SAF-RC-110
100-H Burial Grounds Remaining Sites – Soil In-Process
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 4/13/15
INITIAL/DATE

COMMENTS:

SDG J02179 SAF-RC-110

Rad only ☑ Chem only Rad & Chem

☑ Complete Partial

Waste Site: 100-H-59:2 (excavation)

Analytical Data Package Prepared For

Washington Closure Hanford

Analysis Provided By

TestAmerica Richland
2800 George Washington Way
Richland WA, 99354
(509)375-3131
Assigned Laboratory Code: TARL

SDG Number: J02179

Data Package Contains 7 Pages

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

Washington Closure Hanford
2620 Fermi Avenue
Richland, WA 99354

April 10, 2015

Attention: Joan Kessner

SAF Number	:	RC-110
Date SDG Closed	:	April 10, 2015
Number of Samples	:	Two (2)
Sample Type	:	Soil
SDG Number	:	J02179
Data Deliverable	:	Quick Turn Metals / Summary

CASE NARRATIVE

I. Introduction

On April 8, 2015, two soil samples were received at TestAmerica for analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Washington Closure Hanford (WCH) specific ID;

WCH ID#	TARL ID#	MATRIX	DATE OF RECEIPT
J1V609	M6J5N	SOIL	4/08/15
J1V610	M6J5P	SOIL	4/08/15

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors. The requested analyses were:

ICP Metals
ICP Metals by method SW-846 6010A

IV. Quality Control

SDG J02179 includes a minimum of one Laboratory Control Samples (LCS), one method (reagent) blank, a duplicate sample, matrix spike sample and a matrix spike duplicate sample. Any exceptions have been noted in the "Comments" section.

Blanks and LCS are reported in mg/L units, other QC and sample results are reported in the same units.

V. Comments

ICP Metals

ICP Metals by method SW-846 6010A

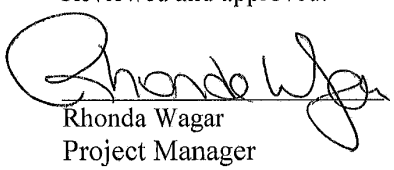
One batch was analyzed for the samples with the standard metal request list.

Batch 5098068:

The LCS, batch blank, samples, sample duplicate, MS, MSD, ICB, ICV, CCB and CCV results are within contractual limits.

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

Reviewed and approved:



Rhonda Wagar
Project Manager

SDG: J02179
SAF #: RC-110
BATCH: 5098068
MATRIX: SOIL
ANALYSIS DATE: 4/9/15

Client_id	Matrix	Result_	Cas_nbr	Parameter	Result	Qualifier	Units	Reporting_Limits_S	Reporting_Limits	Uncertainty_1s	Analyzed_	Analyze	Decision_	LCSReco	Added/	Analysis_date_time	Batch_nbr	Test_Method	Lab_sample_id
J1V609	**SOIL**	**CS**	**7440-22-4**	**Silver**	**-2.13E-01**	**U**	**UG/G**	1.91E+00	1.91E+00	1.40E-01	0.2515	G				4/9/2015 12:43	5098068	46DQ	M6J5N1A0
J1V609	**SOIL**	**CS**	**7440-38-2**	**Arsenic**	**1.82E+00**	**U**	**UG/G**	1.73E+00	1.73E+00	6.30E-01	0.2515	G				4/9/2015 12:43	5098068	46DQ	M6J5N1A0
J1V609	**SOIL**	**CS**	**7440-39-3**	**Ba**	**6.13E+01**		**UG/G**	3.98E-01	3.98E-01	2.40E-01	0.2515	G				4/9/2015 12:43	5098068	46DQ	M6J5N1A0
J1V609	**SOIL**	**CS**	**7440-41-7**	**Beryllium**	**2.96E-01**		**UG/G**	2.58E-02	2.58E-02	2.10E-02	0.2515	G				4/9/2015 12:43	5098068	46DQ	M6J5N1A0
J1V609	**SOIL**	**CS**	**7440-43-9**	**Cadmium**	**1.73E-01**	**U**	**UG/G**	1.99E-01	1.99E-01	4.90E-02	0.2515	G				4/9/2015 12:43	5098068	46DQ	M6J5N1A0
J1V609	**SOIL**	**CS**	**7440-47-3**	**Chromium**	**8.26E+00**	**U**	**UG/G**	7.95E-01	7.95E-01	1.10E-01	0.2515	G				4/9/2015 12:43	5098068	46DQ	M6J5N1A0
J1V609	**SOIL**	**CS**	**7439-92-1**	**Lead**	**4.46E+00**	**U**	**UG/G**	8.55E-01	8.55E-01	9.50E-01	0.2515	G				4/9/2015 12:43	5098068	46DQ	M6J5N1A0
J1V609	**SOIL**	**CS**	**7782-49-2**	**Selenium**	**1.02E+00**	**U**	**UG/G**	2.39E+00	2.39E+00	5.40E-01	0.2515	G				4/9/2015 12:43	5098068	46DQ	M6J5N1A0
J1V610	**SOIL**	**CS**	**7440-22-4**	**Silver**	**-3.72E-01**	**U**	**UG/G**	1.93E+00	1.93E+00	1.20E-01	0.249	G				4/9/2015 13:03	5098068	46DQ	M6J5P1AA
J1V610	**SOIL**	**CS**	**7440-38-2**	**Arsenic**	**2.18E+00**	**U**	**UG/G**	1.75E+00	1.75E+00	9.00E-01	0.249	G				4/9/2015 13:03	5098068	46DQ	M6J5P1AA
J1V610	**SOIL**	**CS**	**7440-39-3**	**Ba**	**6.25E+01**		**UG/G**	4.02E-01	4.02E-01	1.10E-01	0.249	G				4/9/2015 13:03	5098068	46DQ	M6J5P1AA
J1V610	**SOIL**	**CS**	**7440-41-7**	**Beryllium**	**2.74E-01**		**UG/G**	2.61E-02	2.61E-02	8.00E-03	0.249	G				4/9/2015 13:03	5098068	46DQ	M6J5P1AA
J1V610	**SOIL**	**CS**	**7440-43-9**	**Cadmium**	**1.76E-01**	**U**	**UG/G**	2.01E-01	2.01E-01	6.80E-02	0.249	G				4/9/2015 13:03	5098068	46DQ	M6J5P1AA
J1V610	**SOIL**	**CS**	**7440-47-3**	**Chromium**	**9.58E+00**	**U**	**UG/G**	8.03E-01	8.03E-01	1.00E-01	0.249	G				4/9/2015 13:03	5098068	46DQ	M6J5P1AA
J1V610	**SOIL**	**CS**	**7439-92-1**	**Lead**	**9.94E+00**	**U**	**UG/G**	8.63E-01	8.63E-01	5.10E-01	0.249	G				4/9/2015 13:03	5098068	46DQ	M6J5P1AA
J1V610	**SOIL**	**CS**	**7782-49-2**	**Selenium**	**3.30E-01**	**U**	**UG/G**	2.41E+00	2.41E+00	1.20E+00	0.249	G				4/9/2015 13:03	5098068	46DQ	M6J5P1AA
INTRA-LAB BLANK	SOIL	BLK	7440-22-4	Silver	-3.67E-02	U	MG/L	1.93E+00	1.93E+00	1.60E-01	0.2482	L				4/9/2015 12:30	5098068	46DQ	M6J571AA
INTRA-LAB BLANK	SOIL	BLK	7440-38-2	Arsenic	-1.40E-01	U	MG/L	1.75E+00	1.75E+00	3.10E-01	0.2482	L				4/9/2015 12:30	5098068	46DQ	M6J571AA
INTRA-LAB BLANK	SOIL	BLK	7440-39-3	Ba	1.01E-01	U	MG/L	4.03E-01	4.03E-01	2.50E-02	0.2482	L				4/9/2015 12:30	5098068	46DQ	M6J571AA
INTRA-LAB BLANK	SOIL	BLK	7440-41-7	Beryllium	1.33E-02	U	MG/L	2.62E-02	2.62E-02	3.50E-02	0.2482	L				4/9/2015 12:30	5098068	46DQ	M6J571AA
INTRA-LAB BLANK	SOIL	BLK	7440-43-9	Cadmium	2.14E-02	U	MG/L	2.01E-01	2.01E-01	5.80E-02	0.2482	L				4/9/2015 12:30	5098068	46DQ	M6J571AA
INTRA-LAB BLANK	SOIL	BLK	7440-47-3	Chromium	3.49E-01	U	MG/L	8.06E-01	8.06E-01	9.10E-02	0.2482	L				4/9/2015 12:30	5098068	46DQ	M6J571AA
INTRA-LAB BLANK	SOIL	BLK	7439-92-1	Lead	2.10E-01	U	MG/L	8.66E-01	8.66E-01	5.20E-01	0.2482	L				4/9/2015 12:30	5098068	46DQ	M6J571AA
INTRA-LAB BLANK	SOIL	BLK	7782-49-2	Selenium	3.36E-01	U	MG/L	2.42E+00	2.42E+00	5.30E-02	0.2482	L				4/9/2015 12:30	5098068	46DQ	M6J571AA
INTRA-LAB CHECK	SOIL	LCS	7440-22-4	Silver	1.88E+02		MG/L	1.88E+00	1.88E+00	1.80E+01	0.2554	L	0.96	195.8		4/9/2015 12:33	5098068	46DQ	M6J571AA
INTRA-LAB CHECK	SOIL	LCS	7440-38-2	Arsenic	1.67E+02		MG/L	1.70E+00	1.70E+00	2.10E+00	0.2554	L	0.95	195.8		4/9/2015 12:33	5098068	46DQ	M6J571AA
