

**SAF-RC-234**  
**100-IU-2 & 100-IU-6 Remaining**  
**Waste Sites – Other**  
**FINAL DATA PACKAGE**

**COMPLETE COPY OF DATA PACKAGE TO:**

Kathy Wendt

H4-21

KW 4/1/15  
INITIAL/DATE

**COMMENTS:**

**SDG J02174**

**SAF-RC-234**

Rad only

Chem only

Rad & Chem

Complete

Partial

**Sample Location: 600-358 (anomalies)**

## ANALYTICAL REPORT

Job Number: 280-66701-1

SDG Number: J02174

Job Description: SAF# RC-234

For:

Washington Closure Hanford  
2620 Fermi Avenue  
Richland, WA 99354

Attention: Joan H Kessner



Approved for release.  
Kae E Yoder  
Senior Project Manager  
3/31/2015 10:06 AM

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Kae E Yoder, Senior Project Manager  
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03/31/2015

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: 280-66701-1**

**SDG #: J02174**

**SAF#: RC-234**

**Date SDG Closed: March 19, 2015**

**Data Deliverable: 21 Day / Summary**

<u>CLIENT ID</u>	<u>LAB ID</u>	<u>ANALYSES REQUESTED</u>	<u>ANALYSES PERFORMED</u>
J1V592	280-66701-1	9056M/9045	9056M/9045C
J1V593	280-66701-2	6010/9056M/9045	6010B/9056M/9045C

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.

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 3/19/2015 9:10 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.8° C.

### TOTAL METALS - SW846 6010B

Serial dilution of a digestate in batch 280-268809 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Low levels of Aluminum, Barium, Calcium, Magnesium and Silicon are present in the method blank associated with batch 280-268809. Because the concentrations in the method blank are not present at levels greater than half the reporting limit or the associated sample amounts are greater than twenty times the method blank concentration, corrective action is deemed unnecessary.

Copper is present in the method blank associated with batch 280-268809 at 0.989 mg/kg, which is greater than half the project specific reporting limit (PSRL) of 1 mg/kg. TestAmerica's practical quantitation limit (PQL) for Copper is 2 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.

Silicon was recovered outside the control limits, biased low, in the LCS associated with batch 280-268809, and the associated sample result has been flagged "N". Silicon has been identified as a poor performing element when analyzed using this method and has a history of reacting inconsistently; therefore, corrective action is not initiated. Data are reported as is.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Boron and Iron in the Matrix Spike performed on sample J1V593; therefore, control limits are not applicable.

The Matrix Spike performed on sample J1V593 exhibited percent recoveries outside the control limits for Calcium and Manganese, and the associated sample results have been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

No other anomalies were encountered.

**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 samples J1V592 and J1V593 had to be performed at 10X dilutions, and the associated results have been flagged with a "D". The reporting limits have been adjusted relative to the dilutions required.

Chloride is present in the method blank associated with batch 280-269016 at 6.90 mg/kg, which is greater than the project specific reporting limit (PSRL) of 5 mg/kg. TestAmerica's practical quantitation limit (PQL) for Chloride is 30 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 J1V593 exhibited percent recoveries outside the control limits for Orthophosphate as P and Fluoride, and the associated sample results have been flagged "N". 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.

The Orthophosphate as P duplicate analysis of sample J1V593 exceeded the RPD limit, and the associated sample result has been flagged "M". 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 Matrix Spike performed on undiluted sample J1V593 exhibited the percent recovery outside the control limits for Sulfate. It can be noted that the Matrix Spike concentration was present above the instrument calibration range. 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.

**GENERAL CHEMISTRY - SW846 9045C - PH**

SU = standard units

No anomalies were encountered.

## DATA REPORTING QUALIFIERS

Client: Washington Closure Hanford

Job Number: 280-66701-1

Sdg Number: J02174

Lab Section	Qualifier	Description
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.
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 exceeds upper or lower control limits.
	>	Result greater than quantifiable range or greater than upper limit of the analysis range.
	M	Sample duplicate precision not met.
	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: 280-66701-1  
Sdg Number: J02174

<b>Lab Sample ID</b>	<b>Client Sample ID</b>	<b>Client Matrix</b>	<b>Date/Time Sampled</b>	<b>Date/Time Received</b>
280-66701-1	J1V592	Solid	03/17/2015 1224	03/19/2015 0910
280-66701-2	J1V593	Solid	03/17/2015 1245	03/19/2015 0910

## METHOD SUMMARY

Client: Washington Closure Hanford

Job Number: 280-66701-1

Sdg Number: J02174

Description	Lab Location	Method	Preparation Method
<b>Matrix: Solid</b>			
Metals (ICP)	TAL DEN	SW846 6010B	
Preparation, Metals	TAL DEN		SW846 3050B
pH	TAL DEN	SW846 9045C	
Deionized Water Leaching Procedure	TAL DEN		ASTM DI Leach
Anions, Ion Chromatography	TAL DEN	SW846 9056M	
Deionized Water Leaching Procedure	TAL DEN		ASTM DI Leach

