

**SAF-RC-232**  
**100-IU-2 & 100-IU-6 Remaining**  
**Waste Sites – Soil Full Protocol**  
**FINAL DATA PACKAGE**

**COMPLETE COPY OF DATA PACKAGE TO:**

No Distribution Required

KW 10/12/15  
INITIAL/DATE

**COMMENTS:**

**SDG JP1000**

**SAF-RC-232**

Rad only

Chem only

Rad & Chem

Complete

Partial

**Sample Location: 600-326 (Areas 1 and 2) verification**

## ANALYTICAL REPORT

Job Number: 280-74906-1

SDG Number: JP1000

Job Description: SAF# RC-232

For:

Washington Closure Hanford  
2620 Fermi Avenue  
Richland, WA 99354

Attention: Joan H Kessner



Approved for release.  
Kae E Yoder  
Senior Project Manager  
10/9/2015 2:25 PM

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10/09/2015

The test results in this report relate only to the samples in this report and meet all requirements of NELAC, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Denver Project Manager.

The Lab Certification ID# is 4025.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

**TestAmerica Laboratories, Inc.**

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## CASE NARRATIVE

**Client: Washington Closure Hanford**

**Project: WASHINGTON CLOSURE HANFORD**

**Job Number: 280-74906-1**

**SDG #: JP1000**

**SAF#: RC-232**

**Date SDG Closed: October 2, 2015**

**Data Deliverable: 7 Day / Summary**

<u>CLIENT ID</u>	<u>LAB ID</u>	<u>ANALYSES REQUESTED</u>	<u>ANALYSES PERFORMED</u>
J1V846	280-74906-1	6010/9056M/8310/8081	6010B/9056M/8310/8081A
J1V847	280-74906-2	6010/9056M/8310/8081	6010B/9056M/8310/8081A
J1V848	280-74906-3	6010/9056M/8310/8081	6010B/9056M/8310/8081A
J1V849	280-74906-4	6010	6010B

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 10/2/2015 9:35 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.3° C.

### GC SEMIVOLATILES - SW846 8081A - Pesticides

The organic prep laboratory noted that the samples presented in this report required a Florisil clean-up to reduce matrix interferences.

The laboratory noted that the samples presented in this report required a mercury clean-up to reduce matrix interferences caused by sulfur.

The RPD between the primary and confirmation columns exceeded 40% for 4,4'-DDE in sample J1V847. The higher of the two values has been reported. The result has been flagged with a "Y".

The MS/MSD performed on sample J1V846 exhibited spike compound recoveries outside the control limits, and the associated sample results have been flagged "N". In addition, the RPD limit was exceeded for 4,4'-DDD and 4,4'-DDE. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

### HPLC - SW846 8310 - PAHs

The RPD between the primary and confirmation columns exceeded 40% for Benzo[a]anthracene and Phenanthrene in sample J1V847. The lower of the two values has been reported, as matrix interference is evident on both columns. The results have been flagged with an "X".

The MS/MSD performed on sample J1V847 exhibited percent recoveries outside the control limits for Chrysene, and the associated sample result has been flagged "N". The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary.

Continuing Calibration Verification (CCV) standards associated with samples in analysis batch 280-298048 exhibited %Difference (%D) values >15%, biased high, for Benzo[g,h,i]perylene, Dibenzo[a,h]anthracene and Fluoranthene. The samples associated with these CCVs are either non-detect or less than the reporting limit; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

#### **TOTAL METALS - SW846 6010B**

Serial dilution of a digestate in batch 280-297784 indicates that physical and chemical interferences are present for Iron and Zinc. Results have been flagged with an "X".

Low levels of Barium, Calcium, Chromium, Magnesium and Nickel are present in the method blank associated with batch 280-297784. Because the concentrations in the method blank are not present at levels greater than half the reporting limit, corrective action is deemed unnecessary.

Zinc is present in the method blank associated with batch 280-297784 at 0.797 mg/kg, which is greater than half the project specific reporting limit (PSRL) of 1 mg/kg. TestAmerica's practical quantitation limit (PQL) for Zinc is 3 mg/kg. The laboratory cannot maintain system cleanliness at this low level; therefore, corrective action is not initiated. It can be noted that the concentration found in the method blank is less than half of the laboratory standard PQL, and with the exception of 'blank' sample J1V849, the associated sample amounts are greater than twenty times the method blank concentration.

Iron, a common laboratory contaminant, is present at a level greater than the reporting limit in the method blank associated with batch 280-297784. As the associated sample amounts are greater than twenty times the method blank concentration, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1V846; therefore, control limits are not applicable.

Silicon was recovered outside the control limits in the Matrix Spike performed on sample J1V846, and the associated sample result has been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

#### **GENERAL CHEMISTRY - SW846 9056M - ANIONS**

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the method. Due to high constituent concentration, the Sulfate analysis of sample J1V847 had to be performed at a dilution, and the associated result has been flagged with a "D". The reporting limit has been adjusted relative to the dilution required.

Sulfate is present in the method blank associated with batch 280-297863 at 7.21 mg/kg, which is greater than the project specific reporting limit (PSRL) of 5 mg/kg. TestAmerica's practical quantitation limit (PQL) for Sulfate is 50 mg/kg. The laboratory cannot maintain system cleanliness at this low level; therefore, corrective action is not initiated. It can be noted that the concentration found in the method blank is less than half of the laboratory standard PQL.

The Matrix Spike performed on sample J1V846 exhibited the percent recovery outside the control limits for Fluoride, and the associated sample result has been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

## DATA REPORTING QUALIFIERS

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

Lab Section	Qualifier	Description
GC Semi VOA		
	U	Analyzed for but not detected.
	Y	More than 40% difference between columns, higher result reported.
	N	MS, MSD: Spike recovery is outside acceptance limits.
	*	MS/MSD RPD exceeded the control limit
	J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
HPLC/IC		
	U	Analyzed for but not detected.
	X	More than 40% difference between columns, lower result reported.
	N	MS, MSD: Spike recovery is outside acceptance limits.
	J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
Metals		
	U	Analyzed for but not detected.
	B	Estimated result. Result is less than the RL, but greater than MDL
	4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
	N	Recovery exceeds upper or lower control limits
	X	Serial dilution in the analytical batch indicates that physical and chemical interferences are present.
	C	The analyte was detected in both the sample and the associated QC blank, and the sample concentration was $\leq 5X$ the blank concentration.
General Chemistry		
	U	Analyzed for but not detected.
	B	Estimated result. Result is less than the RL, but greater than MDL
	N	MS, MSD: Spike recovery is outside acceptance limits.
	D	Sample results are obtained from a dilution; the surrogate or matrix spike recoveries reported are calculated from diluted samples.

# SAMPLE SUMMARY

Client: Washington Closure Hanford

Job Number: 280-74906-1  
Sdg Number: JP1000

<b>Lab Sample ID</b>	<b>Client Sample ID</b>	<b>Client Matrix</b>	<b>Date/Time Sampled</b>	<b>Date/Time Received</b>
280-74906-1	J1V846	Solid	10/01/2015 0755	10/02/2015 0935
280-74906-2	J1V847	Solid	10/01/2015 0720	10/02/2015 0935
280-74906-3	J1V848	Solid	10/01/2015 0755	10/02/2015 0935
280-74906-4	J1V849	Solid	10/01/2015 0743	10/02/2015 0935

## METHOD SUMMARY

Client: Washington Closure Hanford

Job Number: 280-74906-1  
Sdg Number: JP1000

Description	Lab Location	Method	Preparation Method
<b>Matrix: Solid</b>			
Organochlorine Pesticides (GC)	TAL DEN	SW846 8081A	
Ultrasonic Extraction	TAL DEN		SW846 3550C
PAHs (HPLC)	TAL DEN	SW846 8310	
Ultrasonic Extraction	TAL DEN		SW846 3550C
Metals (ICP)	TAL DEN	SW846 6010B	
Preparation, Metals	TAL DEN		SW846 3050B
Anions, Ion Chromatography	TAL DEN	SW846 9056M	
Deionized Water Leaching Procedure	TAL DEN		ASTM DI Leach
ASTM D-2216	TAL DEN	ASTM D-2216	

### Lab References:

TAL DEN = TestAmerica Denver

### Method References:

ASTM = ASTM International

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

## METHOD / ANALYST SUMMARY

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

<b>Method</b>	<b>Analyst</b>	<b>Analyst ID</b>
SW846 8081A	Wells, David A	DAW
SW846 6010B	Rhoades, Chris R	CRR
SW846 9056M	Phan, Thu L	TLP
ASTM D-2216	Withers, William T	WTW
SW846 8310	Fiedler, Heather K	HKF

# **SAMPLE RESULTS**

## Analytical Data

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

**Client Sample ID: J1V846**

Lab Sample ID: 280-74906-1

Date Sampled: 10/01/2015 0755

Client Matrix: Solid

% Moisture: 9.7

Date Received: 10/02/2015 0935

### 8081A Organochlorine Pesticides (GC)

Analysis Method: 8081A	Analysis Batch: 280-298206	Instrument ID: SGC_C
Prep Method: 3550C	Prep Batch: 280-297790	Initial Weight/Volume: 31.6 g
Dilution: 1.0		Final Weight/Volume: 10 mL
Analysis Date: 10/07/2015 1854		Injection Volume: 1 uL
Prep Date: 10/04/2015 0934		Result Type: PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
4,4'-DDD		0.57	U N	0.57	1.8
4,4'-DDE		0.25	U N	0.25	1.8
4,4'-DDT		0.62	U N	0.62	1.8
Aldrin		0.26	U	0.26	1.7
alpha-BHC		0.22	U	0.22	1.7
beta-BHC		0.70	U N	0.70	1.7
delta-BHC		0.42	U N	0.42	1.7
gamma-BHC (Lindane)		0.49	U	0.49	1.7
Heptachlor		0.22	U	0.22	1.7
Heptachlor epoxide		0.45	U	0.45	1.7
Endosulfan I		0.18	U N	0.18	1.7
Endosulfan II		0.30	U N	0.30	1.8
Endosulfan sulfate		0.29	U N	0.29	1.8
Endrin		0.32	U	0.32	1.8
Endrin aldehyde		0.18	U	0.18	1.8
Endrin ketone		0.51	U N	0.51	1.8
gamma-Chlordane		0.28	U N	0.28	1.8
Methoxychlor		0.47	U N	0.47	3.5
alpha-Chlordane		0.34	U N	0.34	1.8
Dieldrin		0.22	U N	0.22	1.8
Toxaphene		17	U	17	170
Surrogate		%Rec	Qualifier	Acceptance Limits	
Tetrachloro-m-xylene		75		59 - 115	
Decachlorobiphenyl		72		63 - 124	