INTRA-LAB CHECK	SOIL	LCS	7440-39-3	Ba	1.93E+02		MG/L	3.92E-01	3.92E-01	9.50E+00	0.2554	L	0.99	195.8		4/9/2015 12:33	5098068	46DQ	M6J571AA
INTRA-LAB CHECK	SOIL	LCS	7440-41-7	Beryllium	1.93E+02		MG/L	2.55E-02	2.55E-02	2.20E+01	0.2554	L	0.99	195.8		4/9/2015 12:33	5098068	46DQ	M6J571AA
INTRA-LAB CHECK	SOIL	LCS	7440-43-9	Cadmium	1.86E+02		MG/L	1.96E-01	1.96E-01	1.90E+00	0.2554	L	0.95	195.8		4/9/2015 12:33	5098068	46DQ	M6J571AA
INTRA-LAB CHECK	SOIL	LCS	7440-47-3	Chromium	1.94E+02		MG/L	7.83E-01	7.83E-01	2.20E+01	0.2554	L	0.99	195.8		4/9/2015 12:33	5098068	46DQ	M6J571AA
INTRA-LAB CHECK	SOIL	LCS	7439-92-1	Lead	1.90E+02		MG/L	8.42E-01	8.42E-01	2.40E+00	0.2554	L	0.97	195.8		4/9/2015 12:33	5098068	46DQ	M6J571AA
INTRA-LAB CHECK	SOIL	LCS	7782-49-2	Selenium	1.81E+02		MG/L	2.35E+00	2.35E+00	3.80E+00	0.2554	L	0.93	195.8		4/9/2015 12:33	5098068	46DQ	M6J571AA
J1V609 DUP	SOIL	DUP	7440-22-4	Silver	-2.90E-01	U	UG/G	1.89E+00	1.89E+00	1.30E-01	0.2536	G				4/9/2015 12:59	5098068	46DQ	M6J5N1A0
J1V609 DUP	SOIL	DUP	7440-38-2	Arsenic	1.63E+00	U	UG/G	1.72E+00	1.72E+00	7.70E-01	0.2536	G				4/9/2015 12:59	5098068	46DQ	M6J5N1A0
J1V609 DUP	SOIL	DUP	7440-39-3	Ba	5.20E+01		UG/G	3.94E-01	3.94E-01	1.30E-01	0.2536	G				4/9/2015 12:59	5098068	46DQ	M6J5N1A0
J1V609 DUP	SOIL	DUP	7440-41-7	Beryllium	2.87E-01		UG/G	2.56E-02	2.56E-02	1.60E-02	0.2536	G				4/9/2015 12:59	5098068	46DQ	M6J5N1A0
J1V609 DUP	SOIL	DUP	7440-43-9	Cadmium	1.50E-01	U	UG/G	1.97E-01	1.97E-01	5.10E-03	0.2536	G				4/9/2015 12:59	5098068	46DQ	M6J5N1A0
J1V609 DUP	SOIL	DUP	7440-47-3	Chromium	9.86E+00		UG/G	7.89E-01	7.89E-01	1.50E-01	0.2536	G				4/9/2015 12:59	5098068	46DQ	M6J5N1A0
J1V609 DUP	SOIL	DUP	7439-92-1	Lead	4.36E+00	U	UG/G	8.48E-01	8.48E-01	4.90E-01	0.2536	G				4/9/2015 12:59	5098068	46DQ	M6J5N1A0
J1V609 DUP	SOIL	DUP	7782-49-2	Selenium	7.07E-01	U	UG/G	2.37E+00	2.37E+00	1.60E+00	0.2536	G				4/9/2015 12:59	5098068	46DQ	M6J5N1A0
J1V609	SOIL	MS	7440-22-4	Silver	1.93E+02		% REC	1.94E+00	1.94E+00	3.00E+00	0.2468	L	0.95	202.6		4/9/2015 12:47	5098068	46DQ	M6J5N1A0
J1V609	SOIL	MS	7440-38-2	Arsenic	1.94E+02		% REC	1.76E+00	1.76E+00	1.50E+00	0.2468	L	0.96	202.6		4/9/2015 12:47	5098068	46DQ	M6J5N1A0
J1V609	SOIL	MS	7440-39-3	Ba	1.86E+02		% REC	4.05E-01	4.05E-01	1.50E+01	0.2468	L	0.92	202.6		4/9/2015 12:47	5098068	46DQ	M6J5N1A0
J1V609	SOIL	MS	7440-41-7	Beryllium	2.05E+02		% REC	2.63E-02	2.63E-02	4.30E+00	0.2468	L	1.01	202.6		4/9/2015 12:47	5098068	46DQ	M6J5N1A0
J1V609	SOIL	MS	7440-43-9	Cadmium	1.93E+02		% REC	2.03E-01	2.03E-01	1.30E+00	0.2468	L	0.95	202.6		4/9/2015 12:47	5098068	46DQ	M6J5N1A0
J1V609	SOIL	MS	7440-47-3	Chromium	2.01E+02		% REC	8.10E-01	8.10E-01	3.60E+00	0.2468	L	0.99	202.6		4/9/2015 12:47	5098068	46DQ	M6J5N1A0
J1V609	SOIL	MS	7439-92-1	Lead	1.88E+02		% REC	8.71E-01	8.71E-01	9.70E-01	0.2468	L	0.93	202.6		4/9/2015 12:47	5098068	46DQ	M6J5N1A0
J1V609	SOIL	MS	7782-49-2	Selenium	1.89E+02		% REC	2.43E+00	2.43E+00	5.70E-02	0.2468	L	0.93	202.6		4/9/2015 12:47	5098068	46DQ	M6J5N1A0
J1V609	SOIL	MSD	7440-22-4	Silver	1.90E+02		% REC	1.93E+00	1.93E+00	7.00E-01	0.2487	L	0.94	201		4/9/2015 12:53	5098068	46DQ	M6J5N1A0
J1V609	SOIL	MSD	7440-38-2	Arsenic	1.93E+02		% REC	1.75E+00	1.75E+00	1.20E+00	0.2487	L	0.96	201		4/9/2015 12:53	5098068	46DQ	M6J5N1A0
J1V609	SOIL	MSD	7440-39-3	Ba	1.91E+02		% REC	4.02E-01	4.02E-01	3.60E+00	0.2487	L	0.95	201		4/9/2015 12:53	5098068	46DQ	M6J5N1A0
J1V609	SOIL	MSD	7440-41-7	Beryllium	2.00E+02		% REC	2.61E-02	2.61E-02	9.70E-01	0.2487	L	0.99	201		4/9/2015 12:53	5098068	46DQ	M6J5N1A0
J1V609	SOIL	MSD	7440-43-9	Cadmium	1.92E+02		% REC	2.01E-01	2.01E-01	9.40E-01	0.2487	L	0.95	201		4/9/2015 12:53	5098068	46DQ	M6J5N1A0
J1V609	SOIL	MSD	7440-47-3	Chromium	1.97E+02		% REC	8.04E-01	8.04E-01	1.20E+00	0.2487	L	0.98	201		4/9/2015 12:53	5098068	46DQ	M6J5N1A0
J1V609	SOIL	MSD	7439-92-1	Lead	1.87E+02		% REC	8.64E-01	8.64E-01	7.50E-01	0.2487	L	0.93	201		4/9/2015 12:53	5098068	46DQ	M6J5N1A0
J1V609	SOIL	MSD	7782-49-2	Selenium	1.88E+02		% REC	2.41E+00	2.41E+00	4.30E+00	0.2487	L	0.94	201		4/9/2015 12:53	5098068	46DQ	M6J5N1A0

