No.	Matrix	Sample Date	Sample Time										
J1V8J4 m79T2	SOIL	3-1-16	1045	✓	✓								
J1V8J5 m79T3	SOIL	3-1-16	0840	✓	✓								
J1V8J6 m79T5	SOIL	3-1-16	1058	✓	✓								
J1V8J7 m79T6	SOIL	3-1-16	1118	✓	✓								
J1V8J8 m79T7	SOIL	3-1-16	1135	✓	✓								

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
T. ETHERINGTON	3-1-16 1205	J.R. Edmundson	3-1-16 1205
J.R. Edmundson	3-1-16 1300	1060 Refer #3C	3-1-16 1300
1060 Refer #3C	3-3-16 0900	J.R. Edmundson	3-3-16 0900
J.R. Edmundson WCH	3-3-16 1455	J. Bock, TARL	3-3-16/1455

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

(2) Gamma Spec (Client List) {Americium-241, Antimony-125, Cerium-144, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238, Zinc-65}

JK6C030412

Due 3-10-16

REVIEWED BY DAS DATE 3/3/16

JP1035

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-148-221	Page 3 of 3

Collector: ETHERINGTON, TW	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7Day		
Project Designation: 300 Area D4 Waste Sites	Sampling Location: 300-288:2 ESA2		SAF No.: RC-148
Ice Chest No.: ERC-96-511	Field Logbook No.: EL-1663-08	COA: 0328822000	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

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A

Special Handling and/or Storage
Cool as required for preservation

Preservation	None	None										
Type of Container	G/P	G/P										
No. of Container(s)	1	1										
Volume	1000mL	60mL										
Sample Analysis	See item (2) in Special Instructions	Isotopic Uranium										

Sample No.	Matrix	Sample Date	Sample Time										
J1V8J9 mn9T8	SOIL	3-1-16	1156	✓	✓								
J1V8K0 mn9T9	SOIL	3-1-16	0852	✓	✓								
J1V8K1 mn9VA	SOIL	3-1-16	0953	✓	✓								

CHAIN OF POSSESSION	Sign/Print Names
Relinquished By/Removed From: T. Etherington Date/Time: 3-1-16 1205	Received By/Stored In: T.R. Edmundson, J.R. Edmundson Date/Time: 3-1-16 1205
Relinquished By/Removed From: T.R. Edmundson, J.R. Edmundson Date/Time: 3-1-16 1300	Received By/Stored In: 1060 Refer #3C Date/Time: 3-1-16 1300
Relinquished By/Removed From: 1060 Refer #3C Date/Time: 3-3-16 0900	Received By/Stored In: T.R. Edmundson, J.R. Edmundson Date/Time: 3-3-16 0900
Relinquished By/Removed From: T.R. Edmundson, J.R. Edmundson Date/Time: 3-3-16 1455	Received By/Stored In: J. Bock, TARL Date/Time: 3-3-16 1455
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time:
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time:
Relinquished By/Removed From: Date/Time:	Received By/Stored In: Date/Time:
FINAL SAMPLE DISPOSITION: Disposal Method	Disposed By: Date/Time:

SPECIAL INSTRUCTIONS
(2) Gamma Spec (Client List) {Americium-241, Antimony-125, Cerium-144, Cesium-134, Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155, Radium-226, Radium-228, Ruthenium-106, Uranium-235, Uranium-238, Zinc-65}

JLC030412
Due 3-10-16

JP1035

REVIEWED BY DAS
DATE 3/3/16

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

APPENDIX A

RADIOCHEMICAL DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT:	300-298:2 FSA2		DATA PACKAGE:	JP1035	
VALIDATOR:	ECR	LAB:	TAL	DATE:	3/19/10
			SDG:	JP1035	

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

SAMPLES/MATRIX				
J1V8H9	J1V8J0	J1V8J1	J1V8J2	J1V8J3
J1V8J4	J1V8J5	J1V8J6	J1V8J7	J1V8J8
J1V8J9	J1V8K0	J1V8K1		
				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 U-235 LCS - Jall

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

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

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

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

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

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

Comments: _____

_____

_____

_____

_____

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

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

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

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

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

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

Comments: _____

_____

_____

_____

_____

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

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

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

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

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

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

Comments: _____

_____

_____

_____

_____

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

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

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

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

Comments: _____

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

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

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

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

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

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

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

Comments: No PS or PAS

12. Holding Times (All levels)

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

Comments: _____

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

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

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

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

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

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

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

Comments: _____

_____

_____

_____

_____

Appendix 6

Additional Documentation Requested by Client

QC Results Summary

Date: 10-Mar-16

TestAmerica Inc TARL

Ordered by Method, Batch No, QC Type,.

Report No. : 68249

SDG No.: JP1035

Batch Work Order	Parameter	Result +- CSU (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
UISO_IE_PLATE_AEA								
6064017 BLANK QC,								
M79XJ1AA	U-234	-1.90E-03 +- 3.2E-02	U	pCi/g	78%			6.15E-02
	U-235	0.00E+00 +- 3.2E-02	U	pCi/g	78%			5.37E-02
	U-238	-6.35E-04 +- 3.2E-02	U	pCi/g	78%			5.37E-02
6064017 LCS,								
M79XJ1AC	U-234	2.89E+00 +- 6.8E-01		pCi/g	86%	84%	-0.2	5.88E-02
	U-238	3.62E+00 +- 8.1E-01		pCi/g	86%	100%	0.0	5.44E-02
GAMMA_GS								
6064016 BLANK QC,								
M79XH1AA	AMERICIUM 241	2.84E-03 +- 8.0E-03	U	pCi/g				1.42E-02
	CE-144	8.46E-03 +- 2.2E-02	U	pCi/g				3.93E-02
	CO-60	-2.08E-03 +- 8.6E-03	U	pCi/g				1.55E-02
	CS-134	3.98E-03 +- 8.0E-03	U	pCi/g				1.54E-02
	CS-137	-3.51E-03 +- 7.6E-03	U	pCi/g				1.29E-02
	EU-152	1.32E-03 +- 1.7E-02	U	pCi/g				2.92E-02
	EU-154	-1.87E-02 +- 2.5E-02	U	pCi/g				4.06E-02
	EU-155	2.81E-03 +- 1.1E-02	U	pCi/g				1.96E-02
	K-40	1.37E-01 +- 1.5E-01	U	pCi/g				2.90E-01
	RA-226	8.52E-02 +- 2.4E-02	U	pCi/g				4.45E-02
	RA-228	4.15E-02 +- 3.1E-02	U	pCi/g				6.51E-02
	RU-106	-4.13E-02 +- 6.3E-02	U	pCi/g				1.04E-01
	SB-125	-7.68E-03 +- 1.6E-02	U	pCi/g				2.75E-02
	U-235	-2.39E-02 +- 2.9E-02	U	pCi/g				4.28E-02
	U-238	6.30E-02 +- 1.1E-01	U	pCi/g				1.40E-01
	ZN-65	-6.42E-03 +- 1.9E-02	U	pCi/g				3.44E-02
6064016 LCS,								
M79XH1AC	CS-137	1.01E+00 +- 1.4E-01		pCi/g		105%	0.0	2.15E-02
	RA-226	9.42E-01 +- 1.4E-01		pCi/g		83%	-0.2	3.84E-02
	RA-228	5.00E-01 +- 1.2E-01		pCi/g		96%	0.0	7.52E-02
	U-238	9.78E-01 +- 1.3E-01		pCi/g		81%	-0.2	3.69E-02

No. of Results: 25

TestAmerica Inc
rptSTLRchQcSummary V5.4.1 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: 21 March 2016
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 300 Area D4 Waste Sites – Soil Full Protocol – Waste Site 300-288:2 ESA 2
Subject: Semivolatile Organic - Data Package No. JP1035-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP1035 prepared by TestAmerica Inc. (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
J1V8H9	3/1/16	Soil	C	See note 1
J1V8J0	3/1/16	Soil	C	See note 1
J1V8J1	3/1/16	Soil	C	See note 1
J1V8J2	3/1/16	Soil	C	See note 1
J1V8J3	3/1/16	Soil	C	See note 1
J1V8J4	3/1/16	Soil	C	See note 1
J1V8J5	3/1/16	Soil	C	See note 1
J1V8J6	3/1/16	Soil	C	See note 1
J1V8J7	3/1/16	Soil	C	See note 1
J1V8J8	3/1/16	Soil	C	See note 1
J1V8J9	3/1/16	Soil	C	See note 1
J1V8K0	3/1/16	Soil	C	See note 1
J1V8K1	3/1/16	Soil	C	See note 1

1 – Semivolatiles by 8270C

Data validation was conducted in accordance with the Washington Closure Hanford (WCH) validation statement of work and the 300 Area Remedial Action Sampling and Analysis Plan (DOE/RL-2001-48, Rev. 4). 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 & Sample Preservation

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

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

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.

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 (J1V8J1/J1V8K1) were submitted for analysis. Laboratory blanks 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 undetected analytes met the RQL.

- **Completeness**

Data package No. JP1035 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

None found.

REFERENCES

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

DOE/RL-2001-48, Rev. 4, *300 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, November 2014.

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: JP1035	**REVIEWER: ELR**	**Project: 300-288:2 ESA-2**	**PAGE_1_OF_1**
COMMENTS: No qualifiers assigned			

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

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8H9**

Lab Sample ID: 280-80411-1
Client Matrix: Solid
% Moisture: 6.3

Date Sampled: 03/01/2016 0940
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22297.D
Dilution:	1.0			Initial Weight/Volume:	30.4 g
Analysis Date:	03/09/2016 1654			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

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	150	J	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	70	U	70	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	23	350
1,3-Dichlorobenzene	13	U	13	350
1,4-Dichlorobenzene	14	U	14	350
3,3'-Dichlorobenzidine	95	U	95	700
2,4-Dichlorophenol	11	U	11	350
Diethyl phthalate	27	U	27	350
2,4-Dimethylphenol	70	U	70	350
Dimethyl phthalate	24	U	24	350
Di-n-butyl phthalate	31	U	31	350
4,6-Dinitro-2-methylphenol	350	U	350	700
2,4-Dinitrophenol	350	U	350	870
2,4-Dinitrotoluene	70	U	70	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	31	U	31	350
Hexachlorobutadiene	11	U	11	350
Hexachlorocyclopentadiene	53	U	53	350
Hexachloroethane	22	U	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: 280-80411-1
Sdg Number: JP1035

Client Sample ID: J1V8H9

Lab Sample ID: 280-80411-1
Client Matrix: Solid
% Moisture: 6.3

Date Sampled: 03/01/2016 0940
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22297.D
Dilution:	1.0			Initial Weight/Volume:	30.4 g
Analysis Date:	03/09/2016 1654			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

✓ 3/20/16

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	700
N-Nitrosodi-n-propylamine		33	U	33	350
N-Nitrosodiphenylamine		22	U	22	350
Pentachlorophenol		350	U	350	700
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
Tributyl phosphate		61	U	61	1700

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	81		33 - 135
2-Fluorophenol	79		39 - 135
Nitrobenzene-d5	75		32 - 135
Phenol-d5	79		39 - 135
Terphenyl-d14	88		30 - 135
2,4,6-Tribromophenol	91		24 - 135

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: J1V8H9

Lab Sample ID: 280-80411-1
Client Matrix: Solid
% Moisture: 6.3

Date Sampled: 03/01/2016 0940
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22297.D
Dilution:	1.0			Initial Weight/Volume:	30.4 g
Analysis Date:	03/09/2016 1654			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