## Analytical Data

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

**Client Sample ID: J1V847**

Lab Sample ID: 280-74906-2

Date Sampled: 10/01/2015 0720

Client Matrix: Solid

% Moisture: 11.5

Date Received: 10/02/2015 0935

### 8081A Organochlorine Pesticides (GC)

Analysis Method: 8081A	Analysis Batch: 280-298206	Instrument ID: SGC_C
Prep Method: 3550C	Prep Batch: 280-297790	Initial Weight/Volume: 31.6 g
Dilution: 1.0		Final Weight/Volume: 10 mL
Analysis Date: 10/07/2015 1946		Injection Volume: 1 uL
Prep Date: 10/04/2015 0934		Result Type: PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
4,4'-DDD		0.59	U	0.59	1.8
4,4'-DDE		0.59	J Y	0.26	1.8
4,4'-DDT		0.63	U	0.63	1.8
Aldrin		0.27	U	0.27	1.8
alpha-BHC		0.23	U	0.23	1.8
beta-BHC		0.71	U	0.71	1.8
delta-BHC		0.43	U	0.43	1.8
gamma-BHC (Lindane)		0.50	U	0.50	1.8
Heptachlor		0.23	U	0.23	1.8
Heptachlor epoxide		0.46	U	0.46	1.8
Endosulfan I		0.19	U	0.19	1.8
Endosulfan II		0.31	U	0.31	1.8
Endosulfan sulfate		0.30	U	0.30	1.8
Endrin		0.33	U	0.33	1.8
Endrin aldehyde		0.18	U	0.18	1.8
Endrin ketone		0.52	U	0.52	1.8
gamma-Chlordane		0.29	U	0.29	1.8
Methoxychlor		0.48	U	0.48	3.5
alpha-Chlordane		0.35	U	0.35	1.8
Dieldrin		0.23	U	0.23	1.8
Toxaphene		17	U	17	180
Surrogate		%Rec	Qualifier	Acceptance Limits	
Tetrachloro-m-xylene		67		59 - 115	
Decachlorobiphenyl		71		63 - 124	

## Analytical Data

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

**Client Sample ID: J1V848**

Lab Sample ID: 280-74906-3

Date Sampled: 10/01/2015 0755

Client Matrix: Solid

% Moisture: 8.5

Date Received: 10/02/2015 0935

### 8081A Organochlorine Pesticides (GC)

Analysis Method: 8081A	Analysis Batch: 280-298206	Instrument ID: SGC_C
Prep Method: 3550C	Prep Batch: 280-297790	Initial Weight/Volume: 30.0 g
Dilution: 1.0		Final Weight/Volume: 10 mL
Analysis Date: 10/07/2015 2004		Injection Volume: 1 uL
Prep Date: 10/04/2015 0934		Result Type: PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
4,4'-DDD		0.60	U	0.60	1.9
4,4'-DDE		0.26	U	0.26	1.9
4,4'-DDT		0.64	U	0.64	1.9
Aldrin		0.27	U	0.27	1.8
alpha-BHC		0.23	U	0.23	1.8
beta-BHC		0.73	U	0.73	1.8
delta-BHC		0.44	U	0.44	1.8
gamma-BHC (Lindane)		0.51	U	0.51	1.8
Heptachlor		0.23	U	0.23	1.8
Heptachlor epoxide		0.47	U	0.47	1.8
Endosulfan I		0.19	U	0.19	1.8
Endosulfan II		0.31	U	0.31	1.9
Endosulfan sulfate		0.30	U	0.30	1.9
Endrin		0.33	U	0.33	1.9
Endrin aldehyde		0.19	U	0.19	1.9
Endrin ketone		0.53	U	0.53	1.9
gamma-Chlordane		0.29	U	0.29	1.9
Methoxychlor		0.49	U	0.49	3.6
alpha-Chlordane		0.35	U	0.35	1.9
Dieldrin		0.23	U	0.23	1.9
Toxaphene		17	U	17	180
Surrogate		%Rec	Qualifier	Acceptance Limits	
Tetrachloro-m-xylene		77		59 - 115	
Decachlorobiphenyl		68		63 - 124	

## Analytical Data

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

**Client Sample ID: J1V846**

Lab Sample ID: 280-74906-1

Date Sampled: 10/01/2015 0755

Client Matrix: Solid

% Moisture: 9.7

Date Received: 10/02/2015 0935

### 8310 PAHs (HPLC)

Analysis Method: 8310	Analysis Batch: 280-298048	Instrument ID: CHHPLC_G
Prep Method: 3550C	Prep Batch: 280-297792	Initial Weight/Volume: 30.3 g
Dilution: 1.0		Final Weight/Volume: 4 mL
Analysis Date: 10/06/2015 1456		Injection Volume: 20 uL
Prep Date: 10/04/2015 0938		Result Type: PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		11	U	11	110
Acenaphthylene		9.9	U	9.9	110
Anthracene		3.3	U	3.3	22
Benzo[a]anthracene		3.5	U	3.5	16
Benzo[a]pyrene		7.0	U	7.0	16
Benzo[b]fluoranthene		4.6	U	4.6	16
Benzo[g,h,i]perylene		7.9	U	7.9	33
Benzo[k]fluoranthene		4.3	U	4.3	16
Chrysene		5.3	U	5.3	44
Dibenzo(a,h)anthracene		12	U	12	33
Fluoranthene		14	U	14	44
Fluorene		5.8	U	5.8	33
Indeno[1,2,3-cd]pyrene		13	U	13	33
Naphthalene		13	U	13	110
Phenanthrene		13	U	13	44
Pyrene		13	U	13	44
Surrogate		%Rec	Qualifier	Acceptance Limits	
Terphenyl-d14 (SUR)		91		72 - 115	

## Analytical Data

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

**Client Sample ID: J1V847**

Lab Sample ID: 280-74906-2

Date Sampled: 10/01/2015 0720

Client Matrix: Solid

% Moisture: 11.5

Date Received: 10/02/2015 0935

### 8310 PAHs (HPLC)

Analysis Method: 8310	Analysis Batch: 280-298048	Instrument ID: CHHPLC_G
Prep Method: 3550C	Prep Batch: 280-297792	Initial Weight/Volume: 32.3 g
Dilution: 1.0		Final Weight/Volume: 4 mL
Analysis Date: 10/06/2015 1527		Injection Volume: 20 uL
Prep Date: 10/04/2015 0938		Result Type: PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		10	U	10	100
Acenaphthylene		9.4	U	9.4	100
Anthracene		3.2	U	3.2	21
Benzo[a]anthracene		4.0	J X	3.3	16
Benzo[a]pyrene		21		6.7	16
Benzo[b]fluoranthene		20		4.4	16
Benzo[g,h,i]perylene		7.6	U	7.6	31
Benzo[k]fluoranthene		4.1	U	4.1	16
Chrysene		5.1	U N	5.1	42
Dibenzo(a,h)anthracene		12	U	12	31
Fluoranthene		36	J	14	42
Fluorene		5.5	U	5.5	31
Indeno[1,2,3-cd]pyrene		16	J	13	31
Naphthalene		13	U	13	100
Phenanthrene		17	J X	13	42
Pyrene		13	U	13	42
Surrogate		%Rec	Qualifier	Acceptance Limits	
Terphenyl-d14 (SUR)		94		72 - 115	

## Analytical Data

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

**Client Sample ID: J1V848**

Lab Sample ID: 280-74906-3

Date Sampled: 10/01/2015 0755

Client Matrix: Solid

% Moisture: 8.5

Date Received: 10/02/2015 0935

### 8310 PAHs (HPLC)

Analysis Method: 8310	Analysis Batch: 280-298048	Instrument ID: CHHPLC_G
Prep Method: 3550C	Prep Batch: 280-297792	Initial Weight/Volume: 31.8 g
Dilution: 1.0		Final Weight/Volume: 4 mL
Analysis Date: 10/06/2015 1658		Injection Volume: 20 uL
Prep Date: 10/04/2015 0938		Result Type: PRIMARY

Analyte	DryWt Corrected: Y	Result (ug/Kg)	Qualifier	MDL	RL
Acenaphthene		30	J	10	100
Acenaphthylene		9.3	U	9.3	100
Anthracene		3.1	U	3.1	21
Benzo[a]anthracene		3.3	U	3.3	15
Benzo[a]pyrene		6.6	U	6.6	15
Benzo[b]fluoranthene		4.3	U	4.3	15
Benzo[g,h,i]perylene		7.4	U	7.4	31
Benzo[k]fluoranthene		4.1	U	4.1	15
Chrysene		5.0	U	5.0	41
Dibenzo(a,h)anthracene		11	U	11	31
Fluoranthene		13	U	13	41
Fluorene		5.4	U	5.4	31
Indeno[1,2,3-cd]pyrene		12	U	12	31
Naphthalene		12	U	12	100
Phenanthrene		12	U	12	41
Pyrene		12	U	12	41
Surrogate		%Rec	Qualifier	Acceptance Limits	
Terphenyl-d14 (SUR)		91		72 - 115	

# Analytical Data

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

Client Sample ID: J1V846

Lab Sample ID: 280-74906-1

Date Sampled: 10/01/2015 0755

Client Matrix: Solid

% Moisture: 9.7

Date Received: 10/02/2015 0935

## 6010B Metals (ICP)

Analysis Method: 6010B      Analysis Batch: 280-298187      Instrument ID: MT\_025  
Prep Method: 3050B      Prep Batch: 280-297784      Lab File ID: 25B100615.asc  
Dilution: 1.0      Initial Weight/Volume: 1.119 g  
Analysis Date: 10/06/2015 1850      Final Weight/Volume: 100 mL  
Prep Date: 10/05/2015 1350

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.38	U	0.38	0.59
Arsenic		3.5		0.65	0.99
Barium		80.8		0.075	0.49
Beryllium		0.28		0.033	0.20
Boron		1.2	B	0.97	2.0
Cadmium		0.14	B	0.041	0.20
Calcium		3570		13.9	49.5
Chromium		9.4		0.057	0.20
Cobalt		8.1		0.099	0.99
Copper		11.3		0.21	0.99
Lead		6.0		0.27	0.49
Magnesium		4260		3.7	19.8
Manganese		307		0.099	0.99
Molybdenum		0.26	U	0.26	2.0
Nickel		9.8		0.12	4.0
Potassium		1700		40.6	297
Selenium		0.85	U	0.85	0.99
Silicon		325	N	5.6	9.9
Silver		0.16	U	0.16	0.20
Sodium		192		58.4	119
Vanadium		51.9		0.093	2.0