TestAmerica
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Data Review/Verification Checklist

CHEMISTRY, First/Second Level Review

4/9/2015 1:45:46 PM

Lot No., Due Date: J5D080419; 04/09/2015
Client, Site: 127642; S00W235B00 HANFORD
QC Batch No., Method Test: 5098068; M6010_S 6010A
SDG, Matrix: J02179; SOIL

	Yes	No	N/A	2nd
1.0 Initial Calibration				
1.1 Performed at required frequency with required number of levels?	✓			✓
1.2 Correlation coefficient within QC limits?	✓			✓
1.3 Initial calibration verification (ICV) analyzed immediately after calibr. and results within QC limits of +/- 10% at 0.75 ppm?	✓			✓
1.4 ICB analyzed immediately after ICV and concentration of all parameters +/- report limit from zero? RL per RadCalc.	✓			✓
2.0 Continuing Calibration				
2.1 CCV analyzed at required frequency and all parameters within QC limits or +/- 10% at 0.7500 ppm?	✓			✓
2.2 CCB analyzed at required frequency and all results +/- reporting limit from zero?	✓			✓
3.0 Sample Analysis				
3.1 Were any samples with concentration above the linear range diluted and reanalyzed?			✓	✓
3.2 Were all sample holding times met?	✓			✓
4.0 QC Samples				
4.1 All results for the preparation blank < reporting limits?	✓			✓
4.2 MS or MS/MSD recoveries within 25% at 1 ppm and within 20% RPD (for MSD)?	✓			✓
4.3 LCS precent recovery within 20% at 1 ppm and 20% RPD (for LCSD)?	✓			✓
4.4 "ICP Only: Sample and DUP within 35% RPD?"	✓			✓
4.5 ICP only: One serial dilution performed and within 10% of parent per SDG?	✓			✓
4.6 ICP only: RLV run per batch and within 20% of current values?	✓			✓
4.7 ICP only: ICSA,ICSAB analyzed at the required frequencies and within 20% of values per dilution record?	✓			✓
5.0 Other				
5.1 Are all nonconformances included and noted?			✓	✓
5.2 Is the correct date and time of analysis shown?	✓			✓
5.3 Did the analyst sign and date the digestion log for the analytical run?	✓			✓
5.4 Correct methodology used?	✓			✓
5.5 Transcriptions checked?	✓			✓
5.6 Calculations checked at minimum frequency?	✓			✓
5.7 Units checked?	✓			✓
5.8 Verified that appropriate data transferred to ReportDB?	✓			✓

6.0 Comments on any 'No' response:

First Level H. Raha **Date** 4/9/15 **Second** [signature] **Date** 4/09/2015

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-110-125

Collector STOWE, QG	**Company Contact** Joan Kessner	**Telephone No.** 375-4688	**Project Coordinator** KESSNER, JH
Project Designation 100-H Field Remediation	**Sampling Location** 100-H-59:2 (excavation)		**SAF No.** RC-110
Ice Chest No. WCH-12-11-5	**Field Logbook No.** EL-1627-09	**COA** 01H5922600	**Method of Shipment** Local Delivery
Shipped To TestAmerica Richland	**Offsite Property No.** N/A		**Bill of Lading/Air Bill No.** N/A

Price Code QT 24 hrs

Data Turnaround

Other Labs Shipped To N/A

POSSIBLE SAMPLE HAZARDS/REMARKS
N/A

Special Handling and/or Storage
Cooling as required

Preservation	None	None									
Type of Container	G/P	G/P									
No. of Container(s)	1	1									
Volume	125mL	125mL									
Sample Analysis	See item (1) in Special Instructions	QTL TCLP ICP Metals - 1311/6010									

Sample No.	Matrix	Sample Date	Sample Time										
X J1V609 M6J5N	SOIL	4/8/15	1050	X	X								
X J1V610 M6J5P	SOIL	4/8/15	1055	X	X								
J1V611	SOIL												
J1V612 4/8/15	SOIL												
J1V613	SOIL												

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

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Quincy Stowe	4-8-15 1100	C. Martinez/C. Martinez	4/8/15 1100
C. Martinez/C. Martinez	4/8/15 1415	C. Bingham	4-8-15 1415
C. Bingham WCH	4-8-15 1430	J. Friesz, TARL	4/8/15 1430

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

SPECIAL INSTRUCTIONS

Please run the TCLP ICP metals with a 3 day TAT.

(1) Metals by ICP - 6010 - Quick Turn {Arsenic, Barium, Beryllium, Cadmium, Chromium, Lead, Selenium, Silver}

J5D080419
SDG# J02179
Due 4/9/15

REVIEWED BY K. Wood Vlaemme
DATE 4-8-15

J5D080419

WCH-EE-011

TestAmerica
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Sample Check-in List

Date/Time Received: 4/8/15 1430 Container GM Screen Result: (Airlock) 60 cpm Initials[JF]
Sample GM Screen Result (Sample Receiving) 20 cpm Initials[JF]

Client: WCA SDG #: J02179 SAF #: RC-110 NA [ ]

Lot Number: J5D080419

Chain of Custody # RC-110-125

Shipping Container ID or Air Bill Number : _____ NA [JF]

Samples received inside shipping container/cooler/box Yes [JF] Continue with 1 through 4. Initial appropriate response.
No [ ] Go to 5, add comment to #16.

1. Custody Seals on shipping container intact? Yes [ ] No [ ] No Custody Seal [JF]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [JF]
3. Cooler temperature: _____ °C NA [JF]
4. Vermiculite/packing materials is NA [JF] Wet [ ] Dry [ ]

Item 5 through 16 for samples. Initial appropriate response.