### 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: 280-66701-1

Sdg Number: J02174

<b>Method</b>	<b>Analyst</b>	<b>Analyst ID</b>
SW846 6010B	Broander, Laura L	LLB
SW846 6010B	Rhoades, Chris R	CRR
SW846 9045C	Simons, Nicole A	NAS
SW846 9056M	Phan, Thu L	TLP

# SAMPLE RESULTS

**Analytical Data**

Client: Washington Closure Hanford

Job Number: 280-66701-1

Sdg Number: J02174

**Client Sample ID: J1V593**

Lab Sample ID: 280-66701-2

Date Sampled: 03/17/2015 1245

Client Matrix: Solid

Date Received: 03/19/2015 0910

**6010B Metals (ICP)**

Analysis Method:	6010B	Analysis Batch:	280-269414	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-268809	Lab File ID:	26e032315.asc
Dilution:	1.0			Initial Weight/Volume:	1.17 g
Analysis Date:	03/24/2015 0225			Final Weight/Volume:	100 mL
Prep Date:	03/20/2015 1530				

Analyte	DryWt Corrected: N	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		4480	X	1.3	4.3
Antimony		0.32	U	0.32	0.51
Arsenic		3.9		0.56	0.85
Barium		86.4	X	0.065	0.43
Beryllium		0.18		0.028	0.17
Boron		602	X	0.84	1.7
Cadmium		1.0		0.035	0.17
Calcium		7640	X N	12.1	42.7
Chromium		19.2	X	0.050	0.17
Cobalt		3.5		0.085	0.85
Iron		11700	X	3.2	4.3
Lead		1.8		0.23	0.43
Magnesium		3890	X	3.2	17.1
Manganese		124	X N	0.085	0.85
Molybdenum		4.5		0.22	1.7
Nickel		18.8	X	0.11	3.4
Potassium		1240		35.0	256
Selenium		0.84	B	0.74	0.85
Silicon		155	N	4.8	8.5
Silver		0.14	U	0.14	0.17
Sodium		1860		50.4	103
Vanadium		43.5		0.080	1.7
Zinc		37.0	X	0.34	0.85

Analysis Method:	6010B	Analysis Batch:	280-270025	Instrument ID:	MT_026
Prep Method:	3050B	Prep Batch:	280-268809	Lab File ID:	26e032615.asc
Dilution:	1.0			Initial Weight/Volume:	1.17 g
Analysis Date:	03/27/2015 0019			Final Weight/Volume:	100 mL
Prep Date:	03/20/2015 1530				

Analyte	DryWt Corrected: N	Result (mg/Kg)	Qualifier	MDL	RL
Copper		10.4		0.19	0.85

**Analytical Data**

Client: Washington Closure Hanford

Job Number: 280-66701-1  
Sdg Number: J02174

**General Chemistry**

**Client Sample ID: J1V592**

Lab Sample ID: 280-66701-1  
Client Matrix: Solid

Date Sampled: 03/17/2015 1224  
Date Received: 03/19/2015 0910

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Chloride-Soluble	492		mg/Kg	2.0	5.0	1.0	9056M
	Analysis Batch: 280-269016	Analysis Date: 03/20/2015 1838					DryWt Corrected: N
Nitrate as N-Soluble	20.2		mg/Kg	0.31	2.5	1.0	9056M
	Analysis Batch: 280-269015	Analysis Date: 03/20/2015 1838					DryWt Corrected: N
Bromide-Soluble	3.7		mg/Kg	0.39	2.0	1.0	9056M
	Analysis Batch: 280-269016	Analysis Date: 03/20/2015 1838					DryWt Corrected: N
Nitrite as N-Soluble	0.33	U	mg/Kg	0.33	2.5	1.0	9056M
	Analysis Batch: 280-269015	Analysis Date: 03/20/2015 1838					DryWt Corrected: N
Orthophosphate as P-Soluble	1.2	U	mg/Kg	1.2	5.0	1.0	9056M
	Analysis Batch: 280-269015	Analysis Date: 03/20/2015 1838					DryWt Corrected: N
Sulfate-Soluble	7140	D	mg/Kg	16.9	49.8	10	9056M
	Analysis Batch: 280-269016	Analysis Date: 03/21/2015 0056					DryWt Corrected: N
Fluoride-Soluble	1.9	B	mg/Kg	0.82	5.0	1.0	9056M
	Analysis Batch: 280-269016	Analysis Date: 03/20/2015 1838					DryWt Corrected: N
Analyte	Result	Qual	Units	RL	RL	Dil	Method
pH adj. to 25 deg C-Soluble	8.05		SU	0.100	0.100	1.0	9045C
	Analysis Batch: 280-269102	Analysis Date: 03/20/2015 2137					DryWt Corrected: N

