SAF-RC-238
Characterization of Surface Soils
At 100-K-64 & 100-K-111
FINAL DATA PACKAGE

COMPLETE COPY OF DATA PACKAGE TO:

Kathy Wendt H4-21 KW 9/23/13
INITIAL/DATE

COMMENTS:

SDG JP0629 SAF-RC-238

Rad only Chem only ☑ Rad & Chem

☑ Complete Partial

Sample Location: 100-K-64 – 100-K-64 Focused Samples

Analytical Data Package Prepared For

Washington Closure Hanford

Radiochemical Analysis By

TestAmerica Inc

2800 G.W. Way, Richland Wa, 99354, (509)-375-3131.

Assigned Laboratory Code: TARL

Data Package Contains 58 *Pages*

Report No.: 56993

Results in this report relate only to the sample(s) analyzed.

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
JP0629	RC-238	J1RPX5	J3I110449-1	M1W3Q1AG	9M1W3Q10	3255036
		J1RPX5	J3I110449-1	M1W3Q1AC	9M1W3Q10	3255037
		J1RPX5	J3I110449-1	M1W3Q1AH	9M1W3Q10	3255038
		J1RPX5	J3I110449-1	M1W3Q1AF	9M1W3Q10	3255039
		J1RPX5	J3I110449-1	M1W3Q1AD	9M1W3Q10	3255040
		J1RPX5	J3I110449-1	M1W3Q1AE	9M1W3Q10	3255041
		J1RPX5	J3I110449-1	M1W3Q1AA	9M1W3Q10	3259052

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Certificate of Analysis

Washington Hanford Closure
2620 Fermi Avenue
Richland, WA 99354

September 19, 2013

Attention: Joan Kessner

SAF Number	:	RC-238
Date SDG Closed	:	September 11, 2013
Number of Samples	:	One (1)
Sample Type	:	Soil
SDG Number	:	JP0629
Data Deliverable	:	7– Day / Summary

CASE NARRATIVE

I. Introduction

On September 11, 2013, one soil sample was received at TestAmerica for radiochemical analysis. Upon receipt, the sample was assigned the following laboratory ID number to correspond with the Washington Closure Hanford (WCH) specific ID:

WCH ID#	TARL ID#	MATRIX	DATE OF RECEIPT
J1RPX5	M1W3Q	SOIL	09/11/13

II. Sample Receipt

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

III. Analytical Results/Methodology

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

The requested analyses were:

Alpha Spectroscopy
Plutonium-238, -239/240 by method RL-ALP-002
Gas Proportional Counting
Strontium-90 by method RL-GPC-010
Gamma Spectroscopy

Gamma Spec by method RL-GAM-001
Liquid Scintillation Counting
Tritium by method RL-LSC-005
Carbon-14 by method RL-LSC-008
Nickel-63 by method RL-LCS-017
Chemical Analysis
Hexavalent Chromium by EPA method 7196A

IV. Quality Control

The analytical results for each analysis performed includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

V. Comments

Alpha Spectroscopy
Plutonium-238, -239/240 by method RL-ALP-002:
The LCS, batch blank, sample and sample duplicate (J1RPX5) results are within contractual requirements.

Gas Proportional Counting
Strontium-90 by method RL-GPC-010:
The LCS, batch blank, sample and sample duplicate (J1RPX5) results are within contractual requirements.

Gamma Spectroscopy
Gamma Spec by method RL-GAM-001:
The CRDL was not met for some of the analytes. Except as noted, the LCS, batch blank, sample and sample duplicate (J1RPX5) results are within contractual requirements.

Liquid Scintillation Counting
Tritium by method RL-LSC-005:
The LCS, batch blank, sample and sample duplicate (J1RPX5) results are within contractual requirements.

Carbon-14 by method RL-LSC-008:
The LCS, batch blank, sample and sample duplicate (J1RPX5) results are within contractual requirements.

Nickel-63 by method RL-LCS-017:
The LCS, batch blank, sample and sample duplicate (J1RPX5) results are within contractual requirements.

Chemical Analysis
Hexavalent Chromium by EPA method 7196A
The LCS, batch blank, sample, sample duplicate (J1RPX5) and sample matrix spike (J1RPX5) results are within contractual requirements.