Analysis Method: 6010B      Analysis Batch: 280-298379      Instrument ID: MT\_025  
Prep Method: 3050B      Prep Batch: 280-297784      Lab File ID: 25A100715.asc  
Dilution: 1.0      Initial Weight/Volume: 1.119 g  
Analysis Date: 10/07/2015 1602      Final Weight/Volume: 100 mL  
Prep Date: 10/05/2015 1350

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7590		1.5	4.9
Iron		20700	X	3.8	4.9
Zinc		41.8	X	0.39	0.99

# Analytical Data

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

Client Sample ID: J1V847

Lab Sample ID: 280-74906-2

Date Sampled: 10/01/2015 0720

Client Matrix: Solid

% Moisture: 11.5

Date Received: 10/02/2015 0935

## 6010B Metals (ICP)

Analysis Method: 6010B      Analysis Batch: 280-298187      Instrument ID: MT\_025  
Prep Method: 3050B      Prep Batch: 280-297784      Lab File ID: 25B100615.asc  
Dilution: 1.0      Initial Weight/Volume: 1.101 g  
Analysis Date: 10/06/2015 1900      Final Weight/Volume: 100 mL  
Prep Date: 10/05/2015 1350

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.39	U	0.39	0.62
Arsenic		6.0		0.68	1.0
Barium		113		0.078	0.51
Beryllium		0.32		0.034	0.21
Boron		1.3	B	1.0	2.1
Cadmium		0.35		0.042	0.21
Calcium		5750		14.5	51.3
Chromium		19.1		0.060	0.21
Cobalt		7.8		0.10	1.0
Copper		20.2		0.22	1.0
Lead		12.0		0.28	0.51
Magnesium		5260		3.8	20.5
Manganese		321		0.10	1.0
Molybdenum		0.27	U	0.27	2.1
Nickel		15.5		0.13	4.1
Potassium		1770		42.1	308
Selenium		0.88	U	0.88	1.0
Silicon		328		5.8	10.3
Silver		0.16	U	0.16	0.21
Sodium		410		60.6	123
Vanadium		46.9		0.096	2.1

Analysis Method: 6010B      Analysis Batch: 280-298379      Instrument ID: MT\_025  
Prep Method: 3050B      Prep Batch: 280-297784      Lab File ID: 25A100715.asc  
Dilution: 1.0      Initial Weight/Volume: 1.101 g  
Analysis Date: 10/07/2015 1612      Final Weight/Volume: 100 mL  
Prep Date: 10/05/2015 1350

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		10600		1.6	5.1
Iron		21600	X	3.9	5.1
Zinc		74.6	X	0.41	1.0

## Analytical Data

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

Client Sample ID: J1V848

Lab Sample ID: 280-74906-3

Date Sampled: 10/01/2015 0755

Client Matrix: Solid

% Moisture: 8.5

Date Received: 10/02/2015 0935

### 6010B Metals (ICP)

Analysis Method: 6010B      Analysis Batch: 280-298187      Instrument ID: MT\_025  
Prep Method: 3050B      Prep Batch: 280-297784      Lab File ID: 25B100615.asc  
Dilution: 1.0      Initial Weight/Volume: 1.055 g  
Analysis Date: 10/06/2015 1903      Final Weight/Volume: 100 mL  
Prep Date: 10/05/2015 1350

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.39	U	0.39	0.62
Arsenic		3.4		0.68	1.0
Barium		81.8		0.079	0.52
Beryllium		0.28		0.034	0.21
Boron		1.3	B	1.0	2.1
Cadmium		0.10	B	0.042	0.21
Calcium		3570		14.6	51.8
Chromium		8.9		0.060	0.21
Cobalt		9.2		0.10	1.0
Copper		10.8		0.22	1.0
Lead		5.3		0.28	0.52
Magnesium		4160		3.8	20.7
Manganese		154		0.10	1.0
Molybdenum		0.27	U	0.27	2.1
Nickel		9.5		0.13	4.1
Potassium		1720		42.5	311
Selenium		0.89	U	0.89	1.0
Silicon		338		5.9	10.4
Silver		0.17	U	0.17	0.21
Sodium		194		61.1	124
Vanadium		49.7		0.097	2.1

Analysis Method: 6010B      Analysis Batch: 280-298379      Instrument ID: MT\_025  
Prep Method: 3050B      Prep Batch: 280-297784      Lab File ID: 25A100715.asc  
Dilution: 1.0      Initial Weight/Volume: 1.055 g  
Analysis Date: 10/07/2015 1614      Final Weight/Volume: 100 mL  
Prep Date: 10/05/2015 1350

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7620		1.6	5.2
Iron		20200	X	3.9	5.2
Zinc		42.1	X	0.41	1.0

## Analytical Data

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

**Client Sample ID: J1V849**

Lab Sample ID: 280-74906-4

Date Sampled: 10/01/2015 0743

Client Matrix: Solid

% Moisture: 0.0

Date Received: 10/02/2015 0935

### 6010B Metals (ICP)

Analysis Method: 6010B	Analysis Batch: 280-298187	Instrument ID: MT_025
Prep Method: 3050B	Prep Batch: 280-297784	Lab File ID: 25B100615.asc
Dilution: 1.0		Initial Weight/Volume: 1.129 g
Analysis Date: 10/06/2015 1905		Final Weight/Volume: 100 mL
Prep Date: 10/05/2015 1350		

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Antimony		0.34	U	0.34	0.53
Arsenic		0.58	U	0.58	0.89
Barium		1.3		0.067	0.44
Beryllium		0.029	U	0.029	0.18
Boron		0.87	U	0.87	1.8
Cadmium		0.036	U	0.036	0.18
Calcium		38.3	B C	12.5	44.3
Chromium		0.16	B C	0.051	0.18
Cobalt		0.089	U	0.089	0.89
Copper		0.26	B	0.19	0.89
Lead		0.27	B	0.24	0.44
Magnesium		18.9	C	3.3	17.7
Manganese		3.0		0.089	0.89
Molybdenum		0.23	U	0.23	1.8
Nickel		0.17	B C	0.11	3.5
Potassium		36.3	U	36.3	266
Selenium		0.76	U	0.76	0.89
Silicon		91.5		5.0	8.9
Silver		0.14	U	0.14	0.18
Sodium		52.3	U	52.3	106
Vanadium		0.25	B	0.083	1.8

Analysis Method: 6010B	Analysis Batch: 280-298379	Instrument ID: MT_025
Prep Method: 3050B	Prep Batch: 280-297784	Lab File ID: 25A100715.asc
Dilution: 1.0		Initial Weight/Volume: 1.129 g
Analysis Date: 10/07/2015 1617		Final Weight/Volume: 100 mL
Prep Date: 10/05/2015 1350		

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		112		1.4	4.4
Iron		171	X	3.4	4.4
Zinc		1.3	C X	0.35	0.89

## Analytical Data

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

### General Chemistry

**Client Sample ID: J1V846**

Lab Sample ID: 280-74906-1

Date Sampled: 10/01/2015 0755

Client Matrix: Solid

% Moisture: 9.7

Date Received: 10/02/2015 0935

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Chloride-Soluble	2.2	U	mg/Kg	2.2	5.4	1.0	9056M
	Analysis Batch: 280-297863		Analysis Date: 10/05/2015 1537				DryWt Corrected: Y
Nitrate as N-Soluble	0.71	B	mg/Kg	0.34	2.7	1.0	9056M
	Analysis Batch: 280-297862		Analysis Date: 10/05/2015 1537				DryWt Corrected: Y
Bromide-Soluble	0.42	U	mg/Kg	0.42	2.2	1.0	9056M
	Analysis Batch: 280-297863		Analysis Date: 10/05/2015 1537				DryWt Corrected: Y
Nitrite as N-Soluble	0.36	U	mg/Kg	0.36	2.7	1.0	9056M
	Analysis Batch: 280-297862		Analysis Date: 10/05/2015 1537				DryWt Corrected: Y
Orthophosphate as P-Soluble	1.3	U	mg/Kg	1.3	5.4	1.0	9056M
	Analysis Batch: 280-297862		Analysis Date: 10/05/2015 1537				DryWt Corrected: Y
Sulfate-Soluble	43.4		mg/Kg	1.8	5.4	1.0	9056M
	Analysis Batch: 280-297863		Analysis Date: 10/05/2015 1537				DryWt Corrected: Y
Fluoride-Soluble	0.89	U N	mg/Kg	0.89	5.4	1.0	9056M
	Analysis Batch: 280-297863		Analysis Date: 10/05/2015 1537				DryWt Corrected: Y
<b>Analyte</b>	<b>Result</b>	<b>Qual</b>	<b>Units</b>	<b>RL</b>	<b>RL</b>	<b>Dil</b>	<b>Method</b>
Percent Moisture	9.7		%	0.10	0.10	1.0	D-2216
	Analysis Batch: 280-297869		Analysis Date: 10/05/2015 1018				DryWt Corrected: N

## Analytical Data

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

### General Chemistry

**Client Sample ID: J1V847**

Lab Sample ID: 280-74906-2

Date Sampled: 10/01/2015 0720

Client Matrix: Solid

% Moisture: 11.5

Date Received: 10/02/2015 0935

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Chloride-Soluble	2.9	B	mg/Kg	2.2	5.6	1.0	9056M
	Analysis Batch: 280-297863		Analysis Date: 10/05/2015 1628				DryWt Corrected: Y
Nitrate as N-Soluble	2.8		mg/Kg	0.35	2.8	1.0	9056M
	Analysis Batch: 280-297862		Analysis Date: 10/05/2015 1628				DryWt Corrected: Y
Bromide-Soluble	0.44	U	mg/Kg	0.44	2.2	1.0	9056M
	Analysis Batch: 280-297863		Analysis Date: 10/05/2015 1628				DryWt Corrected: Y
Nitrite as N-Soluble	0.38	U	mg/Kg	0.38	2.8	1.0	9056M
	Analysis Batch: 280-297862		Analysis Date: 10/05/2015 1628				DryWt Corrected: Y
Orthophosphate as P-Soluble	1.4	U	mg/Kg	1.4	5.6	1.0	9056M
	Analysis Batch: 280-297862		Analysis Date: 10/05/2015 1628				DryWt Corrected: Y
Sulfate-Soluble	3470	D	mg/Kg	9.5	27.9	5.0	9056M
	Analysis Batch: 280-297863		Analysis Date: 10/05/2015 1707				DryWt Corrected: Y
Fluoride-Soluble	0.92	U	mg/Kg	0.92	5.6	1.0	9056M
	Analysis Batch: 280-297863		Analysis Date: 10/05/2015 1628				DryWt Corrected: Y
Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	11.5		%	0.10	0.10	1.0	D-2216
	Analysis Batch: 280-297869		Analysis Date: 10/05/2015 1018				DryWt Corrected: N