**Analytical Data**

Client: Washington Closure Hanford

Job Number: 280-66701-1  
Sdg Number: J02174

**General Chemistry**

**Client Sample ID: J1V593**

Lab Sample ID: 280-66701-2  
Client Matrix: Solid

Date Sampled: 03/17/2015 1245  
Date Received: 03/19/2015 0910

Analyte	Result	Qual	Units	MDL	RL	Dil	Method
Chloride-Soluble	1090		mg/Kg	2.0	4.9	1.0	9056M
	Analysis Batch: 280-269016	Analysis Date: 03/20/2015 1857					DryWt Corrected: N
Nitrate as N-Soluble	39.8		mg/Kg	0.31	2.4	1.0	9056M
	Analysis Batch: 280-269015	Analysis Date: 03/20/2015 1857					DryWt Corrected: N
Bromide-Soluble	6.2		mg/Kg	0.38	2.0	1.0	9056M
	Analysis Batch: 280-269016	Analysis Date: 03/20/2015 1857					DryWt Corrected: N
Nitrite as N-Soluble	0.33	U	mg/Kg	0.33	2.4	1.0	9056M
	Analysis Batch: 280-269015	Analysis Date: 03/20/2015 1857					DryWt Corrected: N
Orthophosphate as P-Soluble	7.0	M N	mg/Kg	1.2	4.9	1.0	9056M
	Analysis Batch: 280-269015	Analysis Date: 03/20/2015 1857					DryWt Corrected: N
Sulfate-Soluble	7000	D	mg/Kg	16.6	48.9	10	9056M
	Analysis Batch: 280-269016	Analysis Date: 03/21/2015 0116					DryWt Corrected: N
Fluoride-Soluble	1.9	B N	mg/Kg	0.80	4.9	1.0	9056M
	Analysis Batch: 280-269016	Analysis Date: 03/20/2015 1857					DryWt Corrected: N
Analyte	Result	Qual	Units	RL	RL	Dil	Method
pH adj. to 25 deg C-Soluble	7.69		SU	0.100	0.100	1.0	9045C
	Analysis Batch: 280-269102	Analysis Date: 03/20/2015 2137					DryWt Corrected: N

# QUALITY CONTROL RESULTS

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-66701-1

Sdg Number: J02174

**Method Blank - Batch: 280-268809**

**Method: 6010B**

**Preparation: 3050B**

Lab Sample ID: MB 280-268809/1-A  
Client Matrix: Solid  
Dilution: 1.0  
Analysis Date: 03/24/2015 0220  
Prep Date: 03/20/2015 1530  
Leach Date: N/A

Analysis Batch: 280-269414  
Prep Batch: 280-268809  
Leach Batch: N/A  
Units: mg/Kg

Instrument ID: MT\_026  
Lab File ID: 26e032315.asc  
Initial Weight/Volume: 1 g  
Final Weight/Volume: 100 mL

Analyte	Result	Qual	MDL	RL
Aluminum	2.12	B	1.6	5.0
Antimony	0.38	U	0.38	0.60
Arsenic	0.66	U	0.66	1.0
Barium	0.141	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	48.27	B	14.1	50.0
Chromium	0.058	U	0.058	0.20
Cobalt	0.10	U	0.10	1.0
Copper	0.989	B	0.22	1.0
Iron	3.8	U	3.8	5.0
Lead	0.27	U	0.27	0.50
Magnesium	12.23	B	3.7	20.0
Manganese	0.10	U	0.10	1.0
Molybdenum	0.26	U	0.26	2.0
Nickel	0.12	U	0.12	4.0
Potassium	41.0	U	41.0	300
Selenium	0.86	U	0.86	1.0
Silicon	6.82	B	5.7	10.0
Silver	0.16	U	0.16	0.20
Sodium	59.0	U	59.0	120
Vanadium	0.094	U	0.094	2.0
Zinc	0.40	U	0.40	1.0

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-66701-1  
Sdg Number: J02174

**Lab Control Sample - Batch: 280-268809**

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

Lab Sample ID: LCS 280-268809/2-A	Analysis Batch: 280-269414	Instrument ID: MT_026
Client Matrix: Solid	Prep Batch: 280-268809	Lab File ID: 26e032315.asc
Dilution: 1.0	Leach Batch: N/A	Initial Weight/Volume: 1 g
Analysis Date: 03/24/2015 0223	Units: mg/Kg	Final Weight/Volume: 100 mL
Prep Date: 03/20/2015 1530		
Leach Date: N/A		