Tentatively Identified Compounds **Number TIC's Found: 1**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.17	3200	N J

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J0**

Lab Sample ID: 280-80411-2
Client Matrix: Solid
% Moisture: 5.1

Date Sampled: 03/01/2016 0920
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22298.D
Dilution:	1.0			Initial Weight/Volume:	30.2 g
Analysis Date:	03/09/2016 1720			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

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		60	J	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	23	350
1,3-Dichlorobenzene		13	U	13	350
1,4-Dichlorobenzene		14	U	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	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: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J0**

Lab Sample ID: 280-80411-2
Client Matrix: Solid
% Moisture: 5.1

Date Sampled: 03/01/2016 0920
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22298.D
Dilution:	1.0			Initial Weight/Volume:	30.2 g
Analysis Date:	03/09/2016 1720			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

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	76	U	76	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
Tributyl phosphate	60	U	60	1700

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	79		33 - 135
2-Fluorophenol	79		39 - 135
Nitrobenzene-d5	74		32 - 135
Phenol-d5	78		39 - 135
Terphenyl-d14	88		30 - 135
2,4,6-Tribromophenol	88		24 - 135

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J0**

Lab Sample ID: 280-80411-2
Client Matrix: Solid

% Moisture: 5.1

Date Sampled: 03/01/2016 0920
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22298.D
Dilution:	1.0			Initial Weight/Volume:	30.2 g
Analysis Date:	03/09/2016 1720			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

Tentatively Identified Compounds **Number TIC's Found: 1**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.17	3300	N J

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J1**

Lab Sample ID: 280-80411-3
Client Matrix: Solid

% Moisture: 5.8

Date Sampled: 03/01/2016 0953
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22301.D
Dilution:	1.0			Initial Weight/Volume:	30.2 g
Analysis Date:	03/09/2016 1840			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

1/3/2016

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	18	U	18	350
bis (2-chloroisopropyl) ether	24	U	24	350
Bis(2-ethylhexyl) phthalate	49	U	49	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	70	U	70	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	23	350
1,3-Dichlorobenzene	13	U	13	350
1,4-Dichlorobenzene	14	U	14	350
3,3'-Dichlorobenzidine	95	U	95	700
2,4-Dichlorophenol	11	U	11	350
Diethyl phthalate	27	U	27	350
2,4-Dimethylphenol	70	U	70	350
Dimethyl phthalate	24	U	24	350
Di-n-butyl phthalate	31	U	31	350
4,6-Dinitro-2-methylphenol	350	U	350	700
2,4-Dinitrophenol	350	U	350	870
2,4-Dinitrotoluene	70	U	70	350
2,6-Dinitrotoluene	30	U	30	350
Di-n-octyl phthalate	15	U	15	350
Fluoranthene	38	U	38	350
Fluorene	19	U	19	350
Hexachlorobenzene	31	U	31	350
Hexachlorobutadiene	11	U	11	350
Hexachlorocyclopentadiene	53	U	53	350
Hexachloroethane	22	U	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: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J1**

Lab Sample ID: 280-80411-3
Client Matrix: Solid
% Moisture: 5.8

Date Sampled: 03/01/2016 0953
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22301.D
Dilution:	1.0			Initial Weight/Volume:	30.2 g
Analysis Date:	03/09/2016 1840			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

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	700
N-Nitrosodi-n-propylamine		33	U	33	350
N-Nitrosodiphenylamine		22	U	22	350
Pentachlorophenol		350	U	350	700
Phenanthrene		18	U	18	350
Phenol		19	U	19	350
Pyrene		13	U	13	350
1,2,4-Trichlorobenzene		30	U	30	350
2,4,5-Trichlorophenol		11	U	11	350
2,4,6-Trichlorophenol		11	U	11	350
Tributyl phosphate		61	U	61	1700

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	77		33 - 135
2-Fluorophenol	77		39 - 135
Nitrobenzene-d5	71		32 - 135
Phenol-d5	77		39 - 135
Terphenyl-d14	86		30 - 135
2,4,6-Tribromophenol	93		24 - 135

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J1**

Lab Sample ID: 280-80411-3
Client Matrix: Solid

% Moisture: 5.8

Date Sampled: 03/01/2016 0953
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22301.D
Dilution:	1.0			Initial Weight/Volume:	30.2 g
Analysis Date:	03/09/2016 1840			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

Tentatively Identified Compounds **Number TIC's Found: 1**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.17	2900	N J

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J2**

Lab Sample ID: 280-80411-4
Client Matrix: Solid
% Moisture: 6.2

Date Sampled: 03/01/2016 0905
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22302.D
Dilution:	1.0			Initial Weight/Volume:	30.7 g
Analysis Date:	03/09/2016 1906			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

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	69	U	69	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	23	340
1,3-Dichlorobenzene	12	U	12	340
1,4-Dichlorobenzene	14	U	14	340
3,3'-Dichlorobenzidine	94	U	94	690
2,4-Dichlorophenol	10	U	10	340
Diethyl phthalate	27	U	27	340
2,4-Dimethylphenol	69	U	69	340
Dimethyl phthalate	24	U	24	340
Di-n-butyl phthalate	30	U	30	340
4,6-Dinitro-2-methylphenol	340	U	340	690
2,4-Dinitrophenol	350	U	350	860
2,4-Dinitrotoluene	69	U	69	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	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: 280-80411-1
Sdg Number: JP1035

Client Sample ID: J1V8J2

Lab Sample ID: 280-80411-4
Client Matrix: Solid
% Moisture: 6.2

Date Sampled: 03/01/2016 0905
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22302.D
Dilution:	1.0			Initial Weight/Volume:	30.7 g
Analysis Date:	03/09/2016 1906			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

V 3/20/16

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		14	U	14	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	690
N-Nitrosodi-n-propylamine		32	U	32	340
N-Nitrosodiphenylamine		22	U	22	340
Pentachlorophenol		340	U	340	690
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
Tributyl phosphate		60	U	60	1700

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	82		33 - 135
2-Fluorophenol	82		39 - 135
Nitrobenzene-d5	76		32 - 135
Phenol-d5	81		39 - 135
Terphenyl-d14	90		30 - 135
2,4,6-Tribromophenol	94		24 - 135

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J2**

Lab Sample ID: 280-80411-4
Client Matrix: Solid
% Moisture: 6.2

Date Sampled: 03/01/2016 0905
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22302.D
Dilution:	1.0			Initial Weight/Volume:	30.7 g
Analysis Date:	03/09/2016 1906			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

Tentatively Identified Compounds **Number TIC's Found: 2**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.17	3500	N J
111-06-8	Hexadecanoic acid, butyl ester	10.76	170	N J

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J3**

Lab Sample ID: 280-80411-5
Client Matrix: Solid
% Moisture: 5.5

Date Sampled: 03/01/2016 1029
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22303.D
Dilution:	1.0			Initial Weight/Volume:	31.0 g
Analysis Date:	03/09/2016 1933			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

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		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		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		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		19	U	19	340
Dibenzofuran		20	U	20	340
1,2-Dichlorobenzene		23	U	23	340
1,3-Dichlorobenzene		12	U	12	340
1,4-Dichlorobenzene		14	U	14	340
3,3'-Dichlorobenzidine		92	U	92	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		18	U	18	340
Hexachlorobenzene		30	U	30	340
Hexachlorobutadiene		10	U	10	340
Hexachlorocyclopentadiene		51	U	51	340
Hexachloroethane		22	U	22	340
Indeno[1,2,3-cd]pyrene		23	U	23	340
Isophorone		17	U	17	340
2-Methylnaphthalene		19	U	19	340

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J3**

Lab Sample ID: 280-80411-5
Client Matrix: Solid
% Moisture: 5.5

Date Sampled: 03/01/2016 1029
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22303.D
Dilution:	1.0			Initial Weight/Volume:	31.0 g
Analysis Date:	03/09/2016 1933			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

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		23	U	23	340
2-Nitrophenol		10	U	10	340
4-Nitrophenol		99	U	99	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		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
Tributyl phosphate		59	U	59	1600

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	79		33 - 135
2-Fluorophenol	78		39 - 135
Nitrobenzene-d5	74		32 - 135
Phenol-d5	78		39 - 135
Terphenyl-d14	90		30 - 135
2,4,6-Tribromophenol	88		24 - 135

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J3**

Lab Sample ID: 280-80411-5
Client Matrix: Solid

% Moisture: 5.5

Date Sampled: 03/01/2016 1029
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22303.D
Dilution:	1.0			Initial Weight/Volume:	31.0 g
Analysis Date:	03/09/2016 1933			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

Tentatively Identified Compounds **Number TIC's Found: 1**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.17	3000	N J

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J4**

Lab Sample ID: 280-80411-6
Client Matrix: Solid
% Moisture: 4.8

Date Sampled: 03/01/2016 1045
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22304.D
Dilution:	1.0			Initial Weight/Volume:	30.9 g
Analysis Date:	03/09/2016 1959			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

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	22	340
1,3-Dichlorobenzene	12	U	12	340
1,4-Dichlorobenzene	14	U	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	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: 280-80411-1
Sdg Number: JP1035

Client Sample ID: J1V8J4

Lab Sample ID: 280-80411-6
Client Matrix: Solid
% Moisture: 4.8

Date Sampled: 03/01/2016 1045
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22304.D
Dilution:	1.0			Initial Weight/Volume:	30.9 g
Analysis Date:	03/09/2016 1959			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			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	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
Tributyl phosphate	59	U	59	1600

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	78		33 - 135
2-Fluorophenol	76		39 - 135
Nitrobenzene-d5	71		32 - 135
Phenol-d5	76		39 - 135
Terphenyl-d14	84		30 - 135
2,4,6-Tribromophenol	94		24 - 135

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: J1V8J4

Lab Sample ID: 280-80411-6
Client Matrix: Solid
% Moisture: 4.8

Date Sampled: 03/01/2016 1045
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22304.D
Dilution:	1.0			Initial Weight/Volume:	30.9 g
Analysis Date:	03/09/2016 1959			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/2016

Tentatively Identified Compounds **Number TIC's Found: 1**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.17	3100	N J

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J5**

Lab Sample ID: 280-80411-7
Client Matrix: Solid
% Moisture: 5.2

Date Sampled: 03/01/2016 0840
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22305.D
Dilution:	1.0			Initial Weight/Volume:	31.2 g
Analysis Date:	03/09/2016 2026			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

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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	41	U	41	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	37	U	37	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	22	330
1,3-Dichlorobenzene	12	U	12	330
1,4-Dichlorobenzene	14	U	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	840
2,4-Dinitrotoluene	67	U	67	330
2,6-Dinitrotoluene	28	U	28	330
Di-n-octyl phthalate	15	U	15	330
Fluoranthene	37	U	37	330
Fluorene	18	U	18	330
Hexachlorobenzene	29	U	29	330
Hexachlorobutadiene	10	U	10	330
Hexachlorocyclopentadiene	51	U	51	330
Hexachloroethane	22	U	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: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J5**

Lab Sample ID: 280-80411-7
Client Matrix: Solid
% Moisture: 5.2

Date Sampled: 03/01/2016 0840
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22305.D
Dilution:	1.0			Initial Weight/Volume:	31.2 g
Analysis Date:	03/09/2016 2026			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			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		74	U	74	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
Tributyl phosphate		59	U	59	1600