## Analytical Data

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

### General Chemistry

**Client Sample ID: J1V848**

Lab Sample ID: 280-74906-3

Date Sampled: 10/01/2015 0755

Client Matrix: Solid

% Moisture: 8.5

Date Received: 10/02/2015 0935

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Chloride-Soluble	2.1	U	mg/Kg	2.1	5.3	1.0	9056M
	Analysis Batch: 280-297863	Analysis Date: 10/05/2015 1645					DryWt Corrected: Y
Nitrate as N-Soluble	0.63	B	mg/Kg	0.34	2.7	1.0	9056M
	Analysis Batch: 280-297862	Analysis Date: 10/05/2015 1645					DryWt Corrected: Y
Bromide-Soluble	0.42	U	mg/Kg	0.42	2.1	1.0	9056M
	Analysis Batch: 280-297863	Analysis Date: 10/05/2015 1645					DryWt Corrected: Y
Nitrite as N-Soluble	0.36	U	mg/Kg	0.36	2.7	1.0	9056M
	Analysis Batch: 280-297862	Analysis Date: 10/05/2015 1645					DryWt Corrected: Y
Orthophosphate as P-Soluble	1.3	U	mg/Kg	1.3	5.3	1.0	9056M
	Analysis Batch: 280-297862	Analysis Date: 10/05/2015 1645					DryWt Corrected: Y
Sulfate-Soluble	43.4		mg/Kg	1.8	5.3	1.0	9056M
	Analysis Batch: 280-297863	Analysis Date: 10/05/2015 1645					DryWt Corrected: Y
Fluoride-Soluble	0.88	U	mg/Kg	0.88	5.3	1.0	9056M
	Analysis Batch: 280-297863	Analysis Date: 10/05/2015 1645					DryWt Corrected: Y
<b>Analyte</b>	<b>Result</b>	<b>Qual</b>	<b>Units</b>	<b>RL</b>	<b>RL</b>	<b>Dil</b>	<b>Method</b>
Percent Moisture	8.5		%	0.10	0.10	1.0	D-2216
	Analysis Batch: 280-297869	Analysis Date: 10/05/2015 1018					DryWt Corrected: N

## Analytical Data

Client: Washington Closure Hanford

Job Number: 280-74906-1  
Sdg Number: JP1000

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### General Chemistry

Client Sample ID: J1V849

Lab Sample ID: 280-74906-4

Client Matrix: Solid

Date Sampled: 10/01/2015 0743

Date Received: 10/02/2015 0935

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	0.10	U	%	0.10	0.10	1.0	D-2216
Analysis Batch: 280-297869				Analysis Date: 10/05/2015 1018		DryWt Corrected: N	

# QUALITY CONTROL RESULTS

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

### Surrogate Recovery Report

#### 8081A Organochlorine Pesticides (GC)

##### Client Matrix: Solid

Lab Sample ID	Client Sample ID	TCX1 %Rec	DCB1 %Rec
280-74906-1	J1V846	75	72
280-74906-2	J1V847	67	71
280-74906-3	J1V848	77	68
MB 280-297790/1-A		77	80
LCS 280-297790/2-A		76	85
280-74906-1 MS	J1V846 MS	76	68
280-74906-1 MSD	J1V846 MSD	74	64

Surrogate	Acceptance Limits
TCX = Tetrachloro-m-xylene	59-115
DCB = Decachlorobiphenyl	63-124

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

### Surrogate Recovery Report

#### 8310 PAHs (HPLC)

##### Client Matrix: Solid

Lab Sample ID	Client Sample ID	TPH1 %Rec
280-74906-1	J1V846	91
280-74906-2	J1V847	94
280-74906-3	J1V848	91
MB 280-297792/1-A		98
LCS 280-297792/2-A		94
280-74906-2 MS	J1V847 MS	96
280-74906-2 MSD	J1V847 MSD	96

Surrogate

Acceptance Limits

TPH = Terphenyl-d14 (SUR)

72-115

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1  
Sdg Number: JP1000

**Method Blank - Batch: 280-297790**

**Method: 8081A**  
**Preparation: 3550C**

Lab Sample ID: MB 280-297790/1-A  
Client Matrix: Solid  
Dilution: 1.0  
Analysis Date: 10/07/2015 2021  
Prep Date: 10/04/2015 0934  
Leach Date: N/A

Analysis Batch: 280-298206  
Prep Batch: 280-297790  
Leach Batch: N/A  
Units: ug/Kg

Instrument ID: SGC\_C  
Lab File ID: 10070036.D  
Initial Weight/Volume: 30.4 g  
Final Weight/Volume: 10 mL  
Injection Volume: 1 uL  
Column ID: PRIMARY

Analyte	Result	Qual	MDL	RL
4,4'-DDD	0.54	U	0.54	1.7
4,4'-DDE	0.23	U	0.23	1.7
4,4'-DDT	0.58	U	0.58	1.7
Aldrin	0.25	U	0.25	1.6
alpha-BHC	0.21	U	0.21	1.6
beta-BHC	0.66	U	0.66	1.6
delta-BHC	0.40	U	0.40	1.6
gamma-BHC (Lindane)	0.46	U	0.46	1.6
Heptachlor	0.21	U	0.21	1.6
Heptachlor epoxide	0.42	U	0.42	1.6
Endosulfan I	0.17	U	0.17	1.6
Endosulfan II	0.28	U	0.28	1.7
Endosulfan sulfate	0.27	U	0.27	1.7
Endrin	0.30	U	0.30	1.7
Endrin aldehyde	0.17	U	0.17	1.7
Endrin ketone	0.48	U	0.48	1.7
gamma-Chlordane	0.26	U	0.26	1.7
Methoxychlor	0.44	U	0.44	3.3
alpha-Chlordane	0.32	U	0.32	1.7
Dieldrin	0.21	U	0.21	1.7
Toxaphene	16	U	16	160

Surrogate	% Rec	Acceptance Limits
Tetrachloro-m-xylene	77	59 - 115
Decachlorobiphenyl	80	63 - 124

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

**Lab Control Sample - Batch: 280-297790**

**Method: 8081A**

**Preparation: 3550C**

Lab Sample ID: LCS 280-297790/2-A	Analysis Batch: 280-298206	Instrument ID: SGC_C
Client Matrix: Solid	Prep Batch: 280-297790	Lab File ID: 10070030.D
Dilution: 1.0	Leach Batch: N/A	Initial Weight/Volume: 32.5 g
Analysis Date: 10/07/2015 1836	Units: ug/Kg	Final Weight/Volume: 10 mL
Prep Date: 10/04/2015 0934		Injection Volume: 1 uL
Leach Date: N/A		Column ID: PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
4,4'-DDD	15.4	13.5	88	69 - 126	
4,4'-DDE	15.4	13.3	86	71 - 116	
4,4'-DDT	15.4	14.2	92	67 - 132	
Aldrin	15.4	12.7	82	69 - 116	
alpha-BHC	15.4	12.8	83	65 - 122	
beta-BHC	15.4	10.2	66	62 - 121	
delta-BHC	15.4	12.6	82	67 - 122	
gamma-BHC (Lindane)	15.4	12.6	82	66 - 120	
Heptachlor	15.4	13.0	85	61 - 126	
Heptachlor epoxide	15.4	13.3	87	71 - 119	
Endosulfan I	15.4	12.0	78	67 - 115	
Endosulfan II	15.4	13.0	84	69 - 120	
Endosulfan sulfate	15.4	13.7	89	69 - 126	
Endrin	15.4	14.0	91	69 - 129	
Endrin aldehyde	15.4	11.8	77	41 - 128	
Endrin ketone	15.4	13.2	86	70 - 125	
gamma-Chlordane	15.4	13.1	85	69 - 122	
Methoxychlor	15.4	14.5	94	65 - 139	
alpha-Chlordane	15.4	13.0	84	71 - 118	
Dieldrin	15.4	13.4	87	71 - 120	
Surrogate		% Rec		Acceptance Limits	
Tetrachloro-m-xylene		76		59 - 115	
Decachlorobiphenyl		85		63 - 124	

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

**Matrix Spike/  
Matrix Spike Duplicate Recovery Report - Batch: 280-297790**

**Method: 8081A  
Preparation: 3550C**

MS Lab Sample ID: 280-74906-1  
Client Matrix: Solid  
Dilution: 1.0  
Analysis Date: 10/07/2015 1911  
Prep Date: 10/04/2015 0934  
Leach Date: N/A

Analysis Batch: 280-298206  
Prep Batch: 280-297790  
Leach Batch: N/A

Instrument ID: SGC\_C  
Lab File ID: 10070032.D  
Initial Weight/Volume: 31.4 g  
Final Weight/Volume: 10 mL  
Injection Volume: 1 uL  
Column ID: PRIMARY

MSD Lab Sample ID: 280-74906-1  
Client Matrix: Solid  
Dilution: 1.0  
Analysis Date: 10/07/2015 1929  
Prep Date: 10/04/2015 0934  
Leach Date: N/A

Analysis Batch: 280-298206  
Prep Batch: 280-297790  
Leach Batch: N/A

Instrument ID: SGC\_C  
Lab File ID: 10070033.D  
Initial Weight/Volume: 30.4 g  
Final Weight/Volume: 10 mL  
Injection Volume: 1 uL  
Column ID: PRIMARY

Analyte	% Rec.		Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
4,4'-DDD	55	67	69 - 126	22	20	N	N *
4,4'-DDE	65	76	71 - 116	19	15	N	*
4,4'-DDT	66	77	67 - 132	19	29	N	
Aldrin	72	79	69 - 116	13	50		
alpha-BHC	67	75	65 - 122	16	17		
beta-BHC	56	60	62 - 121	11	17	N	N
delta-BHC	65	74	67 - 122	16	19	N	
gamma-BHC (Lindane)	66	75	66 - 120	15	24		
Heptachlor	71	81	61 - 126	17	18		
Heptachlor epoxide	72	78	71 - 119	12	18		
Endosulfan I	59	66	67 - 115	14	26	N	N
Endosulfan II	65	74	69 - 120	17	20	N	
Endosulfan sulfate	63	72	69 - 126	16	22	N	
Endrin	70	81	69 - 129	18	30		
Endrin aldehyde	49	55	41 - 128	14	29		
Endrin ketone	63	71	70 - 125	15	20	N	
gamma-Chlordane	65	74	69 - 122	16	21	N	
Methoxychlor	62	70	65 - 139	16	23	N	
alpha-Chlordane	62	71	71 - 118	16	18	N	
Dieldrin	65	76	71 - 120	19	25	N	
Surrogate		MS % Rec	MSD % Rec			Acceptance Limits	
Tetrachloro-m-xylene		76	74			59 - 115	
Decachlorobiphenyl		68	64			63 - 124	