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	200	186.8	93	82 - 116	
Antimony	50.0	49.63	99	82 - 110	
Arsenic	100	98.40	98	85 - 110	
Barium	200	192.5	96	87 - 112	
Beryllium	5.00	4.68	94	84 - 114	
Boron	100	96.72	97	80 - 120	
Cadmium	10.0	9.69	97	87 - 110	
Calcium	5000	4702	94	82 - 114	
Chromium	20.0	19.66	98	84 - 114	
Cobalt	50.0	48.32	97	87 - 110	
Copper	25.0	26.07	104	88 - 110	
Iron	100	93.80	94	87 - 120	
Lead	50.0	48.15	96	86 - 110	
Magnesium	5000	4748	95	90 - 110	
Manganese	50.0	46.72	93	88 - 110	
Molybdenum	100	99.21	99	86 - 110	
Nickel	50.0	48.43	97	87 - 110	
Potassium	5000	4881	98	89 - 110	
Selenium	200	189.9	95	83 - 110	
Silicon	1000	70.82	7	10 - 70	N
Silver	5.00	4.72	94	87 - 114	
Sodium	5000	4973	99	90 - 112	
Vanadium	50.0	47.06	94	88 - 110	
Zinc	50.0	47.19	94	76 - 114	

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-66701-1  
Sdg Number: J02174

**Matrix Spike - Batch: 280-268809**

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

Lab Sample ID: 280-66701-2	Analysis Batch: 280-269414	Instrument ID: MT_026
Client Matrix: Solid	Prep Batch: 280-268809	Lab File ID: 26e032315.asc
Dilution: 1.0	Leach Batch: N/A	Initial Weight/Volume: 1.08 g
Analysis Date: 03/24/2015 0233	Units: mg/Kg	Final Weight/Volume: 100 mL
Prep Date: 03/20/2015 1530		
Leach Date: N/A		

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	4480	185	8741	2299	50 - 200	4
Antimony	0.32 U	46.3	22.17	48	20 - 200	
Arsenic	3.9	92.6	86.36	89	76 - 111	
Barium	86.4	185	279.4	104	52 - 159	
Beryllium	0.18	4.63	4.38	91	72 - 105	
Boron	602	92.6	807.4	222	80 - 120	4
Cadmium	1.0	9.26	9.42	91	40 - 130	
Calcium	7640	4630	15440	168	43 - 165	N
Chromium	19.2	18.5	47.86	155	70 - 200	
Cobalt	3.5	46.3	47.68	95	72 - 106	
Iron	11700	92.6	16010	4686	70 - 200	4
Lead	1.8	46.3	42.52	88	70 - 200	
Magnesium	3890	4630	9269	116	64 - 145	
Manganese	124	46.3	243.9	258	40 - 200	N
Molybdenum	4.5	92.6	89.46	92	75 - 103	
Nickel	18.8	46.3	64.86	100	61 - 126	
Potassium	1240	4630	6209	107	56 - 172	
Selenium	0.84 B	185	161.3	87	76 - 104	
Silicon	155	926	418.6	28	20 - 200	
Silver	0.14 U	4.63	4.10	89	75 - 141	
Sodium	1860	4630	6806	107	78 - 111	
Vanadium	43.5	46.3	105.9	135	50 - 169	
Zinc	37.0	46.3	89.55	113	70 - 200	

**Matrix Spike - Batch: 280-268809**

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

Lab Sample ID: 280-66701-2	Analysis Batch: 280-270025	Instrument ID: MT_026
Client Matrix: Solid	Prep Batch: 280-268809	Lab File ID: 26e032615.asc
Dilution: 1.0	Leach Batch: N/A	Initial Weight/Volume: 1.08 g
Analysis Date: 03/27/2015 0027	Units: mg/Kg	Final Weight/Volume: 100 mL
Prep Date: 03/20/2015 1530		
Leach Date: N/A		

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Copper	10.4	23.1	32.61	96	37 - 187	

**Quality Control Results**

Client: Washington Closure Hanford

Job Number: 280-66701-1  
Sdg Number: J02174

**Duplicate - Batch: 280-268809**

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

Lab Sample ID:	280-66701-2	Analysis Batch:	280-269414	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-268809	Lab File ID:	26e032315.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.11 g
Analysis Date:	03/24/2015 0230	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/20/2015 1530				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Aluminum	4480	4551	1	40	
Antimony	0.32 U	0.382	NC	40	B
Arsenic	3.9	3.41	13	30	
Barium	86.4	67.64	24	30	
Beryllium	0.18	0.179	2	30	B
Boron	602	609.3	1	30	
Cadmium	1.0	0.880	14	30	
Calcium	7640	8091	6	30	
Chromium	19.2	19.69	3	40	
Cobalt	3.5	4.52	25	30	
Iron	11700	11600	0.6	40	
Lead	1.8	1.88	4	40	
Magnesium	3890	3882	0.09	30	
Manganese	124	145.1	15	40	
Molybdenum	4.5	5.75	24	30	
Nickel	18.8	19.31	3	30	
Potassium	1240	1259	2	40	
Selenium	0.84 B	0.77	NC	30	U
Silicon	155	152.9	1	40	N
Silver	0.14 U	0.14	NC	30	U
Sodium	1860	1885	1	30	
Vanadium	43.5	41.97	3	30	
Zinc	37.0	37.33	0.8	40	