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	78		33 - 135
2-Fluorophenol	77		
Nitrobenzene-d5	71		[illegible]
Phenol-d5	77		39 - 135
Terphenyl-d14	88		30 - 135
2,4,6-Tribromophenol	89		

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J5**

Lab Sample ID: 280-80411-7
Client Matrix: Solid

% Moisture: 5.2

Date Sampled: 03/01/2016 0840
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22305.D
Dilution:	1.0			Initial Weight/Volume:	31.2 g
Analysis Date:	03/09/2016 2026			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

Tentatively Identified Compounds **Number TIC's Found: 1**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.17	2800	N J

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J6**

Lab Sample ID: 280-80411-8
Client Matrix: Solid
% Moisture: 6.2

Date Sampled: 03/01/2016 1058
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22306.D
Dilution:	1.0			Initial Weight/Volume:	30.6 g
Analysis Date:	03/09/2016 2053			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

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	38	U	38	340
4-Chloroaniline	86	U	86	340
4-Chloro-3-methylphenol	69	U	69	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	23	340
1,3-Dichlorobenzene	13	U	13	340
1,4-Dichlorobenzene	14	U	14	340
3,3'-Dichlorobenzidine	94	U	94	690
2,4-Dichlorophenol	10	U	10	340
Diethyl phthalate	27	U	27	340
2,4-Dimethylphenol	69	U	69	340
Dimethyl phthalate	24	U	24	340
Di-n-butyl phthalate	30	U	30	340
4,6-Dinitro-2-methylphenol	340	U	340	690
2,4-Dinitrophenol	350	U	350	860
2,4-Dinitrotoluene	69	U	69	340
2,6-Dinitrotoluene	29	U	29	340
Di-n-octyl phthalate	15	U	15	340
Fluoranthene	38	U	38	340
Fluorene	19	U	19	340
Hexachlorobenzene	30	U	30	340
Hexachlorobutadiene	10	U	10	340
Hexachlorocyclopentadiene	52	U	52	340
Hexachloroethane	22	U	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: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J6**

Lab Sample ID: 280-80411-8
Client Matrix: Solid
% Moisture: 6.2

Date Sampled: 03/01/2016 1058
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22306.D
Dilution:	1.0			Initial Weight/Volume:	30.6 g
Analysis Date:	03/09/2016 2053			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		14	U	14	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		76	U	76	340
Nitrobenzene		23	U	23	340
2-Nitrophenol		10	U	10	340
4-Nitrophenol		100	U	100	690
N-Nitrosodi-n-propylamine		32	U	32	340
N-Nitrosodiphenylamine		22	U	22	340
Pentachlorophenol		340	U	340	690
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
Tributyl phosphate		60	U	60	1700

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	80		33 - 135
2-Fluorophenol	80		39 - 135
Nitrobenzene-d5	73		32 - 135
Phenol-d5	79		39 - 135
Terphenyl-d14	90		30 - 135
2,4,6-Tribromophenol	95		24 - 135

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J6**

Lab Sample ID: 280-80411-8
Client Matrix: Solid

% Moisture: 6.2

Date Sampled: 03/01/2016 1058
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22306.D
Dilution:	1.0			Initial Weight/Volume:	30.6 g
Analysis Date:	03/09/2016 2053			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

Tentatively Identified Compounds **Number TIC's Found: 1**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.17	2900	N J

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J7**

Lab Sample ID: 280-80411-9
Client Matrix: Solid
% Moisture: 7.2

Date Sampled: 03/01/2016 1118
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22307.D
Dilution:	1.0			Initial Weight/Volume:	30.4 g
Analysis Date:	03/09/2016 2119			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

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		43	U	43	350
Bis(2-chloroethoxy)methane		24	U	24	350
Bis(2-chloroethyl)ether		18	U	18	350
bis (2-chloroisopropyl) ether		24	U	24	350
Bis(2-ethylhexyl) phthalate		49	U	49	350
4-Bromophenyl phenyl ether		20	U	20	350
Butyl benzyl phthalate		46	U	46	350
Carbazole		38	U	38	350
4-Chloroaniline		87	U	87	350
4-Chloro-3-methylphenol		70	U	70	350
2-Chloronaphthalene		11	U	11	350
2-Chlorophenol		22	U	22	350
4-Chlorophenyl phenyl ether		22	U	22	350
Chrysene		29	U	29	350
Dibenz(a,h)anthracene		20	U	20	350
Dibenzofuran		21	U	21	350
1,2-Dichlorobenzene		23	U	23	350
1,3-Dichlorobenzene		13	U	13	350
1,4-Dichlorobenzene		14	U	14	350
3,3'-Dichlorobenzidine		96	U	96	700
2,4-Dichlorophenol		11	U	11	350
Diethyl phthalate		28	U	28	350
2,4-Dimethylphenol		70	U	70	350
Dimethyl phthalate		24	U	24	350
Di-n-butyl phthalate		31	U	31	350
4,6-Dinitro-2-methylphenol		350	U	350	700
2,4-Dinitrophenol		350	U	350	880
2,4-Dinitrotoluene		70	U	70	350
2,6-Dinitrotoluene		30	U	30	350
Di-n-octyl phthalate		15	U	15	350
Fluoranthene		38	U	38	350
Fluorene		19	U	19	350
Hexachlorobenzene		31	U	31	350
Hexachlorobutadiene		11	U	11	350
Hexachlorocyclopentadiene		53	U	53	350
Hexachloroethane		23	U	23	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: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J7**

Lab Sample ID: 280-80411-9
Client Matrix: Solid

% Moisture: 7.2

Date Sampled: 03/01/2016 1118
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22307.D
Dilution:	1.0			Initial Weight/Volume:	30.4 g
Analysis Date:	03/09/2016 2119			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			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	78	U	78	350
4-Nitroaniline	77	U	77	350
Nitrobenzene	23	U	23	350
2-Nitrophenol	11	U	11	350
4-Nitrophenol	100	U	100	700
N-Nitrosodi-n-propylamine	33	U	33	350
N-Nitrosodiphenylamine	22	U	22	350
Pentachlorophenol	350	U	350	700
Phenanthrene	18	U	18	350
Phenol	19	U	19	350
Pyrene	13	U	13	350
1,2,4-Trichlorobenzene	30	U	30	350
2,4,5-Trichlorophenol	11	U	11	350
2,4,6-Trichlorophenol	11	U	11	350
Tributyl phosphate	61	U	61	1700

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	80		33 - 135
2-Fluorophenol	78		39 - 135
Nitrobenzene-d5	73		32 - 135
Phenol-d5	77		39 - 135
Terphenyl-d14	89		30 - 135
2,4,6-Tribromophenol	94		24 - 135

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J7**

Lab Sample ID: 280-80411-9
Client Matrix: Solid

% Moisture: 7.2

Date Sampled: 03/01/2016 1118
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22307.D
Dilution:	1.0			Initial Weight/Volume:	30.4 g
Analysis Date:	03/09/2016 2119			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/10/16

Tentatively Identified Compounds **Number TIC's Found: 1**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.17	3600	N J

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J8**

Lab Sample ID: 280-80411-10
Client Matrix: Solid

% Moisture: 5.1

Date Sampled: 03/01/2016 1135
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22308.D
Dilution:	1.0			Initial Weight/Volume:	30.4 g
Analysis Date:	03/09/2016 2146			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

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	69	U	69	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	23	340
1,3-Dichlorobenzene	12	U	12	340
1,4-Dichlorobenzene	14	U	14	340
3,3'-Dichlorobenzidine	94	U	94	690
2,4-Dichlorophenol	10	U	10	340
Diethyl phthalate	27	U	27	340
2,4-Dimethylphenol	69	U	69	340
Dimethyl phthalate	24	U	24	340
Di-n-butyl phthalate	30	U	30	340
4,6-Dinitro-2-methylphenol	340	U	340	690
2,4-Dinitrophenol	350	U	350	860
2,4-Dinitrotoluene	69	U	69	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	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: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J8**

Lab Sample ID: 280-80411-10
Client Matrix: Solid

% Moisture: 5.1

Date Sampled: 03/01/2016 1135
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22308.D
Dilution:	1.0			Initial Weight/Volume:	30.4 g
Analysis Date:	03/09/2016 2146			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol		14	U	14	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	690
N-Nitrosodi-n-propylamine		32	U	32	340
N-Nitrosodiphenylamine		22	U	22	340
Pentachlorophenol		340	U	340	690
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
Tributyl phosphate		60	U	60	1700

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	78		33 - 135
2-Fluorophenol	77		39 - 135
Nitrobenzene-d5	72		32 - 135
Phenol-d5	77		39 - 135
Terphenyl-d14	87		30 - 135
2,4,6-Tribromophenol	87		24 - 135

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J8**

Lab Sample ID: 280-80411-10
Client Matrix: Solid

% Moisture: 5.1

Date Sampled: 03/01/2016 1135
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22308.D
Dilution:	1.0			Initial Weight/Volume:	30.4 g
Analysis Date:	03/09/2016 2146			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

Tentatively Identified Compounds **Number TIC's Found: 1**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.17	3300	N J

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J9**

Lab Sample ID: 280-80411-11
Client Matrix: Solid

% Moisture: 4.6

Date Sampled: 03/01/2016 1156
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22309.D
Dilution:	1.0			Initial Weight/Volume:	31.6 g
Analysis Date:	03/09/2016 2212			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			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	81	U	81	330
4-Chloro-3-methylphenol	66	U	66	330
2-Chloronaphthalene	9.9	U	9.9	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	22	330
1,3-Dichlorobenzene	12	U	12	330
1,4-Dichlorobenzene	14	U	14	330
3,3'-Dichlorobenzidine	90	U	90	660
2,4-Dichlorophenol	9.9	U	9.9	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	820
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	9.9	U	9.9	330
Hexachlorocyclopentadiene	50	U	50	330
Hexachloroethane	21	U	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: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J9**

Lab Sample ID: 280-80411-11
Client Matrix: Solid
% Moisture: 4.6

Date Sampled: 03/01/2016 1156
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22309.D
Dilution:	1.0			Initial Weight/Volume:	31.6 g
Analysis Date:	03/09/2016 2212			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

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		72	U	72	330
Nitrobenzene		22	U	22	330
2-Nitrophenol		9.9	U	9.9	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		9.9	U	9.9	330
2,4,6-Trichlorophenol		9.9	U	9.9	330
Tributyl phosphate		57	U	57	1600

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	80		33 - 135
2-Fluorophenol	81		39 - 135
Nitrobenzene-d5	74		32 - 135
Phenol-d5	79		39 - 135
Terphenyl-d14	89		30 - 135
2,4,6-Tribromophenol	88		24 - 135

Analytical Data

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8J9**

Lab Sample ID: 280-80411-11
Client Matrix: Solid

% Moisture: 4.6

Date Sampled: 03/01/2016 1156
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22309.D
Dilution:	1.0			Initial Weight/Volume:	31.6 g
Analysis Date:	03/09/2016 2212			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

Tentatively Identified Compounds **Number TIC's Found: 1**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.17	3200	N J

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8K0**

Lab Sample ID: 280-80411-12
Client Matrix: Solid
% Moisture: 7.2

Date Sampled: 03/01/2016 0852
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22310.D
Dilution:	1.0			Initial Weight/Volume:	32.5 g
Analysis Date:	03/09/2016 2239			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