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

**Matrix Spike/  
Matrix Spike Duplicate Recovery Report - Batch: 280-297790**

**Method: 8081A  
Preparation: 3550C**

MS Lab Sample ID: 280-74906-1                      Units: ug/Kg  
 Client Matrix: Solid  
 Dilution: 1.0  
 Analysis Date: 10/07/2015 1911  
 Prep Date: 10/04/2015 0934  
 Leach Date: N/A

MSD Lab Sample ID: 280-74906-1  
 Client Matrix: Solid  
 Dilution: 1.0  
 Analysis Date: 10/07/2015 1929  
 Prep Date: 10/04/2015 0934  
 Leach Date: N/A

Analyte	Sample Result/Qual	MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
4,4'-DDD	0.57 U	17.6	18.2	9.73 N	12.2 N *
4,4'-DDE	0.25 U	17.6	18.2	11.4 N	13.8 *
4,4'-DDT	0.62 U	17.6	18.2	11.7 N	14.1
Aldrin	0.26 U	17.6	18.2	12.7	14.4
alpha-BHC	0.22 U	17.6	18.2	11.7	13.7
beta-BHC	0.70 U	17.6	18.2	9.80 N	11.0 N
delta-BHC	0.42 U	17.6	18.2	11.4 N	13.5
gamma-BHC (Lindane)	0.49 U	17.6	18.2	11.7	13.6
Heptachlor	0.22 U	17.6	18.2	12.5	14.8
Heptachlor epoxide	0.45 U	17.6	18.2	12.6	14.2
Endosulfan I	0.18 U	17.6	18.2	10.5 N	12.1 N
Endosulfan II	0.30 U	17.6	18.2	11.4 N	13.4
Endosulfan sulfate	0.29 U	17.6	18.2	11.1 N	13.0
Endrin	0.32 U	17.6	18.2	12.3	14.7
Endrin aldehyde	0.18 U	17.6	18.2	8.70	10.0
Endrin ketone	0.51 U	17.6	18.2	11.1 N	12.9
gamma-Chlordane	0.28 U	17.6	18.2	11.4 N	13.4
Methoxychlor	0.47 U	17.6	18.2	10.9 N	12.7
alpha-Chlordane	0.34 U	17.6	18.2	11.0 N	12.9
Dieldrin	0.22 U	17.6	18.2	11.5 N	13.9

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

**Method Blank - Batch: 280-297792**

**Method: 8310**

**Preparation: 3550C**

Lab Sample ID: MB 280-297792/1-A  
 Client Matrix: Solid  
 Dilution: 1.0  
 Analysis Date: 10/06/2015 1355  
 Prep Date: 10/04/2015 0938  
 Leach Date: N/A

Analysis Batch: 280-298048  
 Prep Batch: 280-297792  
 Leach Batch: N/A  
 Units: ug/Kg

Instrument ID: CHHPLC\_G  
 Lab File ID: G1006006.D  
 Initial Weight/Volume: 31.5 g  
 Final Weight/Volume: 4 mL  
 Injection Volume: 20 uL  
 Column ID: PRIMARY

Analyte	Result	Qual	MDL	RL
Acenaphthene	9.5	U	9.5	95
Acenaphthylene	8.6	U	8.6	95
Anthracene	2.9	U	2.9	19
Benzo[a]anthracene	3.0	U	3.0	14
Benzo[a]pyrene	6.1	U	6.1	14
Benzo[b]fluoranthene	4.0	U	4.0	14
Benzo[g,h,i]perylene	6.9	U	6.9	29
Benzo[k]fluoranthene	3.8	U	3.8	14
Chrysene	4.6	U	4.6	38
Dibenzo(a,h)anthracene	10	U	10	29
Fluoranthene	12	U	12	38
Fluorene	5.0	U	5.0	29
Indeno[1,2,3-cd]pyrene	11	U	11	29
Naphthalene	11	U	11	95
Phenanthrene	11	U	11	38
Pyrene	11	U	11	38

Surrogate	% Rec	Acceptance Limits
Terphenyl-d14 (SUR)	98	72 - 115

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1  
Sdg Number: JP1000

**Lab Control Sample - Batch: 280-297792**

**Method: 8310**  
**Preparation: 3550C**

Lab Sample ID: LCS 280-297792/2-A	Analysis Batch: 280-298048	Instrument ID: CHHPLC_G
Client Matrix: Solid	Prep Batch: 280-297792	Lab File ID: G1006007.D
Dilution: 1.0	Leach Batch: N/A	Initial Weight/Volume: 30.7 g
Analysis Date: 10/06/2015 1426	Units: ug/Kg	Final Weight/Volume: 4 mL
Prep Date: 10/04/2015 0938		Injection Volume: 20 uL
Leach Date: N/A		Column ID: PRIMARY

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Acenaphthene	1950	1700	87	75 - 116	
Acenaphthylene	1950	1660	85	66 - 115	
Anthracene	1950	1620	83	71 - 115	
Benzo[a]anthracene	1950	1790	92	77 - 120	
Benzo[a]pyrene	1950	1840	94	69 - 115	
Benzo[b]fluoranthene	1950	1770	91	56 - 115	
Benzo[g,h,i]perylene	1950	1970	101	72 - 120	
Benzo[k]fluoranthene	1950	1830	94	76 - 115	
Chrysene	1950	1760	90	79 - 115	
Dibenzo(a,h)anthracene	1950	1780	91	72 - 115	
Fluoranthene	1950	1740	89	77 - 115	
Fluorene	1950	1740	89	77 - 115	
Indeno[1,2,3-cd]pyrene	1950	1700	87	78 - 115	
Naphthalene	1950	1710	87	68 - 120	
Phenanthrene	1950	1680	86	75 - 115	
Pyrene	1950	1820	93	72 - 115	
Surrogate		% Rec		Acceptance Limits	
Terphenyl-d14 (SUR)		94		72 - 115	

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1  
Sdg Number: JP1000

**Matrix Spike/  
Matrix Spike Duplicate Recovery Report - Batch: 280-297792**

**Method: 8310  
Preparation: 3550C**

MS Lab Sample ID: 280-74906-2  
Client Matrix: Solid  
Dilution: 1.0  
Analysis Date: 10/06/2015 1557  
Prep Date: 10/04/2015 0938  
Leach Date: N/A

Analysis Batch: 280-298048  
Prep Batch: 280-297792  
Leach Batch: N/A

Instrument ID: CHHPLC\_G  
Lab File ID: G1006010.D  
Initial Weight/Volume: 30.6 g  
Final Weight/Volume: 4 mL  
Injection Volume: 20 uL  
Column ID: PRIMARY

MSD Lab Sample ID: 280-74906-2  
Client Matrix: Solid  
Dilution: 1.0  
Analysis Date: 10/06/2015 1628  
Prep Date: 10/04/2015 0938  
Leach Date: N/A

Analysis Batch: 280-298048  
Prep Batch: 280-297792  
Leach Batch: N/A

Instrument ID: CHHPLC\_G  
Lab File ID: G1006011.D  
Initial Weight/Volume: 30.5 g  
Final Weight/Volume: 4 mL  
Injection Volume: 20 uL  
Column ID: PRIMARY

Analyte	% Rec.		Limit	RPD	RPD Limit	MS Qual	MSD Qual
	MS	MSD					
Acenaphthene	86	85	75 - 116	1	20		
Acenaphthylene	85	84	66 - 115	1	20		
Anthracene	89	86	71 - 115	3	20		
Benzo[a]anthracene	95	93	77 - 120	1	20		
Benzo[a]pyrene	86	85	69 - 115	1	20		
Benzo[b]fluoranthene	89	91	56 - 115	2	20		
Benzo[g,h,i]perylene	105	98	72 - 120	7	20		
Benzo[k]fluoranthene	100	99	76 - 115	1	20		
Chrysene	315	290	79 - 115	8	20	N	N
Dibenzo(a,h)anthracene	87	93	72 - 115	7	20		
Fluoranthene	91	90	77 - 115	1	20		
Fluorene	90	90	77 - 115	0	20		
Indeno[1,2,3-cd]pyrene	91	88	78 - 115	3	20		
Naphthalene	88	87	68 - 120	2	20		
Phenanthrene	79	81	75 - 115	2	20		
Pyrene	111	104	72 - 115	6	20		
Surrogate		MS % Rec	MSD % Rec			Acceptance Limits	
Terphenyl-d14 (SUR)		96	96			72 - 115	

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

**Matrix Spike/  
Matrix Spike Duplicate Recovery Report - Batch: 280-297792**

**Method: 8310  
Preparation: 3550C**

MS Lab Sample ID: 280-74906-2                      Units: ug/Kg  
 Client Matrix: Solid  
 Dilution: 1.0  
 Analysis Date: 10/06/2015 1557  
 Prep Date: 10/04/2015 0938  
 Leach Date: N/A

MSD Lab Sample ID: 280-74906-2  
 Client Matrix: Solid  
 Dilution: 1.0  
 Analysis Date: 10/06/2015 1628  
 Prep Date: 10/04/2015 0938  
 Leach Date: N/A

Analyte	Sample Result/Qual	MS Spike Amount	MSD Spike Amount	MS Result/Qual	MSD Result/Qual
Acenaphthene	10 U	2220	2220	1900	1880
Acenaphthylene	9.4 U	2220	2220	1890	1870
Anthracene	3.2 U	2220	2220	1970	1920
Benzo[a]anthracene	4.0 J	2220	2220	2100	2080
Benzo[a]pyrene	21	2220	2220	1930	1910
Benzo[b]fluoranthene	20	2220	2220	1990	2030
Benzo[g,h,i]perylene	7.6 U	2220	2220	2340	2180
Benzo[k]fluoranthene	4.1 U	2220	2220	2210	2200
Chrysene	5.1 U	2220	2220	6990 N	6440 N
Dibenzo(a,h)anthracene	12 U	2220	2220	1920	2060
Fluoranthene	36 J	2220	2220	2040	2030
Fluorene	5.5 U	2220	2220	1990	1990
Indeno[1,2,3-cd]pyrene	16 J	2220	2220	2030	1960
Naphthalene	13 U	2220	2220	1960	1930
Phenanthrene	17 J	2220	2220	1770	1810
Pyrene	13 U	2220	2220	2460	2320