5. Chain of Custody record present? Yes [JF] No [ ]
6. Number of samples received (Each sample may contain multiple bottles): 2
7. Containers received: 2x125mlp
8. Sample holding times exceeded? NA [ ] Yes [ ] No [JF]
9. Samples have: ____tape ____hazard labels JF custody seals JF appropriate sample labels
10. Matrix: JF A (FLT, Wipe, Solid, Soil) ____I (Water) ____S (Air, Niosh 7400) ____T (Biological, Ni-63)
11. Samples:
JF are in good condition ____are leaking ____are broken
____have air bubbles (Only for samples requiring no head space) ____Other _____
12. Sample pH appropriate for analysis requested Yes [ ] No [ ] NA [JF]
(If acidification is necessary go to pH area & document sample ID, initial pH, amount of HNO_3 added and pH after addition on table)
13. Were any anomalies identified in sample receipt? Yes [ ] No [JF]
14. Description of anomalies (include sample numbers): NA [JF] _____
15. Sample Location, Sample Collector Listed on COC? * Yes [ ] No [JF]
*For documentation only. No corrective action needed.
16. Additional Information: N/A

[ ] Client/Courier denied temperature check. [ ] Client/Courier unpack cooler.

Sample Check-in List completed by Sample Custodian:
Signature: _____ Date: 4/8/15

Client Notification needed? Yes [ ] No [X] Date: _____
By: _____
Person contacted: _____

[N] No action necessary, process as is

Project Manager _____ Date 4/8/15

LS-023 Rev. 17, 05/13

Analytical Data Package Prepared For

Washington Closure Hanford

Analysis Provided By

TestAmerica Richland
2800 George Washington Way
Richland WA, 99354
(509)375-3131
Assigned Laboratory Code: TARL

SDG Number: J02179

Data Package Contains 7 Pages

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

Washington Closure Hanford
2620 Fermi Avenue
Richland, WA 99354

April 13, 2015

Attention: Joan Kessner

SAF Number	:	RC-110
Date SDG Closed	:	April 10, 2015
Number of Samples	:	Two (2)
Sample Type	:	Soil
SDG Number	:	J02179
Data Deliverable	:	3-Day / Summary

CASE NARRATIVE

I. Introduction

On April 8, 2015, two soil samples were received at TestAmerica for analysis. Upon receipt, the samples were assigned the following laboratory ID numbers to correspond with the Washington Closure Hanford (WCH) specific ID;

WCH ID#	TARL ID#	MATRIX	DATE OF RECEIPT
J1V609	M6J5Q	SOIL	4/08/15
J1V610	M6J5R	SOIL	4/08/15

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors. The requested analyses were:

ICP Metals
Metals by ICP (TCLP) method SW-846 6010A

IV. Quality Control

SDG J02179 includes a minimum of one Laboratory Control Samples (LCS) and one method (reagent) blank. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

V. Comments

ICP Metals
Metals by ICP (TCLP) method SW-846 6010A

Batch 5098069:
The LCS, batch blank, samples, MS, MSD, ICB, ICV, CCB and CCV results are within contractual limits.

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

Reviewed and approved:

Rhonda Wagar
Project Manager

SDG: J02179
SAF #: RC-110
BATCH: 5098069 / TCLP
MATRIX: SOIL
ANALYSIS DATE: 4/10/15

Client_id	Matrix	Result_	Cas_nbr	Parameter	Result	Qualifier	Units	Reporting_Limits_S	Reporting_Limits	Uncertainty_1s	Analyzed_s	Analyzed_Decision_	LCSRecc	AddedA	Analysis_date_time	Batch_nbr	Test_Metho	Lab_sample_id
J1V609	**SOLID**	**CS**	**7440-22-4**	**Silver**	**1.35E-03**	**U**	**MG/L**	1.05E-02	1.05E-02	1.70E-03	99.9968	G			4/10/2015 15:16	5098069	JYDQ	M6J5Q1A0
J1V609	**SOLID**	**CS**	**7440-38-2**	**Arsenic**	**8.61E-03**	**U**	**MG/L**	5.24E-02	5.24E-02	3.00E-03	99.9968	G			4/10/2015 15:16	5098069	JYDQ	M6J5Q1A0
J1V609	**SOLID**	**CS**	**7440-39-3**	**Ba**	**4.20E-01**		**MG/L**	5.24E-02	5.24E-02	7.50E-03	99.9968	G			4/10/2015 15:16	5098069	JYDQ	M6J5Q1A0
J1V609	**SOLID**	**CS**	**7440-43-9**	**Cadmium**	**4.43E-04**	**U**	**MG/L**	5.24E-03	5.24E-03	4.00E-04	99.9968	G			4/10/2015 15:16	5098069	JYDQ	M6J5Q1A0
J1V609	**SOLID**	**CS**	**7440-47-3**	**Chromium**	**2.23E-03**	**U**	**MG/L**	1.05E-02	1.05E-02	6.80E-04	99.9968	G			4/10/2015 15:16	5098069	JYDQ	M6J5Q1A0
J1V609	**SOLID**	**CS**	**7439-92-1**	**Lead**	**4.28E-04**	**U**	**MG/L**	5.24E-02	5.24E-02	2.90E-03	99.9968	G			4/10/2015 15:16	5098069	JYDQ	M6J5Q1A0
J1V609	**SOLID**	**CS**	**7782-49-2**	**Selenium**	**6.09E-03**	**U**	**MG/L**	5.24E-02	5.24E-02	4.60E-03	99.9968	G			4/10/2015 15:16	5098069	JYDQ	M6J5Q1A0
J1V610	**SOLID**	**CS**	**7440-22-4**	**Silver**	**1.12E-03**	**U**	**MG/L**	1.07E-02	1.07E-02	2.40E-03	100.0021	G			4/10/2015 15:36	5098069	JYDQ	M6J5R1AA
J1V610	**SOLID**	**CS**	**7440-38-2**	**Arsenic**	**8.60E-03**	**U**	**MG/L**	5.37E-02	5.37E-02	8.70E-03	100.0021	G			4/10/2015 15:36	5098069	JYDQ	M6J5R1AA
J1V610	**SOLID**	**CS**	**7440-39-3**	**Ba**	**4.69E-01**		**MG/L**	5.37E-02	5.37E-02	6.60E-03	100.0021	G			4/10/2015 15:36	5098069	JYDQ	M6J5R1AA
J1V610	**SOLID**	**CS**	**7440-43-9**	**Cadmium**	**1.65E-03**	**U**	**MG/L**	5.37E-03	5.37E-03	1.20E-04	100.0021	G			4/10/2015 15:36	5098069	JYDQ	M6J5R1AA
J1V610	**SOLID**	**CS**	**7440-47-3**	**Chromium**	**1.63E-03**	**U**	**MG/L**	1.07E-02	1.07E-02	6.70E-04	100.0021	G			4/10/2015 15:36	5098069	JYDQ	M6J5R1AA
J1V610	**SOLID**	**CS**	**7439-92-1**	**Lead**	**5.85E-03**	**U**	**MG/L**	5.37E-02	5.37E-02	2.50E-03	100.0021	G			4/10/2015 15:36	5098069	JYDQ	M6J5R1AA
J1V610	**SOLID**	**CS**	**7782-49-2**	**Selenium**	**5.25E-03**	**U**	**MG/L**	5.37E-02	5.37E-02	1.30E-02	100.0021	G			4/10/2015 15:36	5098069	JYDQ	M6J5R1AA
INTRA-LAB BLANK	SOLID	BLK	7440-22-4	Silver	1.38E-04	U	MG/L	1.00E-02	1.00E-02	5.60E-04	100.0139	L			4/10/2015 15:03	5098069	JYDQ	M6J591AA
INTRA-LAB BLANK	SOLID	BLK	7440-38-2	Arsenic	4.75E-03	U	MG/L	5.00E-02	5.00E-02	5.30E-03	100.0139	L			4/10/2015 15:03	5098069	JYDQ	M6J591AA
INTRA-LAB BLANK	SOLID	BLK	7440-39-3	Ba	1.12E-02	U	MG/L	5.00E-02	5.00E-02	3.60E-04	100.0139	L			4/10/2015 15:03	5098069	JYDQ	M6J591AA
INTRA-LAB BLANK	SOLID	BLK	7440-43-9	Cadmium	-3.50E-05	U	MG/L	5.00E-03	5.00E-03	2.70E-04	100.0139	L			4/10/2015 15:03	5098069	JYDQ	M6J591AA
INTRA-LAB BLANK	SOLID	BLK	7440-47-3	Chromium	9.29E-04	U	MG/L	1.00E-02	1.00E-02	6.10E-04	100.0139	L			4/10/2015 15:03	5098069	JYDQ	M6J591AA
INTRA-LAB BLANK	SOLID	BLK	7439-92-1	Lead	-6.20E-05	U	MG/L	5.00E-02	5.00E-02	3.00E-03	100.0139	L			4/10/2015 15:03	5098069	JYDQ	M6J591AA
INTRA-LAB BLANK	SOLID	BLK	7782-49-2	Selenium	1.07E-03	U	MG/L	5.00E-02	5.00E-02	5.60E-03	100.0139	L			4/10/2015 15:03	5098069	JYDQ	M6J591AA
INTRA-LAB CHECK	SOLID	LCS	7440-22-4	Silver	1.10E+00		MG/L	1.00E-02	1.00E-02	6.80E-02	100.0139	L	1.1	1	4/10/2015 15:42	5098069	JYDQ	M6J591AA