**Duplicate - Batch: 280-268809**

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

Lab Sample ID:	280-66701-2	Analysis Batch:	280-270025	Instrument ID:	MT_026
Client Matrix:	Solid	Prep Batch:	280-268809	Lab File ID:	26e032615.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.11 g
Analysis Date:	03/27/2015 0025	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	03/20/2015 1530				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Copper	10.4	10.21	2	30	

**Quality Control Results**

Client: Washington Closure Hanford

Job Number: 280-66701-1  
Sdg Number: J02174

**Lab Control Sample/  
Lab Control Sample Duplicate Recovery Report - Batch: 280-269102**

**Method: 9045C  
Preparation: N/A**

LCS Lab Sample ID:	LCS 280-269075/1-A	Analysis Batch:	280-269102	Instrument ID:	No Equipment Assigned
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	280-269075	Initial Weight/Volume:	
Analysis Date:	03/20/2015 2137	Units:	SU	Final Weight/Volume:	
Prep Date:	N/A				
Leach Date:	03/20/2015 1740				

LCSD Lab Sample ID:	LCSD 280-269075/2-A	Analysis Batch:	280-269102	Instrument ID:	No Equipment Assigned
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	280-269075	Initial Weight/Volume:	
Analysis Date:	03/20/2015 2137	Units:	SU	Final Weight/Volume:	
Prep Date:	N/A				
Leach Date:	03/20/2015 1740				

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
pH adj. to 25 deg C-Soluble	100	100	97 - 103	0	5		

**Laboratory Control/  
Laboratory Duplicate Data Report - Batch: 280-269102**

**Method: 9045C  
Preparation: N/A**

LCS Lab Sample ID:	LCS 280-269075/1-A	Units:	SU
Client Matrix:	Solid		
Dilution:	1.0		
Analysis Date:	03/20/2015 2137		
Prep Date:	N/A		
Leach Date:	03/20/2015 1740		

LCSD Lab Sample ID:	LCSD 280-269075/2-A
Client Matrix:	Solid
Dilution:	1.0
Analysis Date:	03/20/2015 2137
Prep Date:	N/A
Leach Date:	03/20/2015 1740

Analyte	LCS Spike Amount	LCSD Spike Amount	LCS Result/Qual	LCSD Result/Qual
pH adj. to 25 deg C-Soluble	7.00	7.00	7.030	7.030

**Duplicate - Batch: 280-269102**

**Method: 9045C  
Preparation: N/A**

Lab Sample ID:	280-66701-2	Analysis Batch:	280-269102	Instrument ID:	No Equipment Assigned
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	N/A
Dilution:	1.0	Leach Batch:	280-269075	Initial Weight/Volume:	
Analysis Date:	03/20/2015 2137	Units:	SU	Final Weight/Volume:	
Prep Date:	N/A				
Leach Date:	03/20/2015 1806				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
pH adj. to 25 deg C-Soluble	7.69	7.700	0.1	5	

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-66701-1  
Sdg Number: J02174

**Method Blank - Batch: 280-269015**

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

Lab Sample ID: MB 280-269021/2-A  
Client Matrix: Solid  
Dilution: 1.0  
Analysis Date: 03/20/2015 1818  
Prep Date: N/A  
Leach Date: 03/20/2015 1550

Analysis Batch: 280-269015  
Prep Batch: N/A  
Leach Batch: 280-269021  
Units: mg/Kg

Instrument ID: WC\_IonChrom11  
Lab File ID: 0015.d  
Initial Weight/Volume: 5 mL  
Final Weight/Volume: 5 mL

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: 280-269015**

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

Lab Sample ID: MRL 280-269015/3  
Client Matrix: Water  
Dilution: 1.0  
Analysis Date: 03/20/2015 1638  
Prep Date: N/A  
Leach Date: N/A

Analysis Batch: 280-269015  
Prep Batch: N/A  
Leach Batch: N/A  
Units: mg/L

Instrument ID: WC\_IonChrom11  
Lab File ID: 0010.d  
Initial Weight/Volume: 5 mL  
Final Weight/Volume: 5 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Nitrate as N-Soluble	0.200	0.260	130	50 - 150	B
Nitrite as N-Soluble	0.200	0.240	120	50 - 150	B
Orthophosphate as P-Soluble	0.200	0.231	116	50 - 150	B

**Lab Control Sample - Batch: 280-269015**

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

Lab Sample ID: LCS 280-269021/1-A  
Client Matrix: Solid  
Dilution: 1.0  
Analysis Date: 03/20/2015 1758  
Prep Date: N/A  
Leach Date: 03/20/2015 1550

Analysis Batch: 280-269015  
Prep Batch: N/A  
Leach Batch: 280-269021  
Units: mg/Kg

Instrument ID: WC\_IonChrom11  
Lab File ID: 0014.d  
Initial Weight/Volume: 5 mL  
Final Weight/Volume: 5 mL

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Nitrate as N-Soluble	50.0	52.37	105	90 - 110	
Nitrite as N-Soluble	50.0	50.22	100	90 - 110	
Orthophosphate as P-Soluble	50.0	52.53	105	90 - 110	