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1  
Sdg Number: JP1000

**Method Blank - Batch: 280-297784**

**Method: 6010B**  
**Preparation: 3050B**

Lab Sample ID: MB 280-297784/1-A  
Client Matrix: Solid  
Dilution: 1.0  
Analysis Date: 10/06/2015 1845  
Prep Date: 10/05/2015 1350  
Leach Date: N/A

Analysis Batch: 280-298187  
Prep Batch: 280-297784  
Leach Batch: N/A  
Units: mg/Kg

Instrument ID: MT\_025  
Lab File ID: 25B100615.asc  
Initial Weight/Volume: 1 g  
Final Weight/Volume: 100 mL

Analyte	Result	Qual	MDL	RL
Antimony	0.38	U	0.38	0.60
Arsenic	0.66	U	0.66	1.0
Barium	0.156	B	0.076	0.50
Beryllium	0.033	U	0.033	0.20
Boron	0.98	U	0.98	2.0
Cadmium	0.041	U	0.041	0.20
Calcium	20.98	B	14.1	50.0
Chromium	0.0960	B	0.058	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	6.33	B	3.7	20.0
Manganese	0.10	U	0.10	1.0
Molybdenum	0.26	U	0.26	2.0
Nickel	0.126	B	0.12	4.0
Potassium	41.0	U	41.0	300
Selenium	0.86	U	0.86	1.0
Silicon	5.7	U	5.7	10.0
Silver	0.16	U	0.16	0.20
Sodium	59.0	U	59.0	120
Vanadium	0.094	U	0.094	2.0

**Method Blank - Batch: 280-297784**

**Method: 6010B**  
**Preparation: 3050B**

Lab Sample ID: MB 280-297784/1-A  
Client Matrix: Solid  
Dilution: 1.0  
Analysis Date: 10/07/2015 1557  
Prep Date: 10/05/2015 1350  
Leach Date: N/A

Analysis Batch: 280-298379  
Prep Batch: 280-297784  
Leach Batch: N/A  
Units: mg/Kg

Instrument ID: MT\_025  
Lab File ID: 25A100715.asc  
Initial Weight/Volume: 1 g  
Final Weight/Volume: 100 mL

Analyte	Result	Qual	MDL	RL
Aluminum	1.6	U	1.6	5.0
Iron	8.50		3.8	5.0
Zinc	0.797	B	0.40	1.0

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1  
Sdg Number: JP1000

**Lab Control Sample - Batch: 280-297784**

**Method: 6010B**  
**Preparation: 3050B**

Lab Sample ID: LCS 280-297784/2-A	Analysis Batch: 280-298187	Instrument ID: MT_025
Client Matrix: Solid	Prep Batch: 280-297784	Lab File ID: 25B100615.asc
Dilution: 1.0	Leach Batch: N/A	Initial Weight/Volume: 1 g
Analysis Date: 10/06/2015 1848	Units: mg/Kg	Final Weight/Volume: 100 mL
Prep Date: 10/05/2015 1350		
Leach Date: N/A		

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Antimony	50.0	50.30	101	82 - 110	
Arsenic	100	100.0	100	85 - 110	
Barium	200	214.4	107	87 - 112	
Beryllium	5.00	5.05	101	84 - 114	
Boron	100	100.6	101	80 - 120	
Cadmium	10.0	10.55	105	87 - 110	
Calcium	5000	5205	104	82 - 114	
Chromium	20.0	20.68	103	84 - 114	
Cobalt	50.0	50.38	101	87 - 110	
Copper	25.0	26.70	107	88 - 110	
Lead	50.0	50.61	101	86 - 110	
Magnesium	5000	4993	100	90 - 110	
Manganese	50.0	50.20	100	88 - 110	
Molybdenum	100	105.6	106	86 - 110	
Nickel	50.0	51.72	103	87 - 110	
Potassium	5000	5282	106	89 - 110	
Selenium	200	195.1	98	83 - 110	
Silicon	1000	188.7	19	10 - 70	
Silver	5.00	5.23	105	87 - 114	
Sodium	5000	5507	110	90 - 112	
Vanadium	50.0	51.44	103	88 - 110	

**Lab Control Sample - Batch: 280-297784**

**Method: 6010B**  
**Preparation: 3050B**

Lab Sample ID: LCS 280-297784/2-A	Analysis Batch: 280-298379	Instrument ID: MT_025
Client Matrix: Solid	Prep Batch: 280-297784	Lab File ID: 25A100715.asc
Dilution: 1.0	Leach Batch: N/A	Initial Weight/Volume: 1 g
Analysis Date: 10/07/2015 1559	Units: mg/Kg	Final Weight/Volume: 100 mL
Prep Date: 10/05/2015 1350		
Leach Date: N/A		

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	200	198.2	99	82 - 116	
Iron	100	111.6	112	87 - 120	
Zinc	50.0	51.33	103	76 - 114	

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1  
Sdg Number: JP1000

**Matrix Spike - Batch: 280-297784**

**Method: 6010B**  
**Preparation: 3050B**

Lab Sample ID: 280-74906-1	Analysis Batch: 280-298187	Instrument ID: MT_025
Client Matrix: Solid	Prep Batch: 280-297784	Lab File ID: 25B100615.asc
Dilution: 1.0	Leach Batch: N/A	Initial Weight/Volume: 1.193 g
Analysis Date: 10/06/2015 1858	Units: mg/Kg	Final Weight/Volume: 100 mL
Prep Date: 10/05/2015 1350		
Leach Date: N/A		

Analyte	Sample	Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Antimony	0.38	U	46.4	24.06	52	20 - 200	
Arsenic	3.5		92.8	83.40	86	76 - 111	
Barium	80.8		186	266.5	100	52 - 159	
Beryllium	0.28		4.64	4.36	88	72 - 105	
Boron	1.2	B	92.8	79.93	85	80 - 120	
Cadmium	0.14	B	9.28	8.62	91	40 - 130	
Calcium	3570		4640	8987	117	43 - 165	
Chromium	9.4		18.6	26.88	94	70 - 200	
Cobalt	8.1		46.4	47.39	85	72 - 106	
Copper	11.3		23.2	32.89	93	37 - 187	
Lead	6.0		46.4	45.98	86	70 - 200	
Magnesium	4260		4640	8688	95	64 - 145	
Manganese	307		46.4	373.5	144	40 - 200	4
Molybdenum	0.26	U	92.8	82.83	89	75 - 103	
Nickel	9.8		46.4	49.50	86	61 - 126	
Potassium	1700		4640	6398	101	56 - 172	
Selenium	0.85	U	186	156.2	84	76 - 104	
Silicon	325		928	473.3	16	20 - 200	N
Silver	0.16	U	4.64	4.25	92	75 - 141	
Sodium	192		4640	4836	100	78 - 111	
Vanadium	51.9		46.4	94.66	92	50 - 169	

**Matrix Spike - Batch: 280-297784**

**Method: 6010B**  
**Preparation: 3050B**

Lab Sample ID: 280-74906-1	Analysis Batch: 280-298379	Instrument ID: MT_025
Client Matrix: Solid	Prep Batch: 280-297784	Lab File ID: 25A100715.asc
Dilution: 1.0	Leach Batch: N/A	Initial Weight/Volume: 1.193 g
Analysis Date: 10/07/2015 1609	Units: mg/Kg	Final Weight/Volume: 100 mL
Prep Date: 10/05/2015 1350		
Leach Date: N/A		

Analyte	Sample	Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	7590		186	10160	1382	50 - 200	4
Iron	20700		92.8	21020	296	70 - 200	4
Zinc	41.8		46.4	83.16	89	70 - 200	

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1  
Sdg Number: JP1000

**Duplicate - Batch: 280-297784**

**Method: 6010B**  
**Preparation: 3050B**

Lab Sample ID: 280-74906-1  
Client Matrix: Solid  
Dilution: 1.0  
Analysis Date: 10/06/2015 1855  
Prep Date: 10/05/2015 1350  
Leach Date: N/A

Analysis Batch: 280-298187  
Prep Batch: 280-297784  
Leach Batch: N/A  
Units: mg/Kg

Instrument ID: MT\_025  
Lab File ID: 25B100615.asc  
Initial Weight/Volume: 1.129 g  
Final Weight/Volume: 100 mL

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Antimony	0.38 U	0.37	NC	40	U
Arsenic	3.5	3.86	9	30	
Barium	80.8	97.17	18	30	
Beryllium	0.28	0.279	1	30	
Boron	1.2 B	1.20	0.3	30	B
Cadmium	0.14 B	0.121	12	30	B
Calcium	3570	3552	0.5	30	
Chromium	9.4	10.06	6	40	
Cobalt	8.1	7.82	3	30	
Copper	11.3	11.12	1	30	
Lead	6.0	6.32	6	40	
Magnesium	4260	4246	0.3	30	
Manganese	307	362.5	17	40	
Molybdenum	0.26 U	0.25	NC	30	U
Nickel	9.8	10.28	4	30	
Potassium	1700	1751	3	40	
Selenium	0.85 U	0.84	NC	30	U
Silicon	325	330.0	1	40	
Silver	0.16 U	0.16	NC	30	U
Sodium	192	194.7	1	30	
Vanadium	51.9	51.33	1	30	

**Duplicate - Batch: 280-297784**

**Method: 6010B**  
**Preparation: 3050B**

Lab Sample ID: 280-74906-1  
Client Matrix: Solid  
Dilution: 1.0  
Analysis Date: 10/07/2015 1607  
Prep Date: 10/05/2015 1350  
Leach Date: N/A

Analysis Batch: 280-298379  
Prep Batch: 280-297784  
Leach Batch: N/A  
Units: mg/Kg

Instrument ID: MT\_025  
Lab File ID: 25A100715.asc  
Initial Weight/Volume: 1.129 g  
Final Weight/Volume: 100 mL

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Aluminum	7590	7843	3	40	
Iron	20700	20470	1	40	
Zinc	41.8	42.70	2	40	

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1  
Sdg Number: JP1000

**Method Blank - Batch: 280-297862**

**Method: 9056M**  
**Preparation: N/A**

Lab Sample ID: MB 280-297896/2-A	Analysis Batch: 280-297862	Instrument ID: WC_IonChrom8
Client Matrix: Solid	Prep Batch: N/A	Lab File ID: 15.0000.d
Dilution: 1.0	Leach Batch: 280-297896	Initial Weight/Volume: 5 mL
Analysis Date: 10/05/2015 1724	Units: mg/Kg	Final Weight/Volume: 5 mL
Prep Date: N/A		
Leach Date: 10/05/2015 1321		