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	81	U	81	330
4-Chloro-3-methylphenol	66	U	66	330
2-Chloronaphthalene	9.9	U	9.9	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	22	330
1,3-Dichlorobenzene	12	U	12	330
1,4-Dichlorobenzene	14	U	14	330
3,3'-Dichlorobenzidine	90	U	90	660
2,4-Dichlorophenol	9.9	U	9.9	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	820
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	9.9	U	9.9	330
Hexachlorocyclopentadiene	50	U	50	330
Hexachloroethane	21	U	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: 280-80411-1
Sdg Number: JP1035

Client Sample ID: J1V8K0

Lab Sample ID: 280-80411-12
Client Matrix: Solid
% Moisture: 7.2

Date Sampled: 03/01/2016 0852
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22310.D
Dilution:	1.0			Initial Weight/Volume:	32.5 g
Analysis Date:	03/09/2016 2239			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

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		72	U	72	330
Nitrobenzene		22	U	22	330
2-Nitrophenol		9.9	U	9.9	330
4-Nitrophenol		96	U	96	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		9.9	U	9.9	330
2,4,6-Trichlorophenol		9.9	U	9.9	330
Tributyl phosphate		57	U	57	1600

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	82		33 - 135
2-Fluorophenol	80		39 - 135
Nitrobenzene-d5	74		32 - 135
Phenol-d5	80		39 - 135
Terphenyl-d14	90		30 - 135
2,4,6-Tribromophenol	93		24 - 135

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8K0**

Lab Sample ID: 280-80411-12
Client Matrix: Solid

% Moisture: 7.2

Date Sampled: 03/01/2016 0852
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22310.D
Dilution:	1.0			Initial Weight/Volume:	32.5 g
Analysis Date:	03/09/2016 2239			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

Tentatively Identified Compounds **Number TIC's Found: 1**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.17	3100	N J

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: J1V8K1

Lab Sample ID: 280-80411-13
Client Matrix: Solid
% Moisture: 5.3

Date Sampled: 03/01/2016 0953
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22311.D
Dilution:	1.0			Initial Weight/Volume:	32.6 g
Analysis Date:	03/09/2016 2305			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	320
Acenaphthylene		17	U	17	320
Anthracene		17	U	17	320
Benzo[a]anthracene		19	U	19	320
Benzo[a]pyrene		19	U	19	320
Benzo[b]fluoranthene		25	U	25	320
Benzo[ghi]perylene		16	U	16	320
Benzo[k]fluoranthene		39	U	39	320
Bis(2-chloroethoxy)methane		22	U	22	320
Bis(2-chloroethyl)ether		16	U	16	320
bis (2-chloroisopropyl) ether		22	U	22	320
Bis(2-ethylhexyl) phthalate		45	U	45	320
4-Bromophenyl phenyl ether		18	U	18	320
Butyl benzyl phthalate		42	U	42	320
Carbazole		35	U	35	320
4-Chloroaniline		80	U	80	320
4-Chloro-3-methylphenol		64	U	64	320
2-Chloronaphthalene		9.7	U	9.7	320
2-Chlorophenol		20	U	20	320
4-Chlorophenyl phenyl ether		20	U	20	320
Chrysene		26	U	26	320
Dibenz(a,h)anthracene		18	U	18	320
Dibenzofuran		19	U	19	320
1,2-Dichlorobenzene		21	U	21	320
1,3-Dichlorobenzene		12	U	12	320
1,4-Dichlorobenzene		13	U	13	320
3,3'-Dichlorobenzidine		87	U	87	640
2,4-Dichlorophenol		9.7	U	9.7	320
Diethyl phthalate		25	U	25	320
2,4-Dimethylphenol		64	U	64	320
Dimethyl phthalate		22	U	22	320
Di-n-butyl phthalate		28	U	28	320
4,6-Dinitro-2-methylphenol		320	U	320	640
2,4-Dinitrophenol		320	U	320	800
2,4-Dinitrotoluene		64	U	64	320
2,6-Dinitrotoluene		27	U	27	320
Di-n-octyl phthalate		14	U	14	320
Fluoranthene		35	U	35	320
Fluorene		17	U	17	320
Hexachlorobenzene		28	U	28	320
Hexachlorobutadiene		9.7	U	9.7	320
Hexachlorocyclopentadiene		49	U	49	320
Hexachloroethane		21	U	21	320
Indeno[1,2,3-cd]pyrene		21	U	21	320
Isophorone		17	U	17	320
2-Methylnaphthalene		18	U	18	320

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: J1V8K1

Lab Sample ID: 280-80411-13
Client Matrix: Solid
% Moisture: 5.3

Date Sampled: 03/01/2016 0953
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22311.D
Dilution:	1.0			Initial Weight/Volume:	32.6 g
Analysis Date:	03/09/2016 2305			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

Analyte DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
2-Methylphenol	13	U	13	320
3 & 4 Methylphenol	32	U	32	320
Naphthalene	30	U	30	320
2-Nitroaniline	49	U	49	320
3-Nitroaniline	71	U	71	320
4-Nitroaniline	70	U	70	320
Nitrobenzene	21	U	21	320
2-Nitrophenol	9.7	U	9.7	320
4-Nitrophenol	94	U	94	640
N-Nitrosodi-n-propylamine	30	U	30	320
N-Nitrosodiphenylamine	20	U	20	320
Pentachlorophenol	320	U	320	640
Phenanthrene	17	U	17	320
Phenol	17	U	17	320
Pyrene	12	U	12	320
1,2,4-Trichlorobenzene	27	U	27	320
2,4,5-Trichlorophenol	9.7	U	9.7	320
2,4,6-Trichlorophenol	9.7	U	9.7	320
Tributyl phosphate	56	U	56	1600

Surrogate	%Rec	Qualifier	Acceptance Limits
2-Fluorobiphenyl	74		33 - 135
2-Fluorophenol	71		39 - 135
Nitrobenzene-d5	64		32 - 135
Phenol-d5	72		39 - 135
Terphenyl-d14	85		30 - 135
2,4,6-Tribromophenol	93		24 - 135

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Client Sample ID: **J1V8K1**

Lab Sample ID: 280-80411-13
Client Matrix: Solid

% Moisture: 5.3

Date Sampled: 03/01/2016 0953
Date Received: 03/04/2016 0930

8270C Semivolatile Organic Compounds (GC/MS)

Analysis Method:	8270C	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Prep Method:	3550C	Prep Batch:	280-316048	Lab File ID:	G6_22311.D
Dilution:	1.0			Initial Weight/Volume:	32.6 g
Analysis Date:	03/09/2016 2305			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL

3/20/16

Tentatively Identified Compounds **Number TIC's Found: 1**

Cas Number	Analyte	RT	Est. Result (ug/Kg)	Qualifier
	Unknown	3.17	2600	N J

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Job Number: 280-80411-1

SDG #: JP1035
SAF#: RC-148

Date SDG Closed: March 4, 2016
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V8H9	280-80411-1	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J0	280-80411-2	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J1	280-80411-3	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J2	280-80411-4	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J3	280-80411-5	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J4	280-80411-6	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J5	280-80411-7	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J6	280-80411-8	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J7	280-80411-9	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J8	280-80411-10	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J9	280-80411-11	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8K0	280-80411-12	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8K1	280-80411-13	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C

The Uranium 6020 method substitution noted above, as agreed to by all parties, has no technical impact on the data.

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 3/4/2016 9:30 AM; the samples arrived intact and on ice. The temperatures of the 4 coolers at receipt time were 0.0° C, 0.4° C, 0.7° C and 1.2° C. It was not noted which samples were in the cooler received at a temperature of 0.0° C. The client was notified on 3/4/2016.

GC/MS SEMIVOLATILES - SW846 8270C
No anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs
The laboratory noted that the samples presented in this report contained small stones that were not used in extraction.

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

The RPD between the primary and confirmation columns exceeded 25% for Aroclor 1254 in sample J1V8J5. The result has been flagged with a "P".

No other anomalies were encountered.

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

TOTAL METALS - SW846 6010B/6020/7471A
Serial dilution of a digestate in batch 280-315923 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. Sample J1V8H9 required a 2X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Lead, Magnesium, Tin, Vanadium and Zinc to minimize the interference caused by the Titanium concentration greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Barium, Calcium, Chromium, Strontium and Magnesium are present in the method blank associated with batch 280-315923. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, 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 J1V8H9; therefore, control limits are not applicable.

The Matrix Spike performed on sample J1V8H9 exhibited percent recoveries outside the control limits for Tin 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.

The duplicate analysis of sample J1V8H9 exhibited RPD data outside the control limits for several elements, and the associated sample results have been flagged "M". There is no indication that the analytical systems were 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.

GENERAL CHEMISTRY - SW846 9045C - PH
SU = standard units

No anomalies were encountered.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-148-221

Collector: ETHERINGTON, TW	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Day		
Project Designation: 300 Area D4 Waste Sites	Sampling Location: 300-288:2 ESA2		SAF No.: RC-148
Ice Chest No.: TNU-052	Field Logbook No.: EL-1663-08	COA: 0328822000	Method of Shipment: Commercial Carrier
Shipped To: TestAmerica Denver	Offsite Property No.: A131449		Bill of Lading/Air Bill No.: SEE OSPC
Other Labs Shipped To: TestAmerica Richland			

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cool as required for preservation

Preservation	Cool <=6C	Cool <=6C	Cool <=6C	None	Cool <=6C						
Type of Container	G/P	aG	aG	G/P	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	125mL	250mL	250mL						
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	pH (Soil) - 9045	Semi-VOA - 8270 (TCL); Semi-VOA -- 8270 (Add-On Tributyl phosphate)						

Sample No.	Matrix	Sample Date	Sample Time										
J1V8H9	SOIL	3-1-16	0940	✓	✓	✓	✓	✓					
J1V8J0	SOIL	3-1-16	0920	✓	✓	✓	✓	✓					
J1V8J1	SOIL	3-1-16	0953	✓	✓	✓	✓	✓					
J1V8J2	SOIL	3-1-16	0905	✓	✓	✓	✓	✓					
J1V8J3	SOIL	3-1-16	1029	✓	✓	✓	✓	✓					

Page 1 of 3

CHAIN OF POSSESSION

Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
T.R. Edmundson	3-1-16 1205	T.R. Edmundson	3-1-16 1205
T.R. Edmundson	3-1-16 1300	1060 Refer #3C	3-1-16 1300
1060 Refer #3C	3-3-16 0900	T.R. Edmundson	3-3-16 0900
T.R. Edmundson WCH	3-3-16 1500	Fred	3-3-16 —
		TAD	3/4/16 0930

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

WCH-EE-011

SPECIAL INSTRUCTIONS

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

280-80411 Chain of Custody

REVIEWED BY DAS DATE 3/3/16

JP1035

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-148-221

Collector: ETHERINGTON, TW	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 300 Area D4 Waste Sites	Sampling Location: 300-288:2 ESA2		SAF No.: RC-148
Ice Chest No.: TNU-052	Field Logbook No.: EL-1663-08	COA: 0328822000	Method of Shipment: Commercial Carrier
Shipped To: TestAmerica Denver	Offsite Property No.: A131449		Bill of Lading/Air Bill No.: SEE OSPC

Price Code: 8B

Data Turnaround: 7 Day

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cool as required for preservation

Preservation	Cool <=6C	Cool <=6C	Cool <=6C	None	Cool <=6C						
Type of Container	G/P	aG	aG	G/P	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	125mL	250mL	250mL						
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	pH (Soil) - 9045	Semi-VOA - 8270 (TCL); Semi-VOA – 8270 (Add-On Tributyl phosphate)						