**Quality Control Results**

Client: Washington Closure Hanford

Job Number: 280-66701-1  
Sdg Number: J02174

**Matrix Spike - Batch: 280-269015**

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

Lab Sample ID:	280-66701-2	Analysis Batch:	280-269015	Instrument ID:	WC_IonChrom11
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	0019.d
Dilution:	1.0	Leach Batch:	280-269021	Initial Weight/Volume:	5 mL
Analysis Date:	03/20/2015 1937	Units:	mg/Kg	Final Weight/Volume:	5 mL
Prep Date:	N/A				25 uL
Leach Date:	03/20/2015 1550				

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Nitrate as N-Soluble	39.8	49.5	96.85	115	80 - 120	
Nitrite as N-Soluble	0.33 U	49.5	47.47	96	80 - 120	
Orthophosphate as P-Soluble	7.0	49.5	14.12	14	80 - 120	N

**Duplicate - Batch: 280-269015**

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

Lab Sample ID:	280-66701-2	Analysis Batch:	280-269015	Instrument ID:	WC_IonChrom11
Client Matrix:	Solid	Prep Batch:	N/A	Lab File ID:	0018.d
Dilution:	1.0	Leach Batch:	280-269021	Initial Weight/Volume:	5 mL
Analysis Date:	03/20/2015 1917	Units:	mg/Kg	Final Weight/Volume:	5 mL
Prep Date:	N/A				25 uL
Leach Date:	03/20/2015 1550				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Nitrate as N-Soluble	39.8	39.25	1	15	
Nitrite as N-Soluble	0.33 U	0.33	NC	15	U
Orthophosphate as P-Soluble	7.0	4.54	43	15	B M

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-66701-1  
Sdg Number: J02174

**Method Blank - Batch: 280-269016**

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

Lab Sample ID: MB 280-269021/2-A	Analysis Batch: 280-269016	Instrument ID: WC_IonChrom11
Client Matrix: Solid	Prep Batch: N/A	Lab File ID: 0015.d
Dilution: 1.0	Leach Batch: 280-269021	Initial Weight/Volume: 5 mL
Analysis Date: 03/20/2015 1818	Units: mg/Kg	Final Weight/Volume: 5 mL
Prep Date: N/A		
Leach Date: 03/20/2015 1550		

Analyte	Result	Qual	MDL	RL
Chloride-Soluble	6.90		2.0	5.0
Bromide-Soluble	0.39	U	0.39	2.0
Sulfate-Soluble	1.7	U	1.7	5.0
Fluoride-Soluble	0.82	U	0.82	5.0

**Method Reporting Limit Check - Batch: 280-269016**

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

Lab Sample ID: MRL 280-269016/3	Analysis Batch: 280-269016	Instrument ID: WC_IonChrom11
Client Matrix: Water	Prep Batch: N/A	Lab File ID: 0010.d
Dilution: 1.0	Leach Batch: N/A	Initial Weight/Volume: 5 mL
Analysis Date: 03/20/2015 1638	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	2.43	97	50 - 150	B
Bromide-Soluble	0.200	0.238	119	50 - 150	
Sulfate-Soluble	2.50	2.48	99	50 - 150	B
Fluoride-Soluble	0.200	0.238	119	50 - 150	B

**Lab Control Sample - Batch: 280-269016**

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

Lab Sample ID: LCS 280-269021/1-A	Analysis Batch: 280-269016	Instrument ID: WC_IonChrom11
Client Matrix: Solid	Prep Batch: N/A	Lab File ID: 0014.d
Dilution: 1.0	Leach Batch: 280-269021	Initial Weight/Volume: 5 mL
Analysis Date: 03/20/2015 1758	Units: mg/Kg	Final Weight/Volume: 5 mL
Prep Date: N/A		
Leach Date: 03/20/2015 1550		

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Chloride-Soluble	1000	1013	101	90 - 110	
Bromide-Soluble	50.0	51.59	103	90 - 110	
Sulfate-Soluble	1000	989.0	99	90 - 110	
Fluoride-Soluble	50.0	48.45	97	90 - 110	

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-66701-1  
Sdg Number: J02174

**Matrix Spike - Batch: 280-269016**

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

Lab Sample ID: 280-66701-2	Analysis Batch: 280-269016	Instrument ID: WC_IonChrom11
Client Matrix: Solid	Prep Batch: N/A	Lab File ID: 0019.d
Dilution: 1.0	Leach Batch: 280-269021	Initial Weight/Volume: 5 mL
Analysis Date: 03/20/2015 1937	Units: mg/Kg	Final Weight/Volume: 5 mL
Prep Date: N/A		25 uL
Leach Date: 03/20/2015 1550		