INTRA-LAB CHECK	SOLID	LCS	7440-38-2	Arsenic	1.14E+00		MG/L	5.00E-02	5.00E-02	1.10E-02	100.0139	L	1.14	1	4/10/2015 15:42	5098069	JYDQ	M6J591AA
INTRA-LAB CHECK	SOLID	LCS	7440-39-3	Ba	9.67E-01		MG/L	5.00E-02	5.00E-02	5.20E-02	100.0139	L	0.97	1	4/10/2015 15:42	5098069	JYDQ	M6J591AA
INTRA-LAB CHECK	SOLID	LCS	7440-43-9	Cadmium	1.06E+00		MG/L	5.00E-03	5.00E-03	1.20E-02	100.0139	L	1.06	1	4/10/2015 15:42	5098069	JYDQ	M6J591AA
INTRA-LAB CHECK	SOLID	LCS	7440-47-3	Chromium	1.04E+00		MG/L	1.00E-02	1.00E-02	6.50E-02	100.0139	L	1.04	1	4/10/2015 15:42	5098069	JYDQ	M6J591AA
INTRA-LAB CHECK	SOLID	LCS	7439-92-1	Lead	9.32E-01		MG/L	5.00E-02	5.00E-02	1.10E-02	100.0139	L	0.93	1	4/10/2015 15:42	5098069	JYDQ	M6J591AA
INTRA-LAB CHECK	SOLID	LCS	7782-49-2	Selenium	1.20E+00		MG/L	5.00E-02	5.00E-02	3.00E-03	100.0139	L	1.2	1	4/10/2015 15:42	5098069	JYDQ	M6J591AA
J1V609 DUP	SOLID	DUP	7440-22-4	Silver	7.29E-04	U	MG/L	1.05E-02	1.05E-02	2.10E-03	99.9968	G			4/10/2015 15:32	5098069	JYDQ	M6J5Q1A0
J1V609 DUP	SOLID	DUP	7440-38-2	Arsenic	7.37E-03	U	MG/L	5.24E-02	5.24E-02	5.00E-03	99.9968	G			4/10/2015 15:32	5098069	JYDQ	M6J5Q1A0
J1V609 DUP	SOLID	DUP	7440-39-3	Ba	4.21E-01		MG/L	5.24E-02	5.24E-02	5.20E-03	99.9968	G			4/10/2015 15:32	5098069	JYDQ	M6J5Q1A0
J1V609 DUP	SOLID	DUP	7440-43-9	Cadmium	5.14E-04	U	MG/L	5.24E-03	5.24E-03	5.70E-04	99.9968	G			4/10/2015 15:32	5098069	JYDQ	M6J5Q1A0
J1V609 DUP	SOLID	DUP	7440-47-3	Chromium	1.80E-03	U	MG/L	1.05E-02	1.05E-02	3.40E-04	99.9968	G			4/10/2015 15:32	5098069	JYDQ	M6J5Q1A0
J1V609 DUP	SOLID	DUP	7439-92-1	Lead	2.39E-03	U	MG/L	5.24E-02	5.24E-02	2.30E-03	99.9968	G			4/10/2015 15:32	5098069	JYDQ	M6J5Q1A0
J1V609 DUP	SOLID	DUP	7782-49-2	Selenium	1.12E-02	U	MG/L	5.24E-02	5.24E-02	2.10E-03	99.9968	G			4/10/2015 15:32	5098069	JYDQ	M6J5Q1A0
J1V609	SOLID	MS	7440-22-4	Silver	1.17E+00		% REC	1.05E-02	1.05E-02	9.00E-03	99.9968	L	1.11	1.048	4/10/2015 15:19	5098069	JYDQ	M6J5Q1A0
J1V609	SOLID	MS	7440-38-2	Arsenic	1.19E+00		% REC	5.24E-02	5.24E-02	1.80E-02	99.9968	L	1.13	1.048	4/10/2015 15:19	5098069	JYDQ	M6J5Q1A0
J1V609	SOLID	MS	7440-39-3	Ba	1.00E+00		% REC	5.24E-02	5.24E-02	3.40E-02	99.9968	L	0.95	1.048	4/10/2015 15:19	5098069	JYDQ	M6J5Q1A0
J1V609	SOLID	MS	7440-43-9	Cadmium	1.10E+00		% REC	5.24E-03	5.24E-03	1.80E-02	99.9968	L	1.05	1.048	4/10/2015 15:19	5098069	JYDQ	M6J5Q1A0
J1V609	SOLID	MS	7440-47-3	Chromium	1.09E+00		% REC	1.05E-02	1.05E-02	6.60E-03	99.9968	L	1.04	1.048	4/10/2015 15:19	5098069	JYDQ	M6J5Q1A0
J1V609	SOLID	MS	7439-92-1	Lead	9.65E-01		% REC	5.24E-02	5.24E-02	1.10E-02	99.9968	L	0.92	1.048	4/10/2015 15:19	5098069	JYDQ	M6J5Q1A0
J1V609	SOLID	MS	7782-49-2	Selenium	1.25E+00		% REC	5.24E-02	5.24E-02	8.20E-03	99.9968	L	1.19	1.048	4/10/2015 15:19	5098069	JYDQ	M6J5Q1A0
J1V609	SOLID	MSD	7440-22-4	Silver	1.15E+00		% REC	1.05E-02	1.05E-02	4.70E-03	99.9968	L	1.1	1.048	4/10/2015 15:25	5098069	JYDQ	M6J5Q1A0
J1V609	SOLID	MSD	7440-38-2	Arsenic	1.19E+00		% REC	5.24E-02	5.24E-02	2.10E-02	99.9968	L	1.13	1.048	4/10/2015 15:25	5098069	JYDQ	M6J5Q1A0
J1V609	SOLID	MSD	7440-39-3	Ba	9.89E-01		% REC	5.24E-02	5.24E-02	1.80E-02	99.9968	L	0.94	1.048	4/10/2015 15:25	5098069	JYDQ	M6J5Q1A0
J1V609	SOLID	MSD	7440-43-9	Cadmium	1.11E+00		% REC	5.24E-03	5.24E-03	2.90E-04	99.9968	L	1.06	1.048	4/10/2015 15:25	5098069	JYDQ	M6J5Q1A0
J1V609	SOLID	MSD	7440-47-3	Chromium	1.08E+00		% REC	1.05E-02	1.05E-02	2.70E-04	99.9968	L	1.03	1.048	4/10/2015 15:25	5098069	JYDQ	M6J5Q1A0
J1V609	SOLID	MSD	7439-92-1	Lead	9.75E-01		% REC	5.24E-02	5.24E-02	7.10E-03	99.9968	L	0.93	1.048	4/10/2015 15:25	5098069	JYDQ	M6J5Q1A0
J1V609	SOLID	MSD	7782-49-2	Selenium	1.25E+00		% REC	5.24E-02	5.24E-02	1.50E-02	99.9968	L	1.19	1.048	4/10/2015 15:25	5098069	JYDQ	M6J5Q1A0