Sample No.	Matrix	Sample Date	Sample Time										
J1V8J4	SOIL	3-1-16	1045	✓	✓	✓	✓	✓					
J1V8J5	SOIL	3-1-16	0840	✓	✓	✓	✓	✓					
J1V8J6	SOIL	3-1-16	1058	✓	✓	✓	✓	✓					
J1V8J7	SOIL	3-1-16	1118	✓	✓	✓	✓	✓					
J1V8J8	SOIL	3-1-16	1135	✓	✓	✓	✓	✓					

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
T. Etherington [signature]	3-1-16 1205	T.R. Edmundson T.R. Edmundson	3-1-16 1205
T.R. Edmundson T.R. Edmundson	3-1-16 1300	1060 Refer #3C	3-1-16 1300
1060 Refer #3C	3-3-16 0900	T.R. Edmundson T.R. Edmundson	3-3-16 0900
T.R. Edmundson WCH T.R. Edmundson	3-3-16 1500	T.R. Edmundson FRG 3-3-16 T.R. Edmundson	3-3-16 1500 Fed Ex
		[signature] TAD	3/4/16 0930

FINAL SAMPLE DISPOSITION — Disposal Method — Disposed By — Date/Time

SPECIAL INSTRUCTIONS

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

REVIEWED BY [signature] DATE 3/3/16

JP1035

WCH-EE-011

Washington Closure Hanford	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	RC-148-221	Page 3 of 3

Collector: ETHERINGTON, TW	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 300 Area D4 Waste Sites	Sampling Location: 300-288:2 ESA2		SAF No.: RC-148
Ice Chest No.: TNV-052	Field Logbook No.: EL-1663-08	COA: 0328822000	Method of Shipment: Commercial Carrier
Shipped To: TestAmerica Denver	Offsite Property No.: A131449		Bill of Lading/Air Bill No.: SEE OSPC

Price Code: 8B

Data Turnaround: 7 Day

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cool as required for preservation

Preservation	Cool <=6C	Cool <=6C	Cool <=6C	None	Cool <=6C							
Type of Container	G/P	aG	aG	G/P	aG							
No. of Container(s)	1	1	1	1	1							
Volume	250mL	250mL	125mL	250mL	250mL							
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	pH (Soil) - 9045	Semi-VOA - 8270 (TCL); Semi-VOA -- 8270 (Add-On Tributyl phosphate)							

Sample No.	Matrix	Sample Date	Sample Time										
J1V8J9	SOIL	3-1-16	1156	✓	✓	✓	✓	✓					
J1V8K0	SOIL	3-1-16	0852	✓	✓	✓	✓	✓					
J1V8K1	SOIL	3-1-16	0953	✓	✓	✓	✓	✓					

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
T. Etherington [signature]	3-1-16 1205	T.R. Edmundson J.R. Edmundson	3-1-16 1205
T.R. Edmundson J.R. Edmundson	3-1-16 1300	1060 Refer #3C	3-1-16 1300
1060 Refer #3C	3-3-16 0900	T.R. Edmundson J.R. Edmundson	3-3-16 0900
T.R. Edmundson J.R. Edmundson WCH	3-3-16 1500	Fed Ex	3-3-16 —
		[signature] TAD	3/4/16 0930

SPECIAL INSTRUCTIONS

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

REVIEWED BY DAS DATE 3/3/16

FINAL SAMPLE DISPOSITION — Disposal Method — Disposed By — Date/Time

JP1035

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GC/MS ORGANIC DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 300-287:2 ESA 2			DATA PACKAGE: JP1035		
VALIDATOR: ELR		LAB: TAL		DATE: 3/19/11	
			SDG: JP1035		
ANALYSES PERFORMED					
SW-846 8260		SW-846 8260 (TCLP)	SW-846 8270		SW-846 8270 (TCLP)
SAMPLES/MATRIX					
J1V8H9	J1V8J0	J1V8J1	J1V8J2	J1V8J3	
J1V8J4	J1V8J5	J1V8J6	J1V8J7	J1V8J8	
J1V8J9	J1V8K0	J1V8K1			
					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: no PA

GC/MS ORGANIC DATA VALIDATION CHECKLIST

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

MS/MSD samples analyzed? ..... Yes No N/A
MS/MSD RPD values acceptable? ..... Yes No N/A
MS/MSD standards NIST traceable? (Levels D, E) ..... Yes No N/A
MS/MSD standards expired? (Levels D, E) ..... Yes No N/A
Field duplicate RPD values acceptable? ..... Yes No N/A
Field split RPD values acceptable? ..... Yes No N/A
Transcription/calculation errors? (Levels D, E) ..... Yes No N/A
Comments: _____

6. SYSTEM PERFORMANCE (Levels D and E)

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

7. HOLDING TIMES (all levels)

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

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: 280-80411-1
Sdg Number: JP1035

Method Blank - Batch: 280-316048

Method: 8270C
Preparation: 3550C

Lab Sample ID:	MB 280-316048/1-A	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Client Matrix:	Solid	Prep Batch:	280-316048	Lab File ID:	G6_22292.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30 g
Analysis Date:	03/09/2016 1441	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL
Leach Date:	N/A				

Analyte	Result	Qual	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	22	330
1,3-Dichlorobenzene	12	U	12	330
1,4-Dichlorobenzene	14	U	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	21	330
Indeno[1,2,3-cd]pyrene	22	U	22	330
Isophorone	17	U	17	330

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Method Blank - Batch: 280-316048

Method: 8270C
Preparation: 3550C

Lab Sample ID:	MB 280-316048/1-A	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Client Matrix:	Solid	Prep Batch:	280-316048	Lab File ID:	G6_22292.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30 g
Analysis Date:	03/09/2016 1441	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
2-Methylnaphthalene	19	U	19	330
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
Tributyl phosphate	58	U	58	1600

Surrogate	% Rec	Acceptance Limits
2-Fluorobiphenyl	80	33 - 135
2-Fluorophenol	77	39 - 135
Nitrobenzene-d5	74	32 - 135
Phenol-d5	77	39 - 135
Terphenyl-d14	88	30 - 135
2,4,6-Tribromophenol	89	24 - 135

Method Blank TICs- Batch: 280-316048

Cas Number	Analyte	RT	Est. Result (ug/	Qual
	Tentatively Identified Compound		None	

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Lab Control Sample - Batch: 280-316048

Method: 8270C
Preparation: 3550C

Lab Sample ID:	LCS 280-316048/2-A	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Client Matrix:	Solid	Prep Batch:	280-316048	Lab File ID:	G6_22293.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30 g
Analysis Date:	03/09/2016 1508	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Acenaphthene	2670	2250	84	55 - 135	
Acenaphthylene	2670	2300	86	57 - 135	
Anthracene	2670	2360	89	56 - 135	
Benzo[a]anthracene	2670	2360	89	54 - 135	
Benzo[a]pyrene	2670	2430	91	54 - 135	
Benzo[b]fluoranthene	2670	2370	89	54 - 135	
Benzo[ghi]perylene	2670	2490	93	55 - 135	
Benzo[k]fluoranthene	2670	2610	98	54 - 135	
Bis(2-chloroethoxy)methane	2670	2170	81	47 - 135	
Bis(2-chloroethyl)ether	2670	2100	79	42 - 135	
bis (2-chloroisopropyl) ether	2670	1630	61	36 - 135	
Bis(2-ethylhexyl) phthalate	2670	2420	91	49 - 135	
4-Bromophenyl phenyl ether	2670	2470	93	57 - 135	
Butyl benzyl phthalate	2670	2400	90	49 - 135	
Carbazole	2670	2380	89	56 - 135	
4-Chloroaniline	2670	1920	72	28 - 135	
4-Chloro-3-methylphenol	2670	2410	90	55 - 135	
2-Chloronaphthalene	2670	2240	84	53 - 135	
2-Chlorophenol	2670	2250	84	47 - 135	
4-Chlorophenyl phenyl ether	2670	2390	90	57 - 135	
Chrysene	2670	2430	91	55 - 135	
Dibenz(a,h)anthracene	2670	2390	90	50 - 135	
Dibenzofuran	2670	2330	87	57 - 135	
1,2-Dichlorobenzene	2670	2140	80	48 - 135	
1,3-Dichlorobenzene	2670	2080	78	47 - 135	
1,4-Dichlorobenzene	2670	2100	79	47 - 135	
3,3'-Dichlorobenzidine	2670	2000	75	30 - 135	
2,4-Dichlorophenol	2670	2350	88	54 - 135	
Diethyl phthalate	2670	2420	91	57 - 135	
2,4-Dimethylphenol	2670	2190	82	51 - 135	
Dimethyl phthalate	2670	2410	90	56 - 135	
Di-n-butyl phthalate	2670	2440	92	53 - 135	
4,6-Dinitro-2-methylphenol	5330	5120	96	50 - 135	
2,4-Dinitrophenol	5330	4980	93	39 - 135	
2,4-Dinitrotoluene	2670	2560	96	59 - 135	
2,6-Dinitrotoluene	2670	2470	93	58 - 135	
Di-n-octyl phthalate	2670	2200	83	46 - 135	
Fluoranthene	2670	2440	92	57 - 135	
Fluorene	2670	2320	87	57 - 135	
Hexachlorobenzene	2670	2460	92	57 - 135	
Hexachlorobutadiene	2670	2250	84	47 - 135	
Hexachlorocyclopentadiene	2670	2020	76	35 - 135	
Hexachloroethane	2670	2080	78	45 - 135	
Indeno[1,2,3-cd]pyrene	2670	2310	87	50 - 135	
Isophorone	2670	2010	75	49 - 135	
2-Methylnaphthalene	2670	2260	85	55 - 135	

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Lab Control Sample - Batch: 280-316048

Method: 8270C
Preparation: 3550C

Lab Sample ID:	LCS 280-316048/2-A	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Client Matrix:	Solid	Prep Batch:	280-316048	Lab File ID:	G6_22293.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	30 g
Analysis Date:	03/09/2016 1508	Units:	ug/Kg	Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
2-Methylphenol	2670	2200	82	47 - 135	
3 & 4 Methylphenol	2670	2200	82	47 - 135	
Naphthalene	2670	2200	82	50 - 135	
2-Nitroaniline	2670	2170	81	47 - 135	
3-Nitroaniline	2670	2210	83	39 - 135	
4-Nitroaniline	2670	2300	86	50 - 135	
Nitrobenzene	2670	2080	78	45 - 135	
2-Nitrophenol	2670	2330	87	48 - 135	
4-Nitrophenol	5330	5310	100	52 - 135	
N-Nitrosodi-n-propylamine	2670	1980	74	42 - 135	
N-Nitrosodiphenylamine	2670	2380	89	50 - 135	
Pentachlorophenol	5330	5360	101	37 - 135	
Phenanthrene	2670	2370	89	57 - 135	
Phenol	2670	2150	80	45 - 135	
Pyrene	2670	2360	89	55 - 135	
1,2,4-Trichlorobenzene	2670	2230	84	49 - 135	
2,4,5-Trichlorophenol	2670	2500	94	55 - 135	
2,4,6-Trichlorophenol	2670	2610	98	55 - 135	
Tributyl phosphate	1330	1400	105	30 - 150	J