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

Reviewed and approved:

Rhonda Wagar
Project Manager

Drinking Water Method Cross References

	DRINKING WATER ASTM METHOD CROSS REFERENCES	
Referenced Method	**Isotope(s)**	**TestAmerica Richland's SOP No.**
EPA 901.1	Cs-134, I-131	RL-GAM-001
EPA 900.0	Alpha & Beta	RL-GPC-001
EPA 00-02	Gross Alpha (Coprecipitation)	RL-GPC-002
EPA 903.0	Total Alpha Radium (Ra-226)	RL-RA-002
EPA 903.1	Ra-226	RL-RA-001
EPA 904.0	Ra-228	RL-RA-001
EPA 905.0	Sr-89/90	RL-GPC-003
ASTM D5174	Uranium	RL-KPA-003
EPA 906.0	Tritium	RL-LSC-005

Results in this report relate only to the sample(s) analyzed.

Uncertainty Estimation

TestAmerica Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, R = constants * f(x,y,z,...). The components (x,y,z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1,2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/?n), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation (Result/Expected)-1 as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or TestAmerica.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) ***u_c – Combined Uncertainty.***	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, *u_c the combined uncertainty*. The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or TestAmerica "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. Lc=(1.645 * Sqrt(2*(BkgrndCnt/BkgrndCntMin)/SCntMin)) * (ConvFct/(Eff*Yld*Abn*Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC|MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. MDC = (4.65 * Sqrt((BkgrndCnt/BkgrndCntMin)/SCntMin) + 2.71/SCntMin) * (ConvFct/(Eff * Yld * Abn * Vol) * IngrFct). For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the **Work Order** Number.
RER	The equation Replicate Error Ratio = (S-D)/[sqrt($TPUs^2$ + $TPUd^2$)] as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by TestAmerica upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Sample Results Summary

TestAmerica Inc TARL

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

Date: 19-Sep-13

Report No. : 56993

SDG No: JP0629

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
3255038 C14_LSC									
J1RPX5									
	M1W3Q1AH	C-14	1.48E-01 +- 2.3E-01	U	pCi/g	100%	4.91E-01	5.00E+01	
J1RPX5 DUP									
	M1W3Q1AL	C-14	-2.76E-01 +- 2.1E-01	U	pCi/g	100%	4.89E-01	5.00E+01	-663.6
3255041 PUISO_PLATE_AEA									
J1RPX5									
	M1W3Q1AE	Pu-238	-4.31E-03 +- 3.1E-02	U	pCi/g	100%	7.95E-02	1.00E+00	
		PU239/40	-1.85E-03 +- 3.1E-02	U	pCi/g	100%	6.64E-02	1.00E+00	
J1RPX5 DUP									
	M1W3Q1AP	Pu-238	-2.34E-03 +- 2.9E-02	U	pCi/g	100%	6.69E-02	1.00E+00	-59.1
		PU239/40	-5.85E-04 +- 2.9E-02	U	pCi/g	100%	5.33E-02	1.00E+00	-103.7
3255036 GAMMA_GS									
J1RPX5									
	M1W3Q1AG	CO-60	-1.73E-02 +- 1.7E-02	U	pCi/g		2.75E-02	5.00E-02	
		CS-137	8.50E-02 +- 2.9E-02		pCi/g		2.88E-02	1.00E-01	
		EU-152	6.43E-02 +- 3.9E-02	U	pCi/g		6.98E-02	1.00E-01	
		EU-154	5.43E-03 +- 5.9E-02	U	pCi/g		1.03E-01	1.00E-01	
		EU-155	7.71E-02 +- 3.6E-02	U	pCi/g		6.13E-02	1.00E-01	
		K-40	1.71E+01 +- 2.0E+00		pCi/g		2.47E-01		
J1RPX5 DUP									
	M1W3Q1AJ	CO-60	7.05E-03 +- 1.8E-02	U	pCi/g		3.26E-02	5.00E-02	-474.1
		CS-137	1.04E-01 +- 3.0E-02		pCi/g		2.68E-02	1.00E-01	19.7
		EU-152	5.49E-02 +- 4.9E-02	U	pCi/g		6.43E-02	1.00E-01	15.9
		EU-154	-8.97E-03 +- 5.9E-02	U	pCi/g		1.02E-01	1.00E-01	-814.9
		EU-155	1.78E-02 +- 2.8E-02	U	pCi/g		4.96E-02	1.00E-01	125.0
		K-40	1.69E+01 +- 2.0E+00		pCi/g		2.51E-01		1.5
3255037 SRTOT_SEP_PRECIP_GPC									
J1RPX5									
	M1W3Q1AC	STRONTIUM	8.78E-02 +- 1.4E-01	U	pCi/g	78%	2.90E-01		
J1RPX5 DUP									
	M1W3Q1AK	STRONTIUM	3.10E-01 +- 2.0E-01	U	pCi/g	62%	3.63E-01		111.7
3255039 906.0_H3_LSC									
J1RPX5									
	M1W3Q1AF	H-3	-1.91E-02 +- 4.6E-02	U	pCi/g	100%	1.10E-01	4.00E+02	
J1RPX5 DUP									
	M1W3Q1AM	H-3	3.00E-02 +- 4.8E-02	U	pCi/g	100%	1.04E-01	4.00E+02	901.5
3255040 NI63_LSC									
J1RPX5									