TestAmerica
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Data Review/Verification Checklist

CHEMISTRY, First/Second Level Review

4/13/2015 8:29:54 AM

Lot No., Due Date: J5D080420; 04/13/2015
Client, Site: 127642; S00W235B00 HANFORD
QC Batch No., Method Test: 5098069; M6010_S 6010A
SDG, Matrix: J02179; ~~SOIL~~ SOLID HR 4/13/15

	Yes	No	N/A	2nd
1.0 Initial Calibration				
1.1 Performed at required frequency with required number of levels?	✓			✓
1.2 Correlation coefficient within QC limits?	✓			✓
1.3 Initial calibration verification (ICV) analyzed immediately after calibr. and results within QC limits of +/- 10% at 0.75 ppm?	✓			✓
1.4 ICB analyzed immediately after ICV and concentration of all parameters +/- report limit from zero? RL per RadCalc.	✓			✓
2.0 Continuing Calibration				
2.1 CCV analyzed at required frequency and all parameters within QC limits or +/- 10% at 0.7500 ppm?	✓			✓
2.2 CCB analyzed at required frequency and all results +/- reporting limit from zero?	✓			✓
3.0 Sample Analysis				
3.1 Were any samples with concentration above the linear range diluted and reanalyzed?			✓	✓
3.2 Were all sample holding times met?	✓			✓
4.0 QC Samples				
4.1 All results for the preparation blank < reporting limits?	✓			✓
4.2 MS or MS/MSD recoveries within 25% at 1 ppm and within 20% RPD (for MSD)?	✓			✓
4.3 LCS precent recovery within 20% at 1 ppm and 20% RPD (for LCSD)?	✓			✓
4.4 "ICP Only: Sample and DUP within 35% RPD?"	✓			✓
4.5 ICP only: One serial dilution performed and within 10% of parent per SDG?	✓			✓
4.6 ICP only: RLV run per batch and within 20% of current values?	✓			✓
4.7 ICP only: ICSA,ICSAB analyzed at the required frequencies and within 20% of values per dilution record?	✓			✓
5.0 Other				
5.1 Are all nonconformances included and noted?			✓	✓
5.2 Is the correct date and time of analysis shown?	✓			✓
5.3 Did the analyst sign and date the digestion log for the analytical run?	✓			✓
5.4 Correct methodology used?	✓			✓
5.5 Transcriptions checked?	✓			✓
5.6 Calculations checked at minimum frequency?	✓			✓
5.7 Units checked?	✓			✓
5.8 Verified that appropriate data transferred to ReportDB?	✓			✓

6.0 Comments on any 'No' response:

First Level H. Rahaw **Date** 4/13/15 **Second** [signature] **Date** 04/13/15

TestAmerica Richland
QAS_RADCALCv4.8.66.3

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-110-125 | Page 1 of 1

Collector: STOWE, QG	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Project Designation: 100-H Field Remediation	Sampling Location: 100-H-59:2 (excavation)		SAF No.: RC-110
Ice Chest No.: WCH-12-11-5	Field Logbook No.: EL-1627-09	COA: 01H5922600	Method of Shipment: Local Delivery
Shipped To: TestAmerica Richland	Offsite Property No.: N/A		Bill of Lading/Air Bill No.: N/A

Price Code: QT — Data Turnaround: 24 hrs

Other Labs Shipped To: N/A

POSSIBLE SAMPLE HAZARDS/REMARKS: N/A

Special Handling and/or Storage: *Cooling as required*

Sample No.	Matrix	Sample Date	Sample Time	Preservation	Type of Container	No. of Container(s)	Volume	Sample Analysis
				None	G/P	1	125mL	See item (1) in Special Instructions
				None	G/P	1	125mL	QTL TCLP ICP Metals - 1311/6010
J1V609 M6J5Q	SOIL	4/8/15	1050	X	X			
J1V610 M6J5R	SOIL	4/8/15	1055	X	X			
J1V611	SOIL							
J1V612	SOIL							
J1V613	SOIL							

4/8/15

CHAIN OF POSSESSION — Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
Chaney Stowe	4-8-15 1100	Smartmail Lockers	4/8/15 1100
Smartmail Lockers	4/8/15 1415	C Bingham	4-8-15 1415
C Bingham	4-8-15 1430	J. Friesz, TARL	4/8/15 1430

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

WCH-EE-011

SPECIAL INSTRUCTIONS

Please run the TCLP ICP metals with a 3 day TAT.

(1) Metals by ICP - 6010 - Quick Turn {Arsenic, Barium, Beryllium, Cadmium, Chromium, Lead, Selenium, Silver}

J5D080420
SDG# J02179
Due 4/13/15

REVIEWED BY K. Woodward DATE 4-8-15

J5D080420

TestAmerica
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Sample Check-in List

Date/Time Received: 4/8/15 1430 Container GM Screen Result: (Airlock) 60 cpm Initials[JF]
Sample GM Screen Result (Sample Receiving) 20 cpm Initials[JF]

Client: WCH SDG #: J02179 SAF #: RC-110 NA [ ]

Lot Number: J500804420

Chain of Custody # RC-110-125

Shipping Container ID or Air Bill Number : _____ NA [ ]

Samples received inside shipping container/cooler/box Yes [ ] Continue with 1 through 4. Initial appropriate response.
No [ ] Go to 5, add comment to #16.

1. Custody Seals on shipping container intact? Yes [ ] No [ ] No Custody Seal [ ]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [ ]
3. Cooler temperature: _____ °C NA [ ]
4. Vermiculite/packing materials is NA [ ] Wet [ ] Dry [ ]

Item 5 through 16 for samples. Initial appropriate response.

5. Chain of Custody record present? Yes [ ] No [ ]
6. Number of samples received (Each sample may contain multiple bottles): 2
7. Containers received: ~~2x125mlp~~ JF 4/8/15 ~~2x125mlp~~ JF 4/8/15 2x125mlp
8. Sample holding times exceeded? NA [ ] Yes [ ] No [JF]
9. Samples have: _____tape _____hazard labels J custody seals J appropriate sample labels
10. Matrix: J A (FLT, Wipe, Solid, Soil) _____I (Water) _____S (Air, Niosh 7400) _____T (Biological, Ni-63)
11. Samples:
J are in good condition _____are leaking _____are broken
_____have air bubbles (Only for samples requiring no head space) _____Other _____
12. Sample pH appropriate for analysis requested Yes [ ] No [ ] NA [JF]
(If acidification is necessary go to pH area & document sample ID, initial pH, amount of HNO_3 added and pH after addition on table)
13. Were any anomalies identified in sample receipt? Yes [ ] No [JF]
14. Description of anomalies (include sample numbers): NA [JF] _____
15. Sample Location, Sample Collector Listed on COC? * Yes [ ] No [JF]
*For documentation only. No corrective action needed.
16. Additional Information: TCLP Metals.

[ ] Client/Courier denied temperature check. [ ] Client/Courier unpack cooler.

Sample Check-in List completed by Sample Custodian:
Signature: _____ Date: 4/8/15

Client Notification needed? Yes [ ] No [X] Date: _____
By: _____
Person contacted: _____

[X] No action necessary; process as is

Project Manager _____ Date 4/8/15

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