Surrogate	% Rec	Acceptance Limits
2-Fluorobiphenyl	80	33 - 135
2-Fluorophenol	78	39 - 135
Nitrobenzene-d5	74	32 - 135
Phenol-d5	77	39 - 135
Terphenyl-d14	85	30 - 135
2,4,6-Tribromophenol	102	24 - 135

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-316048

Method: 8270C
Preparation: 3550C

MS Lab Sample ID:	280-80411-2	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Client Matrix:	Solid	Prep Batch:	280-316048	Lab File ID:	G6_22299.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.6 g
Analysis Date:	03/09/2016 1747			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL
Leach Date:	N/A				

MSD Lab Sample ID:	280-80411-2	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Client Matrix:	Solid	Prep Batch:	280-316048	Lab File ID:	G6_22300.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	32.4 g
Analysis Date:	03/09/2016 1813			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL
Leach Date:	N/A				

Analyte	% Rec. MS	% Rec. MSD	Limit	RPD	RPD Limit	MS Qual	MSD Qual
Acenaphthene	85	89	55 - 135	2	30		
Acenaphthylene	87	90	57 - 135	2	30		
Anthracene	87	91	56 - 135	2	30		
Benzo[a]anthracene	84	91	54 - 135	5	30		
Benzo[a]pyrene	87	90	54 - 135	1	30		
Benzo[b]fluoranthene	85	93	54 - 135	6	30		
Benzo[ghi]perylene	87	94	55 - 135	4	30		
Benzo[k]fluoranthene	94	97	54 - 135	1	30		
Bis(2-chloroethoxy)methane	82	86	47 - 135	2	30		
Bis(2-chloroethyl)ether	79	84	42 - 135	4	30		
bis (2-chloroisopropyl) ether	62	67	36 - 135	5	30		
Bis(2-ethylhexyl) phthalate	83	92	49 - 135	8	30		
4-Bromophenyl phenyl ether	88	93	57 - 135	3	30		
Butyl benzyl phthalate	84	92	49 - 135	7	30		
Carbazole	86	90	56 - 135	2	30		
4-Chloroaniline	59	68	28 - 135	12	30		
4-Chloro-3-methylphenol	87	93	55 - 135	4	30		
2-Chloronaphthalene	83	89	53 - 135	3	30		
2-Chlorophenol	85	89	47 - 135	2	30		
4-Chlorophenyl phenyl ether	87	93	57 - 135	5	30		
Chrysene	87	93	55 - 135	5	30		
Dibenz(a,h)anthracene	84	91	50 - 135	5	30		
Dibenzofuran	86	91	57 - 135	3	30		
1,2-Dichlorobenzene	80	84	48 - 135	1	30		
1,3-Dichlorobenzene	79	82	47 - 135	2	30		
1,4-Dichlorobenzene	79	83	47 - 135	2	30		
3,3'-Dichlorobenzidine	55	69	30 - 135	20	30		
2,4-Dichlorophenol	90	94	54 - 135	2	30		
Diethyl phthalate	87	94	57 - 135	5	30		
2,4-Dimethylphenol	83	86	51 - 135	1	30		
Dimethyl phthalate	88	93	56 - 135	4	30		
Di-n-butyl phthalate	88	94	53 - 135	4	30		
4,6-Dinitro-2-methylphenol	76	87	50 - 135	11	30		

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-316048

Method: 8270C
Preparation: 3550C

MS Lab Sample ID:	280-80411-2	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Client Matrix:	Solid	Prep Batch:	280-316048	Lab File ID:	G6_22299.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	31.6 g
Analysis Date:	03/09/2016 1747			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			Injection Volume:	0.5 uL
Leach Date:	N/A				

MSD Lab Sample ID:	280-80411-2	Analysis Batch:	280-316335	Instrument ID:	SMS_G6
Client Matrix:	Solid	Prep Batch:	280-316048	Lab File ID:	G6_22300.D
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	32.4 g
Analysis Date:	03/09/2016 1813			Final Weight/Volume:	1 mL
Prep Date:	03/07/2016 2130			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	60	74	39 - 135	19	30		
2,4-Dinitrotoluene	92	98	59 - 135	4	30		
2,6-Dinitrotoluene	90	95	58 - 135	4	30		
Di-n-octyl phthalate	76	84	46 - 135	8	30		
Fluoranthene	89	94	57 - 135	3	30		
Fluorene	85	90	57 - 135	3	30		
Hexachlorobenzene	88	93	57 - 135	3	30		
Hexachlorobutadiene	84	87	47 - 135	2	30		
Hexachlorocyclopentadiene	74	78	35 - 135	3	30		
Hexachloroethane	79	81	45 - 135	0	30		
Indeno[1,2,3-cd]pyrene	80	84	50 - 135	3	30		
Isophorone	75	79	49 - 135	4	30		
2-Methylnaphthalene	86	89	55 - 135	1	30		
2-Methylphenol	84	87	47 - 135	1	30		
3 & 4 Methylphenol	84	88	47 - 135	3	30		
Naphthalene	83	87	50 - 135	2	30		
2-Nitroaniline	79	85	47 - 135	5	30		
3-Nitroaniline	70	80	39 - 135	10	30		
4-Nitroaniline	81	88	50 - 135	5	30		
Nitrobenzene	77	82	45 - 135	4	30		
2-Nitrophenol	87	93	48 - 135	4	30		
4-Nitrophenol	96	102	52 - 135	4	30		
N-Nitrosodi-n-propylamine	77	81	42 - 135	2	30		
N-Nitrosodiphenylamine	86	92	50 - 135	4	30		
Pentachlorophenol	94	101	37 - 135	5	30		
Phenanthrene	87	92	57 - 135	3	30		
Phenol	81	85	45 - 135	1	30		
Pyrene	86	92	55 - 135	5	30		
1,2,4-Trichlorobenzene	83	88	49 - 135	3	30		
2,4,5-Trichlorophenol	90	95	55 - 135	3	30		
2,4,6-Trichlorophenol	94	102	55 - 135	5	30		
Tributyl phosphate	102	111	30 - 150	6	50	J	J

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits

Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Surrogate	MS % Rec	MSD % Rec	Acceptance Limits
2-Fluorobiphenyl	79	84	33 - 135
2-Fluorophenol	79	83	39 - 135
Nitrobenzene-d5	74	78	32 - 135
Phenol-d5	78	82	39 - 135
Terphenyl-d14	82	89	30 - 135
2,4,6-Tribromophenol	96	104	24 - 135

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-316048

Method: 8270C
Preparation: 3550C

MS Lab Sample ID:	280-80411-2	Units: ug/Kg	MSD Lab Sample ID:	280-80411-2
Client Matrix:	Solid		Client Matrix:	Solid
Dilution:	1.0		Dilution:	1.0
Analysis Date:	03/09/2016 1747		Analysis Date:	03/09/2016 1813
Prep Date:	03/07/2016 2130		Prep Date:	03/07/2016 2130
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	11	U	2670	2600	2270	2320
Acenaphthylene	18	U	2670	2600	2310	2350
Anthracene	18	U	2670	2600	2310	2370
Benzo[a]anthracene	21	U	2670	2600	2250	2360
Benzo[a]pyrene	21	U	2670	2600	2320	2350
Benzo[b]fluoranthene	27	U	2670	2600	2280	2410
Benzo[ghi]perylene	17	U	2670	2600	2330	2430
Benzo[k]fluoranthene	42	U	2670	2600	2500	2540
Bis(2-chloroethoxy)methane	24	U	2670	2600	2190	2230
Bis(2-chloroethyl)ether	17	U	2670	2600	2100	2190
bis (2-chloroisopropyl) ether	24	U	2670	2600	1660	1740
Bis(2-ethylhexyl) phthalate	60	J	2670	2600	2270	2450
4-Bromophenyl phenyl ether	20	U	2670	2600	2350	2420
Butyl benzyl phthalate	45	U	2670	2600	2250	2410
Carbazole	38	U	2670	2600	2300	2350
4-Chloroaniline	86	U	2670	2600	1570	1770
4-Chloro-3-methylphenol	69	U	2670	2600	2330	2410
2-Chloronaphthalene	10	U	2670	2600	2230	2300
2-Chlorophenol	22	U	2670	2600	2270	2310
4-Chlorophenyl phenyl ether	22	U	2670	2600	2320	2430
Chrysene	28	U	2670	2600	2310	2430
Dibenz(a,h)anthracene	20	U	2670	2600	2250	2360
Dibenzofuran	21	U	2670	2600	2300	2370
1,2-Dichlorobenzene	23	U	2670	2600	2140	2170
1,3-Dichlorobenzene	13	U	2670	2600	2100	2140
1,4-Dichlorobenzene	14	U	2670	2600	2110	2150
3,3'-Dichlorobenzidine	94	U	2670	2600	1470	1790
2,4-Dichlorophenol	10	U	2670	2600	2390	2440
Diethyl phthalate	27	U	2670	2600	2330	2440
2,4-Dimethylphenol	69	U	2670	2600	2220	2250
Dimethyl phthalate	24	U	2670	2600	2340	2430
Di-n-butyl phthalate	30	U	2670	2600	2340	2440
4,6-Dinitro-2-methylphenol	350	U	5340	5200	4050	4520
2,4-Dinitrophenol	350	U	5340	5200	3190	3850
2,4-Dinitrotoluene	69	U	2670	2600	2450	2540
2,6-Dinitrotoluene	29	U	2670	2600	2390	2480
Di-n-octyl phthalate	15	U	2670	2600	2020	2190
Fluoranthene	38	U	2670	2600	2370	2430
Fluorene	19	U	2670	2600	2270	2350
Hexachlorobenzene	30	U	2670	2600	2350	2410
Hexachlorobutadiene	10	U	2670	2600	2230	2270
Hexachlorocyclopentadiene	52	U	2670	2600	1970	2040
Hexachloroethane	22	U	2670	2600	2110	2100

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Matrix Spike/
Matrix Spike Duplicate Recovery Report - Batch: 280-316048

Method: 8270C
Preparation: 3550C

MS Lab Sample ID:	280-80411-2	Units: ug/Kg	MSD Lab Sample ID: 280-80411-2
Client Matrix:	Solid		Client Matrix: Solid
Dilution:	1.0		Dilution: 1.0
Analysis Date:	03/09/2016 1747		Analysis Date: 03/09/2016 1813
Prep Date:	03/07/2016 2130		Prep Date: 03/07/2016 2130
Leach Date:	N/A		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	23	U	2670	2600	2130		2190	
Isophorone	18	U	2670	2600	1990		2060	
2-Methylnaphthalene	20	U	2670	2600	2290		2320	
2-Methylphenol	14	U	2670	2600	2240		2260	
3 & 4 Methylphenol	35	U	2670	2600	2230		2300	
Naphthalene	32	U	2670	2600	2220		2280	
2-Nitroaniline	52	U	2670	2600	2110		2220	
3-Nitroaniline	76	U	2670	2600	1870		2070	
4-Nitroaniline	76	U	2670	2600	2170		2280	
Nitrobenzene	23	U	2670	2600	2060		2140	
2-Nitrophenol	10	U	2670	2600	2330		2420	
4-Nitrophenol	100	U	5340	5200	5100		5320	
N-Nitrosodi-n-propylamine	32	U	2670	2600	2050		2100	
N-Nitrosodiphenylamine	22	U	2670	2600	2300		2380	
Pentachlorophenol	350	U	5340	5200	5020		5250	
Phenanthrene	18	U	2670	2600	2320		2400	
Phenol	19	U	2670	2600	2170		2200	
Pyrene	13	U	2670	2600	2280		2400	
1,2,4-Trichlorobenzene	29	U	2670	2600	2220		2280	
2,4,5-Trichlorophenol	10	U	2670	2600	2400		2480	
2,4,6-Trichlorophenol	10	U	2670	2600	2520		2660	
Tributyl phosphate	60	U	1330	1300	1360	J	1440	J

Date: 21 March 2016
To: Washington Closure Hanford Inc. (technical representative)
From: ELR Consulting
Project: 300 Area D4 Waste Sites – Soil Full Protocol – Waste Site 300-288:2 ESA 2
Subject: Wet Chemistry - Data Package No. JP1035-TAL

INTRODUCTION

This memo presents the results of data validation on Data Package No. JP1035 prepared by TestAmerica Inc. (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
J1V8H9	3/1/16	Soil	C	See note 1
J1V8J0	3/1/16	Soil	C	See note 1
J1V8J1	3/1/16	Soil	C	See note 1
J1V8J2	3/1/16	Soil	C	See note 1
J1V8J3	3/1/16	Soil	C	See note 1
J1V8J4	3/1/16	Soil	C	See note 1
J1V8J5	3/1/16	Soil	C	See note 1
J1V8J6	3/1/16	Soil	C	See note 1
J1V8J7	3/1/16	Soil	C	See note 1
J1V8J8	3/1/16	Soil	C	See note 1
J1V8J9	3/1/16	Soil	C	See note 1
J1V8K0	3/1/16	Soil	C	See note 1
J1V8K1	3/1/16	Soil	C	See note 1

1 – pH by 9045C.