Analyte	Sample Result/Qual	Spike Amount	Result	% Rec.	Limit	Qual
Chloride-Soluble	1090	248	1394	124	80 - 120	
Bromide-Soluble	6.2	49.5	55.53	100	80 - 120	
Sulfate-Soluble	9430	248	9816	155	80 - 120	>
Fluoride-Soluble	1.9      B	49.5	28.77	54	80 - 120	N

**Duplicate - Batch: 280-269016**

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

Lab Sample ID: 280-66701-2	Analysis Batch: 280-269016	Instrument ID: WC_IonChrom11
Client Matrix: Solid	Prep Batch: N/A	Lab File ID: 0018.d
Dilution: 1.0	Leach Batch: 280-269021	Initial Weight/Volume: 5 mL
Analysis Date: 03/20/2015 1917	Units: mg/Kg	Final Weight/Volume: 5 mL
Prep Date: N/A		25 uL
Leach Date: 03/20/2015 1550		

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Chloride-Soluble	1090	1072	1	10	
Bromide-Soluble	6.2	6.09	1	10	
Sulfate-Soluble	9430	9328	1	10	>
Fluoride-Soluble	1.9      B	1.87	0.3	10	B

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-66701-1

Sdg Number: J02174

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>Metals</b>					
<b>Prep Batch: 280-268809</b>					
LCS 280-268809/2-A	Lab Control Sample	T	Solid	3050B	
MB 280-268809/1-A	Method Blank	T	Solid	3050B	
280-66701-2	J1V593	T	Solid	3050B	
280-66701-2DU	Duplicate	T	Solid	3050B	
280-66701-2MS	Matrix Spike	T	Solid	3050B	
<b>Analysis Batch:280-269414</b>					
LCS 280-268809/2-A	Lab Control Sample	T	Solid	6010B	280-268809
MB 280-268809/1-A	Method Blank	T	Solid	6010B	280-268809
280-66701-2	J1V593	T	Solid	6010B	280-268809
280-66701-2DU	Duplicate	T	Solid	6010B	280-268809
280-66701-2MS	Matrix Spike	T	Solid	6010B	280-268809
<b>Analysis Batch:280-270025</b>					
280-66701-2	J1V593	T	Solid	6010B	280-268809
280-66701-2DU	Duplicate	T	Solid	6010B	280-268809
280-66701-2MS	Matrix Spike	T	Solid	6010B	280-268809

**Report Basis**

T = Total

## Quality Control Results

Client: Washington Closure Hanford

Job Number: 280-66701-1

Sdg Number: J02174

### QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
<b>General Chemistry</b>					
<b>Analysis Batch:280-269015</b>					
LCS 280-269021/1-A	Lab Control Sample	S	Solid	9056M	
MB 280-269021/2-A	Method Blank	S	Solid	9056M	
280-66701-1	J1V592	S	Solid	9056M	
280-66701-2	J1V593	S	Solid	9056M	
280-66701-2DU	Duplicate	S	Solid	9056M	
280-66701-2MS	Matrix Spike	S	Solid	9056M	
<b>Analysis Batch:280-269016</b>					
LCS 280-269021/1-A	Lab Control Sample	S	Solid	9056M	
MB 280-269021/2-A	Method Blank	S	Solid	9056M	
280-66701-1	J1V592	S	Solid	9056M	
280-66701-2	J1V593	S	Solid	9056M	
280-66701-2DU	Duplicate	S	Solid	9056M	
280-66701-2MS	Matrix Spike	S	Solid	9056M	
<b>Prep Batch: 280-269021</b>					
LCS 280-269021/1-A	Lab Control Sample	S	Solid	DI Leach	
MB 280-269021/2-A	Method Blank	S	Solid	DI Leach	
280-66701-1	J1V592	S	Solid	DI Leach	
280-66701-2	J1V593	S	Solid	DI Leach	
280-66701-2DU	Duplicate	S	Solid	DI Leach	
280-66701-2MS	Matrix Spike	S	Solid	DI Leach	
<b>Prep Batch: 280-269075</b>					
LCS 280-269075/1-A	Lab Control Sample	S	Solid	DI Leach	
LCSD 280-269075/2-A	Lab Control Sample Duplicate	S	Solid	DI Leach	
280-66701-1	J1V592	S	Solid	DI Leach	
280-66701-2	J1V593	S	Solid	DI Leach	
280-66701-2DU	Duplicate	S	Solid	DI Leach	
<b>Analysis Batch:280-269102</b>					
LCS 280-269075/1-A	Lab Control Sample	S	Solid	9045C	
LCSD 280-269075/2-A	Lab Control Sample Duplicate	S	Solid	9045C	
280-66701-1	J1V592	S	Solid	9045C	
280-66701-2	J1V593	S	Solid	9045C	
280-66701-2DU	Duplicate	S	Solid	9045C	