Analyte	Result	Qual	MDL	RL
Nitrate as N-Soluble	0.31	U	0.31	2.5
Nitrite as N-Soluble	0.34	U	0.34	2.5
Orthophosphate as P-Soluble	1.2	U	1.2	5.0

**Method Reporting Limit Check - Batch: 280-297862**

**Method: 9056M**  
**Preparation: N/A**

Lab Sample ID: MRL 280-297862/3	Analysis Batch: 280-297862	Instrument ID: WC_IonChrom8
Client Matrix: Water	Prep Batch: N/A	Lab File ID: 03.0000.d
Dilution: 1.0	Leach Batch: N/A	Initial Weight/Volume: 5 mL
Analysis Date: 10/05/2015 1254	Units: mg/L	Final Weight/Volume: 5 mL
Prep Date: N/A		
Leach Date: N/A		

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Nitrate as N-Soluble	0.200	0.193	96	50 - 150	B
Nitrite as N-Soluble	0.200	0.171	85	50 - 150	B
Orthophosphate as P-Soluble	0.200	0.19	63	50 - 150	U

**Lab Control Sample - Batch: 280-297862**

**Method: 9056M**  
**Preparation: N/A**

Lab Sample ID: LCS 280-297896/1-A	Analysis Batch: 280-297862	Instrument ID: WC_IonChrom8
Client Matrix: Solid	Prep Batch: N/A	Lab File ID: 07.0000.d
Dilution: 1.0	Leach Batch: 280-297896	Initial Weight/Volume: 5 mL
Analysis Date: 10/05/2015 1504	Units: mg/Kg	Final Weight/Volume: 5 mL
Prep Date: N/A		
Leach Date: 10/05/2015 1321		

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Nitrate as N-Soluble	50.0	49.94	100	90 - 110	
Nitrite as N-Soluble	50.0	49.86	100	90 - 110	
Orthophosphate as P-Soluble	50.0	50.10	100	90 - 110	

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1  
Sdg Number: JP1000

**Matrix Spike - Batch: 280-297862**

**Method: 9056M**  
**Preparation: N/A**

Lab Sample ID: 280-74906-1	Analysis Batch: 280-297862	Instrument ID: WC_IonChrom8
Client Matrix: Solid	Prep Batch: N/A	Lab File ID: 11.0000.d
Dilution: 1.0	Leach Batch: 280-297896	Initial Weight/Volume: 5 mL
Analysis Date: 10/05/2015 1611	Units: mg/Kg	Final Weight/Volume: 5 mL
Prep Date: N/A		25 uL
Leach Date: 10/05/2015 1321		

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Nitrate as N-Soluble	0.71	B	54.4	56.97	103	80 - 120	
Nitrite as N-Soluble	0.36	U	54.4	55.07	101	80 - 120	
Orthophosphate as P-Soluble	1.3	U	54.4	49.43	91	80 - 120	

**Duplicate - Batch: 280-297862**

**Method: 9056M**  
**Preparation: N/A**

Lab Sample ID: 280-74906-1	Analysis Batch: 280-297862	Instrument ID: WC_IonChrom8
Client Matrix: Solid	Prep Batch: N/A	Lab File ID: 10.0000.d
Dilution: 1.0	Leach Batch: 280-297896	Initial Weight/Volume: 5 mL
Analysis Date: 10/05/2015 1554	Units: mg/Kg	Final Weight/Volume: 5 mL
Prep Date: N/A		25 uL
Leach Date: 10/05/2015 1321		

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Nitrate as N-Soluble	0.71	B	0.718	0.4	15	B
Nitrite as N-Soluble	0.36	U	0.37	NC	15	U
Orthophosphate as P-Soluble	1.3	U	1.4	NC	15	U

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1  
Sdg Number: JP1000

**Method Blank - Batch: 280-297863**

**Method: 9056M**  
**Preparation: N/A**

Lab Sample ID: MB 280-297896/2-A	Analysis Batch: 280-297863	Instrument ID: WC_IonChrom8
Client Matrix: Solid	Prep Batch: N/A	Lab File ID: 15.0000.d
Dilution: 1.0	Leach Batch: 280-297896	Initial Weight/Volume: 5 mL
Analysis Date: 10/05/2015 1724	Units: mg/Kg	Final Weight/Volume: 5 mL
Prep Date: N/A		
Leach Date: 10/05/2015 1321		

Analyte	Result	Qual	MDL	RL
Chloride-Soluble	2.0	U	2.0	5.0
Bromide-Soluble	0.39	U	0.39	2.0
Sulfate-Soluble	7.21		1.7	5.0
Fluoride-Soluble	0.82	U	0.82	5.0

**Method Reporting Limit Check - Batch: 280-297863**

**Method: 9056M**  
**Preparation: N/A**

Lab Sample ID: MRL 280-297863/3	Analysis Batch: 280-297863	Instrument ID: WC_IonChrom8
Client Matrix: Water	Prep Batch: N/A	Lab File ID: 03.0000.d
Dilution: 1.0	Leach Batch: N/A	Initial Weight/Volume: 5 mL
Analysis Date: 10/05/2015 1254	Units: mg/L	Final Weight/Volume: 5 mL
Prep Date: N/A		
Leach Date: N/A		

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Chloride-Soluble	2.50	2.49	99	50 - 150	B
Bromide-Soluble	0.200	0.212	106	50 - 150	
Sulfate-Soluble	2.50	2.49	99	50 - 150	B
Fluoride-Soluble	0.200	0.175	87	50 - 150	B

**Lab Control Sample - Batch: 280-297863**

**Method: 9056M**  
**Preparation: N/A**

Lab Sample ID: LCS 280-297896/1-A	Analysis Batch: 280-297863	Instrument ID: WC_IonChrom8
Client Matrix: Solid	Prep Batch: N/A	Lab File ID: 07.0000.d
Dilution: 1.0	Leach Batch: 280-297896	Initial Weight/Volume: 5 mL
Analysis Date: 10/05/2015 1504	Units: mg/Kg	Final Weight/Volume: 5 mL
Prep Date: N/A		
Leach Date: 10/05/2015 1321		

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Chloride-Soluble	1000	1035	104	90 - 110	
Bromide-Soluble	50.0	48.67	97	90 - 110	
Sulfate-Soluble	1000	1006	101	90 - 110	
Fluoride-Soluble	50.0	49.58	99	90 - 110	

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1  
Sdg Number: JP1000

**Matrix Spike - Batch: 280-297863**

**Method: 9056M**  
**Preparation: N/A**

Lab Sample ID: 280-74906-1	Analysis Batch: 280-297863	Instrument ID: WC_IonChrom8
Client Matrix: Solid	Prep Batch: N/A	Lab File ID: 11.0000.d
Dilution: 1.0	Leach Batch: 280-297896	Initial Weight/Volume: 5 mL
Analysis Date: 10/05/2015 1611	Units: mg/Kg	Final Weight/Volume: 5 mL
Prep Date: N/A		25 uL
Leach Date: 10/05/2015 1321		

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Chloride-Soluble	2.2 U	272	296.5	109	80 - 120	
Bromide-Soluble	0.42 U	54.4	57.11	105	80 - 120	
Sulfate-Soluble	43.4	272	340.1	109	80 - 120	
Fluoride-Soluble	0.89 U	54.4	38.20	70	80 - 120	N

**Duplicate - Batch: 280-297863**

**Method: 9056M**  
**Preparation: N/A**

Lab Sample ID: 280-74906-1	Analysis Batch: 280-297863	Instrument ID: WC_IonChrom8
Client Matrix: Solid	Prep Batch: N/A	Lab File ID: 10.0000.d
Dilution: 1.0	Leach Batch: 280-297896	Initial Weight/Volume: 5 mL
Analysis Date: 10/05/2015 1554	Units: mg/Kg	Final Weight/Volume: 5 mL
Prep Date: N/A		25 uL
Leach Date: 10/05/2015 1321		

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Chloride-Soluble	2.2 U	2.2	NC	10	U
Bromide-Soluble	0.42 U	0.43	NC	10	U
Sulfate-Soluble	43.4	45.79	5	10	
Fluoride-Soluble	0.89 U	0.90	NC	10	U

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1  
Sdg Number: JP1000

**Duplicate - Batch: 280-297869**

**Method: D-2216**  
**Preparation: N/A**

Lab Sample ID:	280-74906-1	Analysis Batch:	280-297869	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:	10/05/2015 1018	Units:	%	Final Weight/Volume:	
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Percent Moisture	9.7	9.9	3	20	

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>GC Semi VOA</b>					
<b>Prep Batch: 280-297790</b>					
LCS 280-297790/2-A	Lab Control Sample	T	Solid	3550C	
MB 280-297790/1-A	Method Blank	T	Solid	3550C	
280-74906-1	J1V846	T	Solid	3550C	
280-74906-1MS	Matrix Spike	T	Solid	3550C	
280-74906-1MSD	Matrix Spike Duplicate	T	Solid	3550C	
280-74906-2	J1V847	T	Solid	3550C	
280-74906-3	J1V848	T	Solid	3550C	
<b>Analysis Batch:280-298206</b>					
LCS 280-297790/2-A	Lab Control Sample	T	Solid	8081A	280-297790
MB 280-297790/1-A	Method Blank	T	Solid	8081A	280-297790
280-74906-1	J1V846	T	Solid	8081A	280-297790
280-74906-1MS	Matrix Spike	T	Solid	8081A	280-297790
280-74906-1MSD	Matrix Spike Duplicate	T	Solid	8081A	280-297790
280-74906-2	J1V847	T	Solid	8081A	280-297790
280-74906-3	J1V848	T	Solid	8081A	280-297790