Data validation was conducted in accordance with the Washington Closure Hanford Incorporated (WCH) validation statement of work and the 300 Area Remedial Action Sampling and Analysis Plan (DOE/RL-2001-48, Rev. 4). 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 immediate (24 hours) for pH.

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

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

All other holding times were acceptable.

- **Method Blanks**

Method Blanks

Method blank analyses are performed to determine the extent of laboratory contamination introduced through sampling, sample preparation and analysis. At least one acceptable method blank analysis must be conducted for every 20 samples. No contaminants should be present in the method blank. All blank results must fall below the contract required detection limit (CRQL) to be acceptable.

Method blank analysis is not applicable to pH analysis.

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 (J1V8J1/J1V8K1) were submitted for analysis. Laboratory blanks 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 JP1035 was submitted for validation and verified for completeness. Completeness is based on the percentage of data determined to be valid (i.e., not rejected). The completion percentage was 100%.

MAJOR DEFICIENCIES

None found.

MINOR DEFICIENCIES

The following minor deficiencies were noted:

- Due to the holding time being exceeded by greater than twice the limit, all pH 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-2001-48, Rev. 4, *300 Area Remedial Action Sampling and Analysis Plan*, U.S. Department of Energy, November 2014.

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: JP1035	**REVIEWER: ELR**	**Project: 300-288:2 ESA 2**	**PAGE_1_OF_1**
COMPOUND	QUALIFIER	SAMPLES AFFECTED	REASON
pH	J	All	Hold time

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

Appendix 3

Annotated Laboratory Reports

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

General Chemistry

Client Sample ID: **J1V8H9**

Lab Sample ID: 280-80411-1
Client Matrix: Solid

Date Sampled: 03/01/2016 0940
Date Received: 03/04/2016 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
pH adj. to 25 deg C-Soluble	9.16	J	SU	0.100	0.100	1.0	9045C
Analysis Batch: 280-315944	Analysis Date: 03/05/2016 1045						DryWt Corrected: N
Percent Moisture	6.3		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-315941	Analysis Date: 03/05/2016 0958						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

General Chemistry

Client Sample ID: **J1V8J0**

Lab Sample ID: 280-80411-2
Client Matrix: Solid

3/20/16

Date Sampled: 03/01/2016 0920
Date Received: 03/04/2016 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
pH adj. to 25 deg C-Soluble	9.36	J	SU	0.100	0.100	1.0	9045C
Analysis Batch: 280-315944	Analysis Date: 03/05/2016 1045						DryWt Corrected: N
Percent Moisture	5.1		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-315941	Analysis Date: 03/05/2016 0958						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

General Chemistry

Client Sample ID: **J1V8J1**

Lab Sample ID: 280-80411-3
Client Matrix: Solid

Date Sampled: 03/01/2016 0953
Date Received: 03/04/2016 0930

r 3/20/16

Analyte	Result	Qual	Units	RL	RL	Dil	Method
pH adj. to 25 deg C-Soluble	9.44	J	SU	0.100	0.100	1.0	9045C
Analysis Batch: 280-315944	Analysis Date: 03/05/2016 1045						DryWt Corrected: N
Percent Moisture	5.8		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-315941	Analysis Date: 03/05/2016 0958						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

General Chemistry

Client Sample ID: **J1V8J2**

Lab Sample ID: 280-80411-4
Client Matrix: Solid

W 3/20/16

Date Sampled: 03/01/2016 0905
Date Received: 03/04/2016 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
pH adj. to 25 deg C-Soluble	9.49	J	SU	0.100	0.100	1.0	9045C
Analysis Batch: 280-315944	Analysis Date: 03/05/2016 1045						DryWt Corrected: N
Percent Moisture	6.2		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-315941	Analysis Date: 03/05/2016 0958						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

General Chemistry

Client Sample ID: **J1V8J3**

Lab Sample ID: 280-80411-5
Client Matrix: Solid

3/20/16

Date Sampled: 03/01/2016 1029
Date Received: 03/04/2016 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
pH adj. to 25 deg C-Soluble	9.38	J	SU	0.100	0.100	1.0	9045C
Analysis Batch: 280-315944	Analysis Date: 03/05/2016 1045						DryWt Corrected: N
Percent Moisture	5.5		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-315941	Analysis Date: 03/05/2016 0958						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

General Chemistry

Client Sample ID: **J1V8J4**

Lab Sample ID: 280-80411-6
Client Matrix: Solid

Date Sampled: 03/01/2016 1045
Date Received: 03/04/2016 0930

r 3/20/16

Analyte	Result	Qual	Units	RL	RL	Dil	Method
pH adj. to 25 deg C-Soluble	9.34	J	SU	0.100	0.100	1.0	9045C
Analysis Batch: 280-315944	Analysis Date: 03/05/2016 1045						DryWt Corrected: N
Percent Moisture	4.8		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-315941	Analysis Date: 03/05/2016 0958						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

General Chemistry

Client Sample ID: **J1V8J5**

Lab Sample ID: 280-80411-7
Client Matrix: Solid

V 3/20/16

Date Sampled: 03/01/2016 0840
Date Received: 03/04/2016 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
pH adj. to 25 deg C-Soluble	9.44	J	SU	0.100	0.100	1.0	9045C
Analysis Batch: 280-315944	Analysis Date: 03/05/2016 1045						DryWt Corrected: N
Percent Moisture	5.2		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-315941	Analysis Date: 03/05/2016 0958						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

General Chemistry

Client Sample ID: J1V8J6

Lab Sample ID: 280-80411-8
Client Matrix: Solid

3/20/16

Date Sampled: 03/01/2016 1058
Date Received: 03/04/2016 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
pH adj. to 25 deg C-Soluble	9.17	J	SU	0.100	0.100	1.0	9045C
Analysis Batch: 280-315944	Analysis Date: 03/05/2016 1045						DryWt Corrected: N
Percent Moisture	6.2		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-315941	Analysis Date: 03/05/2016 0958						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

General Chemistry

Client Sample ID: **J1V8J7**

Lab Sample ID: 280-80411-9
Client Matrix: Solid

r 3/20/16

Date Sampled: 03/01/2016 1118
Date Received: 03/04/2016 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
pH adj. to 25 deg C-Soluble	9.22	J	SU	0.100	0.100	1.0	9045C
Analysis Batch: 280-315944	Analysis Date: 03/05/2016 1045						DryWt Corrected: N
Percent Moisture	7.2		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-315941	Analysis Date: 03/05/2016 0958						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

General Chemistry

Client Sample ID: **J1V8J8**

Lab Sample ID: 280-80411-10
Client Matrix: Solid

V 3/20/16

Date Sampled: 03/01/2016 1135
Date Received: 03/04/2016 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
pH adj. to 25 deg C-Soluble	9.27	J	SU	0.100	0.100	1.0	9045C
Analysis Batch: 280-315944	Analysis Date: 03/05/2016 1045						DryWt Corrected: N
Percent Moisture	5.1		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-315941	Analysis Date: 03/05/2016 0958						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

General Chemistry

Client Sample ID: **J1V8J9**

Lab Sample ID: 280-80411-11
Client Matrix: Solid

3/20/16

Date Sampled: 03/01/2016 1156
Date Received: 03/04/2016 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
pH adj. to 25 deg C-Soluble	9.13		SU	0.100	0.100	1.0	9045C
Analysis Batch: 280-315944	Analysis Date: 03/05/2016 1045						DryWt Corrected: N
Percent Moisture	4.6		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-315941	Analysis Date: 03/05/2016 0958						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

General Chemistry

Client Sample ID: **J1V8K0**

Lab Sample ID: 280-80411-12
Client Matrix: Solid

5/20/16

Date Sampled: 03/01/2016 0852
Date Received: 03/04/2016 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
pH adj. to 25 deg C-Soluble	9.46	J	SU	0.100	0.100	1.0	9045C
Analysis Batch: 280-315944	Analysis Date: 03/05/2016 1045						DryWt Corrected: N
Percent Moisture	7.2		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-315941	Analysis Date: 03/05/2016 0958						DryWt Corrected: N

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

General Chemistry

Client Sample ID: **J1V8K1**

Lab Sample ID: 280-80411-13
Client Matrix: Solid

Date Sampled: 03/01/2016 0953
Date Received: 03/04/2016 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
pH adj. to 25 deg C-Soluble	9.40	J	SU	0.100	0.100	1.0	9045C
Analysis Batch: 280-315944	Analysis Date: 03/05/2016 1045						DryWt Corrected: N
Percent Moisture	5.3		%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-315941	Analysis Date: 03/05/2016 0958						DryWt Corrected: N

Appendix 4

Laboratory Narrative and Chain-of-Custody Documentation

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Job Number: 280-80411-1

SDG #: JP1035
SAF#: RC-148

Date SDG Closed: March 4, 2016
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1V8H9	280-80411-1	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J0	280-80411-2	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J1	280-80411-3	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J2	280-80411-4	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J3	280-80411-5	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J4	280-80411-6	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J5	280-80411-7	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J6	280-80411-8	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J7	280-80411-9	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J8	280-80411-10	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8J9	280-80411-11	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8K0	280-80411-12	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C
J1V8K1	280-80411-13	6010/7471/8082/WTPH-D+/8270/9045	6010B/6020/7471A/8082/NWTPH-Dx/8270C/9045C

The Uranium 6020 method substitution noted above, as agreed to by all parties, has no technical impact on the data.

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 3/4/2016 9:30 AM; the samples arrived intact and on ice. The temperatures of the 4 coolers at receipt time were 0.0° C, 0.4° C, 0.7° C and 1.2° C. It was not noted which samples were in the cooler received at a temperature of 0.0° C. The client was notified on 3/4/2016.

GC/MS SEMIVOLATILES - SW846 8270C
No anomalies were encountered.

GC SEMIVOLATILES - SW846 8082 - PCBs
The laboratory noted that the samples presented in this report contained small stones that were not used in extraction.