**Report Basis**

S = Soluble

# CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

**Washington Closure Hanford**

RC-234-029

Collector CLARK, SD	Company Contact Joan Kessner	Telephone No. 375-4688	Project Coordinator KESSNER, JH	Price Code 9D	Data Turnaround 21 days
Project Designation 100-IU-2 & 100-IU-6 Remaining Waste Sites	Sampling Location 600-358 (anomalies)		SAF No. RC-234		
Ice Chest No. FBP-106	Field Logbook No. EL-1667-03	COA 0603582600	Method of Shipment Commercial Carrier		Red Ex
Shipped To TestAmerica Denver	Offsite Property No. A131394		Bill of Lading/Air Bill No. See OSPC		

Other Labs Shipped To MIA	Preservation None	Cool 4C			
	Type of Container GIP	GIP			
	No. of Container(s) 1	1			
	Volume 1000mL	1000mL			
	Sample Analysis	See item (1) in Special Instructions	See item (2) in Special Instructions		

**POSSIBLE SAMPLE HAZARDS/REMARKS**  
Cooling as required

**Special Handling and/or Storage**  
potentially small pieces of broken glass

Sample No.	Matrix	Sample Date	Sample Time
J1V592	OTHER	03/17/15	1234 MIA X
J1V593	OTHER	03/17/15	1245 X X
J1V594	OTHER		
J1V595	OTHER		

**CHAIN OF POSSESSION**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Steve Clark (Signature)	3-17-15 1325	C. Bingham (Signature)	3-17-15 1600
C. Bingham (Signature)	3-17-15 1610	C. Bingham (Signature)	3-18-15 0715
C. Bingham (Signature)	3-18-15 0717	fed EX (Signature)	3-18-15 9:10

**CHAIN OF CUSTODY**

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
C. Bingham (Signature)	3-17-15 1610	C. Bingham (Signature)	3-17-15 1600
C. Bingham (Signature)	3-18-15 0715	C. Bingham (Signature)	3-18-15 0715
C. Bingham (Signature)	3-18-15 0717	fed EX (Signature)	3-18-15 9:10

**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, Magnesium, Manganese, Molybdenum, Nickel, Potassium, Selenium, Silicon, Silver, Sodium, Vanadium, Zinc); Mercury - 7474 (CV-Mercury) 03/17/15  
 (2) IC Anions - 9056 Modified (Bromide, Chloride, Fluoride, Nitrate, Nitrogen in Nitrate, Nitrogen in Nitrite, Phosphorous in phosphate, Sulfate); pH - 9045



O.6 I.R.S 40.2  
Transferred by M-D 3/19/15

SDG JO 2174

D.B. 3-19-15



90 w Permission

Project 28002142

Report Due: 4/9/2015

TALs TAT: 15-Days

7 D.B.  
3-19-15

0.6 IR5 + 0.2  
Transferred by M-9 3/11/15

### Sample Check-in List

Date/Time Received: 3/19/15 910 GM Screen Result 12 microR/hr

Client: Washington Closure Hanford SDG #: FP J02174 NA [ ] SAF #: RC-234 NA [ ]  
*DB 3-19-15 150.6*

Job Number: 66701 Chain of Custody # RC-234-029

Shipping Container ID: FBP-217 Air Bill # 7731 5567 1805

- 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: 0.6 IR5 + 0.2 NA [ ] 5. Vermiculite/packing materials is NA [ ] Wet [ ] Dry
- 6. Number of samples in shipping container: 2
- 7. Sample holding times exceeded? NA [ ] Yes [ ] No
- 8. Samples have:
  - Tape  Hazard Labels
  - Custody Seals  Appropriate Sample Labels
- 9. Samples are:
  - In Good Condition  Leaking
  - Broken  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: 3/19/15

Client Sample ID	Analysis Requested	Condition	Comments/Action

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

[ ] No action necessary; process as is.

Project Manager D.B. Dalaro ben dy Date 3-20-15

From: (509) 376-7492  
1162 Shipping  
US DOE c/o WCH  
2355 Stevens Dr  
Richland, WA 99354

Origin ID: PSCA



Ship Date: 18MAR15  
ActWgt: 98.0 LB  
CAD: 105286502/NET3810

Delivery Address Bar Code



SHIP TO: (303) 736-0190  
Kae Yoder  
TestAmerica  
4955 Yarrow St.  
A131394  
ARVADA, CO 80002

BILL THIRD PARTY

Ref # 0603582600  
Invoice #  
PO #  
Dept #

2 of 2

THU - 19 MAR 10:30A  
PRIORITY OVERNIGHT

MPS# 7731 5567 1805

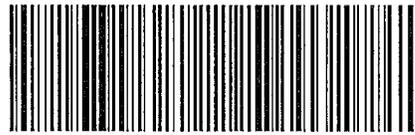
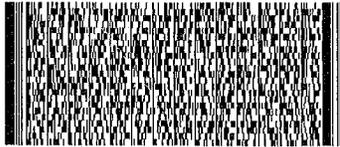
0263

Mstr# 7731 5567 2709

0201

80002  
CO-US  
DEN

**XH WHHA**



537JH67DAEE48

**After printing this label:**

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2. Fold the printed page along the horizontal line.
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