**Report Basis**

T = Total

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>Metals</b>					
<b>Prep Batch: 280-297784</b>					
LCS 280-297784/2-A	Lab Control Sample	T	Solid	3050B	
MB 280-297784/1-A	Method Blank	T	Solid	3050B	
280-74906-1	J1V846	T	Solid	3050B	
280-74906-1DU	Duplicate	T	Solid	3050B	
280-74906-1MS	Matrix Spike	T	Solid	3050B	
280-74906-2	J1V847	T	Solid	3050B	
280-74906-3	J1V848	T	Solid	3050B	
280-74906-4	J1V849	T	Solid	3050B	
<b>Analysis Batch:280-298187</b>					
LCS 280-297784/2-A	Lab Control Sample	T	Solid	6010B	280-297784
MB 280-297784/1-A	Method Blank	T	Solid	6010B	280-297784
280-74906-1	J1V846	T	Solid	6010B	280-297784
280-74906-1DU	Duplicate	T	Solid	6010B	280-297784
280-74906-1MS	Matrix Spike	T	Solid	6010B	280-297784
280-74906-2	J1V847	T	Solid	6010B	280-297784
280-74906-3	J1V848	T	Solid	6010B	280-297784
280-74906-4	J1V849	T	Solid	6010B	280-297784
<b>Analysis Batch:280-298379</b>					
LCS 280-297784/2-A	Lab Control Sample	T	Solid	6010B	280-297784
MB 280-297784/1-A	Method Blank	T	Solid	6010B	280-297784
280-74906-1	J1V846	T	Solid	6010B	280-297784
280-74906-1DU	Duplicate	T	Solid	6010B	280-297784
280-74906-1MS	Matrix Spike	T	Solid	6010B	280-297784
280-74906-2	J1V847	T	Solid	6010B	280-297784
280-74906-3	J1V848	T	Solid	6010B	280-297784
280-74906-4	J1V849	T	Solid	6010B	280-297784

**Report Basis**

T = Total

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>General Chemistry</b>					
<b>Analysis Batch:280-297862</b>					
LCS 280-297896/1-A	Lab Control Sample	S	Solid	9056M	
MB 280-297896/2-A	Method Blank	S	Solid	9056M	
280-74906-1	J1V846	S	Solid	9056M	
280-74906-1DU	Duplicate	S	Solid	9056M	
280-74906-1MS	Matrix Spike	S	Solid	9056M	
280-74906-2	J1V847	S	Solid	9056M	
280-74906-3	J1V848	S	Solid	9056M	
<b>Analysis Batch:280-297863</b>					
LCS 280-297896/1-A	Lab Control Sample	S	Solid	9056M	
MB 280-297896/2-A	Method Blank	S	Solid	9056M	
280-74906-1	J1V846	S	Solid	9056M	
280-74906-1DU	Duplicate	S	Solid	9056M	
280-74906-1MS	Matrix Spike	S	Solid	9056M	
280-74906-2	J1V847	S	Solid	9056M	
280-74906-3	J1V848	S	Solid	9056M	
<b>Analysis Batch:280-297869</b>					
280-74906-1	J1V846	T	Solid	D-2216	
280-74906-1DU	Duplicate	T	Solid	D-2216	
280-74906-2	J1V847	T	Solid	D-2216	
280-74906-3	J1V848	T	Solid	D-2216	
280-74906-4	J1V849	T	Solid	D-2216	
<b>Prep Batch: 280-297896</b>					
LCS 280-297896/1-A	Lab Control Sample	S	Solid	DI Leach	
MB 280-297896/2-A	Method Blank	S	Solid	DI Leach	
280-74906-1	J1V846	S	Solid	DI Leach	
280-74906-1DU	Duplicate	S	Solid	DI Leach	
280-74906-1MS	Matrix Spike	S	Solid	DI Leach	
280-74906-2	J1V847	S	Solid	DI Leach	
280-74906-3	J1V848	S	Solid	DI Leach	

**Report Basis**

S = Soluble

T = Total

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-74906-1

Sdg Number: JP1000


### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>HPLC/IC</b>					
<b>Prep Batch: 280-297792</b>					
LCS 280-297792/2-A	Lab Control Sample	T	Solid	3550C	
MB 280-297792/1-A	Method Blank	T	Solid	3550C	
280-74906-1	J1V846	T	Solid	3550C	
280-74906-2	J1V847	T	Solid	3550C	
280-74906-2MS	Matrix Spike	T	Solid	3550C	
280-74906-2MSD	Matrix Spike Duplicate	T	Solid	3550C	
280-74906-3	J1V848	T	Solid	3550C	
<b>Analysis Batch:280-298048</b>					
LCS 280-297792/2-A	Lab Control Sample	T	Solid	8310	280-297792
MB 280-297792/1-A	Method Blank	T	Solid	8310	280-297792
280-74906-1	J1V846	T	Solid	8310	280-297792
280-74906-2	J1V847	T	Solid	8310	280-297792
280-74906-2MS	Matrix Spike	T	Solid	8310	280-297792
280-74906-2MSD	Matrix Spike Duplicate	T	Solid	8310	280-297792
280-74906-3	J1V848	T	Solid	8310	280-297792

**Report Basis**

T = Total

<b>Washington Closure Hanford</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>				RC-232-102	Page 1 of 1
Collector CRAIG, JC	Company Contact Joan Kessner	Telephone No. 375-4688	Project Coordinator KESSNER, JH		Price Code	Data Turnaround	
Project Designation 100-IU-2 & 100-IU-6 Remaining Waste Sites		Sampling Location 600-326 (Areas 1 and 2) verification		SAF No. RC-232	83	7 days	
Ice Chest No. AFS-04-008	Field Logbook No. EL-1667-03	COA 0603262000	Method of Shipment Commercial Carrier		Fed Ex		
Shipped To TestAmerica Denver		Offsite Property No. A131443		Bill of Lading/Air Bill No. See ASPC			

Other Labs Shipped To N/A TRG 10-1-15	Preservation	Cool <=6C	Cool <=6C	Cool <=6C	Cool <=6C	 280-74906 Chain of Custody
	Type of Container	G/P	aG	aG	G/P	
	No. of Container(s)	1	1	1	1	
	Volume	250mL	250mL	250mL	250mL	
POSSIBLE SAMPLE HAZARDS/REMARKS None	Sample Analysis	See item (1) in Special Instructions	PAHs - 8310	Pesticides - 8081	See item (2) in Special Instructions	
Special Handling and/or Storage Cooling as required						

Sample No.	Matrix	Sample Date	Sample Time												
J1V846	SOIL	10/01/15	0755	X	X	X	X								
J1V847	SOIL	10/01/15	0720	X	X	X	X								
J1V848	SOIL	10/01/15	0755	X	X	X	X								
J1V849	SOIL	10/01/15	0743	X											

CHAIN OF POSSESSION		Sign/Print Names	
Relinquished By/Removed From <i>Joan Kessner</i>	Date/Time 10/1/15 0800	Received By/Stored In <i>C. Martinez</i>	Date/Time 10/1/15 0800
Relinquished By/Removed From <i>C. Martinez</i>	Date/Time 10/1/15 0935	Received By/Stored In <i>T.R. Edmondson</i>	Date/Time 10-1-15 0935
Relinquished By/Removed From <i>T.R. Edmondson</i>	Date/Time 10-1-15 1300	Received By/Stored In <i>Fed Ex</i>	Date/Time 10-1-15
Relinquished By/Removed From	Date/Time	Received By/Stored In <i>[Signature]</i>	Date/Time 10-2-15 9:35
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**

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

(2) IC Anions - 9056 Modified {Bromide, Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphorous in phosphate, Sulfate}

3.2 I.R.S 70.1  
T. R. Edmondson 10/1/15

REVIEWED BY  
*Kuperstale*  
DATE  
10-1-15

JP1000

Temp 3.2 IR# 5  
 CF +0.1 Initials VMS  
 Date: 10/02/15

90 w/Permission

Project 28002142

Report Due: 10/9/2015 P.B. 10-2-15  
 TALs TAT: Rush 5 by TAT

### Sample Check-in List

Date/Time Received: 10/2/15 9:35 GM Screen Result 11 microR/hr

Client: Washington Closure Hanford SDG#: JP1000 NA [ ] SAF#: RC-232 NA [ ]

Job Number: 74906 Chain of Custody # RC-232-102

Shipping Container ID: AFS-04-008 Air Bill # 7746 47136444

1. Custody Seals on shipping container intact? NA [ ] Yes  No [ ]
2. Custody Seals dated and signed? NA [ ] Yes  No [ ]
3. Chain of Custody record present? NA [ ] Yes  No [ ]
4. Cooler Temperature °C: 3.2 IR570.1 NA [ ] 5. Vermiculite/packing materials is NA [ ] Wet [ ] Dry
6. Number of samples in shipping container: 4
7. Sample holding times exceeded? NA [ ] Yes [ ] No
8. Samples have:
  - Tape
  - Custody Seals
  - Hazard Labels
  - Appropriate Sample Labels
9. Samples are:
  - In Good Condition
  - Broken
  - Leaking
  - Have Air Bubbles
 (Only for samples requiring no head space.)
10. Sample pH taken? NA  pH<2 [ ] pH>2 [ ] pH>9 [ ] Amount HNO<sub>3</sub> Added \_\_\_\_\_
11. Sample Location, Sample Collector Listed? \* yes  
 \*For documentation only. No corrective action needed.
12. Were any anomalies identified in sample receipt? Yes [ ] No
13. Description of anomalies (include sample numbers): \_\_\_\_\_

Sample Custodian: [Signature] Date: 10-2-15

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on \_\_\_\_\_ by \_\_\_\_\_ Person Contacted \_\_\_\_\_

[ ] No action necessary; process as is.

Project Manager Darlene Bandy Date 10-2-15

ORIGIN ID: PSCA (509) 376-7492  
1162 SHIPPING  
US DOE C/O MSA  
2355 STEVENS DR

RICHLAND, WA 99354  
UNITED STATES US

SHIP DATE: 01OCT15  
ACTWGT: 52.00 LB  
CAD: 105266502/INET3670

BILL THIRD PARTY

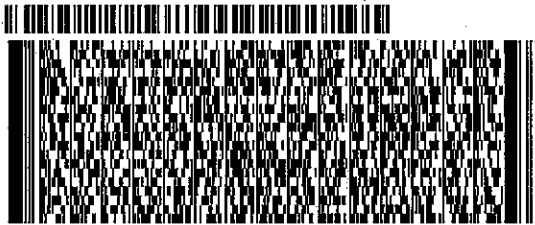
TO KAE YODER  
TESTAMERICA  
4955 YARROW ST.  
A131443  
ARVADA CO 80002

(303) 736-0190

REF: 0603262000

INV:  
PC:

DEPT:



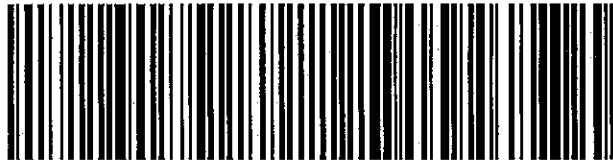
639,1287070100

FRI - 02 OCT 10:30A  
PRIORITY OVERNIGHT

TRK# 7746 4713 6444  
0201

XH WHHA

80002  
CO-US DEN



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