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

The RPD between the primary and confirmation columns exceeded 25% for Aroclor 1254 in sample J1V8J5. The result has been flagged with a "P".

No other anomalies were encountered.

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

TOTAL METALS - SW846 6010B/6020/7471A
Serial dilution of a digestate in batch 280-315923 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. Sample J1V8H9 required a 2X dilution prior to the analysis of Antimony, Beryllium, Cobalt, Copper, Lead, Magnesium, Tin, Vanadium and Zinc to minimize the interference caused by the Titanium concentration greater than the linear range. The reporting limits have been adjusted relative to the dilution required.

Low levels of Barium, Calcium, Chromium, Strontium and Magnesium are present in the method blank associated with batch 280-315923. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, 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 J1V8H9; therefore, control limits are not applicable.

The Matrix Spike performed on sample J1V8H9 exhibited percent recoveries outside the control limits for Tin 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.

The duplicate analysis of sample J1V8H9 exhibited RPD data outside the control limits for several elements, and the associated sample results have been flagged "M". There is no indication that the analytical systems were 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.

GENERAL CHEMISTRY - SW846 9045C - PH
SU = standard units

No anomalies were encountered.

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-148-221

Collector: ETHERINGTON, TW	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Day		
Project Designation: 300 Area D4 Waste Sites	Sampling Location: 300-288:2 ESA2		SAF No.: RC-148
Ice Chest No.: TNU-052	Field Logbook No.: EL-1663-08	COA: 0328822000	Method of Shipment: Commercial Carrier
Shipped To: TestAmerica Denver	Offsite Property No.: A131449		Bill of Lading/Air Bill No.: SEE OSPC

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cool as required for preservation

Preservation	Cool <=6C	Cool <=6C	Cool <=6C	None	Cool <=6C						
Type of Container	G/P	aG	aG	G/P	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	125mL	250mL	250mL						
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	pH (Soil) - 9045	Semi-VOA - 8270 (TCL); Semi-VOA – 8270 (Add-On Tributyl phosphate)						

Sample No.	Matrix	Sample Date	Sample Time										
J1V8H9	SOIL	3-1-16	0940	✓	✓	✓	✓	✓					
J1V8J0	SOIL	3-1-16	0920	✓	✓	✓	✓	✓					
J1V8J1	SOIL	3-1-16	0953	✓	✓	✓	✓	✓					
J1V8J2	SOIL	3-1-16	0905	✓	✓	✓	✓	✓					
J1V8J3	SOIL	3-1-16	1029	✓	✓	✓	✓	✓					

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
T.R. Edmundson	3-1-16 1205	T.R. Edmundson	3-1-16 1205
T.R. Edmundson	3-1-16 1300	1060 Refer #3C	3-1-16 1300
1060 Refer #3C	3-3-16 0900	T.R. Edmundson	3-3-16 0900
T.R. Edmundson WCH	3-3-16 1500	Fred Ef	3-3-16 —
		TAD	3/4/16 0930

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

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

280-80411 Chain of Custody

REVIEWED BY DAS DATE 3/3/16

JP1035

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-148-221

Collector: ETHERINGTON, TW	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8B	Data Turnaround: 7 Day		
Project Designation: 300 Area D4 Waste Sites	Sampling Location: 300-288:2 ESA2		SAF No.: RC-148
Ice Chest No.: TNU-052	Field Logbook No.: EL-1663-08	COA: 0328822000	Method of Shipment: Commercial Carrier
Shipped To: TestAmerica Denver	Offsite Property No.: A131449		Bill of Lading/Air Bill No.: SEE OSPC

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cool as required for preservation

Preservation	Cool <=6C	Cool <=6C	Cool <=6C	None	Cool <=6C						
Type of Container	G/P	aG	aG	G/P	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	125mL	250mL	250mL						
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	pH (Soil) - 9045	Semi-VOA - 8270 (TCL); Semi-VOA – 8270 (Add-On Tributyl phosphate)						
Sample No.	Matrix	Sample Date	Sample Time								
J1V8J4	SOIL	3-1-16	1045	✓	✓	✓	✓	✓			
J1V8J5	SOIL	3-1-16	0840	✓	✓	✓	✓	✓			
J1V8J6	SOIL	3-1-16	1058	✓	✓	✓	✓	✓			
J1V8J7	SOIL	3-1-16	1118	✓	✓	✓	✓	✓			
J1V8J8	SOIL	3-1-16	1135	✓	✓	✓	✓	✓			

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
T. Etherington	3-1-16 1205	T.R. Edmundson	3-1-16 1205
T.R. Edmundson	3-1-16 1300	1060 Refer #3C	3-1-16 1300
1060 Refer #3C	3-3-16 0900	T.R. Edmundson	3-3-16 0900
T.R. Edmundson WCH	3-3-16 1500	T.R. Edmundson Fed Ex	3-3-16 1500
		TAD	3/4/16 0930

FINAL SAMPLE DISPOSITION	Disposal Method	Disposed By	Date/Time

SPECIAL INSTRUCTIONS

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

REVIEWED BY [illegible] DATE 3/3/16

JP1035

WCH-EE-011

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-148-221

Collector: ETHERINGTON, TW	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 300 Area D4 Waste Sites	Sampling Location: 300-288:2 ESA2		SAF No.: RC-148
Ice Chest No.: TNV-052	Field Logbook No.: EL-1663-08	COA: 0328822000	Method of Shipment: Commercial Carrier
Shipped To: TestAmerica Denver	Offsite Property No.: A131449		Bill of Lading/Air Bill No.: SEE OSPC

Price Code: 8B

Data Turnaround: 7 Day

Other Labs Shipped To: TestAmerica Richland

POSSIBLE SAMPLE HAZARDS/REMARKS

N/A

Special Handling and/or Storage

Cool as required for preservation

Preservation	Cool <=6C	Cool <=6C	Cool <=6C	None	Cool <=6C						
Type of Container	G/P	aG	aG	G/P	aG						
No. of Container(s)	1	1	1	1	1						
Volume	250mL	250mL	125mL	250mL	250mL						
Sample Analysis	See item (1) in Special Instructions	PCBs - 8082	TPH-Diesel Range - WTPH-D +	pH (Soil) - 9045	Semi-VOA - 8270 (TCL); Semi-VOA -- 8270 (Add-On Tributyl phosphate)						

Sample No.	Matrix	Sample Date	Sample Time										
J1V8J9	SOIL	3-1-16	1156	✓	✓	✓	✓	✓					
J1V8K0	SOIL	3-1-16	0852	✓	✓	✓	✓	✓					
J1V8K1	SOIL	3-1-16	0953	✓	✓	✓	✓	✓					

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
T. Etherington [signature]	3-1-16 1205	T.R. Edmundson J.R. Edmundson	3-1-16 1205
T.R. Edmundson J.R. Edmundson	3-1-16 1300	1060 Refer #3C	3-1-16 1300
1060 Refer #3C	3-3-16 0900	T.R. Edmundson J.R. Edmundson	3-3-16 0900
T.R. Edmundson J.R. Edmundson WCH	3-3-16 1500	Fed Ex	3-3-16 —
		[signature] TAD	3/4/16 0930

FINAL SAMPLE DISPOSITION — Disposal Method — Disposed By — Date/Time

SPECIAL INSTRUCTIONS

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

REVIEWED BY [initials] DATE 3/3/16

JP1035

WCH-EE-011

Appendix 5

Data Validation Supporting Documentation

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

VALIDATION LEVEL:	A	B	C	D	E
PROJECT: 300-2288:2-EST2			DATA PACKAGE: JP1035		
VALIDATOR: ELR		LAB: TAL		DATE: 3/19/16	
			SDG: JP1035		
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					
J1V8H9	J1V8J0	J1V8J1	J1V8J2	J1V8J3	
J1V8J4	J1V8J5	J1V8J6	J1V8J7	J1V8J8	
J1V8J9	J1V8K0	J1V8K1			
					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: _____

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: >2x HT - J all

GENERAL CHEMISTRY ANALYSIS DATA VALIDATION CHECKLIST

7. RESULT QUANTITATION AND DETECTION LIMITS (all levels)

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

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

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

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

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

Comments:

Appendix 6

Additional Documentation Requested by Client

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 280-315944

Method: 9045C
Preparation: N/A

LCS Lab Sample ID:	LCS 280-315944/4	Analysis Batch:	280-315944	Instrument ID:	No Equipment Assigned
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 mL
Analysis Date:	03/05/2016 1045	Units:	SU	Final Weight/Volume:	1 mL
Prep Date:	N/A				
Leach Date:	N/A				

LCSD Lab Sample ID:	LCSD 280-315944/5	Analysis Batch:	280-315944	Instrument ID:	No Equipment Assigned
Client Matrix:	Water	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 mL
Analysis Date:	03/05/2016 1045	Units:	SU	Final Weight/Volume:	1 mL
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	% Rec. LCS	% Rec. LCSD	Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
pH adj. to 25 deg C-Soluble	100	100	97 - 103	0	5		

Laboratory Control/
Laboratory Duplicate Data Report - Batch: 280-315944

Method: 9045C
Preparation: N/A

LCS Lab Sample ID:	LCS 280-315944/4	Units:	SU	LCSD Lab Sample ID:	LCSD 280-315944/5
Client Matrix:	Water			Client Matrix:	Water
Dilution:	1.0			Dilution:	1.0
Analysis Date:	03/05/2016 1045			Analysis Date:	03/05/2016 1045
Prep Date:	N/A			Prep Date:	N/A
Leach Date:	N/A			Leach Date:	N/A

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
pH adj. to 25 deg C-Soluble	7.00	7.00	7.010	7.000

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Duplicate - Batch: 280-315944

Method: 9045C
Preparation: N/A

Lab Sample ID:	280-80411-1	Analysis Batch:	280-315944	Instrument ID:	No Equipment Assigned
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	280-315911	Initial Weight/Volume:	1 mL
Analysis Date:	03/05/2016 1045	Units:	SU	Final Weight/Volume:	1 mL
Prep Date:	N/A				
Leach Date:	03/04/2016 1832				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
pH adj. to 25 deg C-Soluble	9.16	9.210	0.5	5	

Duplicate - Batch: 280-315944

Method: 9045C
Preparation: N/A

Lab Sample ID:	280-80411-8	Analysis Batch:	280-315944	Instrument ID:	No Equipment Assigned
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	280-315911	Initial Weight/Volume:	1 mL
Analysis Date:	03/05/2016 1045	Units:	SU	Final Weight/Volume:	1 mL
Prep Date:	N/A				
Leach Date:	03/04/2016 1832				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
pH adj. to 25 deg C-Soluble	9.17	9.220	0.5	5	

Client: Washington Closure Hanford

Job Number: 280-80411-1
Sdg Number: JP1035

Duplicate - Batch: 280-315941

Method: D-2216
Preparation: N/A

Lab Sample ID:	280-80411-1	Analysis Batch:	280-315941	Instrument ID:	No Equipment Assigned
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	
Analysis Date:	03/05/2016 0958	Units:	%	Final Weight/Volume:	
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Percent Moisture	6.3	6.6	4	20	

Duplicate - Batch: 280-315941

Method: D-2216
Preparation: N/A

Lab Sample ID:	280-80411-13	Analysis Batch:	280-315941	Instrument ID:	No Equipment Assigned
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	
Analysis Date:	03/05/2016 0958	Units:	%	Final Weight/Volume:	
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Percent Moisture	5.3	5.1	3	20	