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RPD - Relative Percent Difference.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

Sample Results Summary

Date: 19-Sep-13

TestAmerica Inc TARL

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

Report No. : 56993

SDG No: JP0629

Batch	Client Id Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	MDL	CRDL	RPD
3255040 NI63_LSC									
	J1RPX5								
	M1W3Q1AD	Ni-63	3.35E+00 +- 3.4E+00	U	pCi/g	96%	6.40E+00	3.00E+01	
	J1RPX5 DUP								
	M1W3Q1AN	Ni-63	2.91E+00 +- 3.4E+00	U	pCi/g	95%	6.57E+00	3.00E+01	14.1
3259052 7196_CR6									
	J1RPX5								
	M1W3Q1AA	HEXCHROME	7.72E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	
	M1W3Q1AR	HEXCHROME	8.48E-01 +- 0.0E+00		mg/kg	N/A	1.55E-01	1.55E-01	9.4

No. of Results: 26

TestAmerica Inc

rptSTLRchSaSummary2 V5.2.24 A2002

RPD - Relative Percent Difference.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

QC Results Summary

Date: 19-Sep-13

TestAmerica Inc TARL

Ordered by Method, Batch No, QC Type,.

Report No. : 56993 **SDG No.:** JP0629

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
C14_LSC								
3255038 BLANK QC,								
M1W801AA	C-14	-4.65E-03 +- 2.3E-01	U	pCi/g	100%			4.89E-01
3255038 LCS,								
M1W801AC	C-14	6.78E+00 +- 5.8E-01		pCi/g	100%	94%	-0.1	4.88E-01
PUISO_PLATE_AEA								
3255041 BLANK QC,								
M1W831AA	Pu-238	-1.27E-03 +- 3.2E-02	U	pCi/g	93%			6.40E-02
	PU239/40	-1.91E-03 +- 3.2E-02	U	pCi/g	93%			6.86E-02
3255041 LCS,								
M1W831AC	PU239/40	6.67E+00 +- 1.3E+00		pCi/g	100%	102%	0.0	6.49E-02
GAMMA_GS								
3255036 BLANK QC,								
M1W8W1AA	CO-60	-3.47E-03 +- 1.1E-02	U	pCi/g				1.93E-02
	CS-137	4.96E-04 +- 1.1E-02	U	pCi/g				1.90E-02
	EU-152	1.01E-02 +- 2.7E-02	U	pCi/g				4.74E-02
	EU-154	-1.75E-02 +- 3.2E-02	U	pCi/g				5.43E-02
	EU-155	-3.51E-03 +- 2.0E-02	U	pCi/g				3.55E-02
	K-40	-5.79E-02 +- 2.7E-01	U	pCi/g				5.55E-01
3255036 LCS,								
M1W8W1AC	CS-137	9.86E-01 +- 1.3E-01		pCi/g		96%	0.0	2.68E-02
	RA-226	9.05E-01 +- 1.3E-01		pCi/g		80%	-0.2	4.53E-02
	RA-228	8.15E-01 +- 1.4E-01		pCi/g		116%	0.2	8.36E-02
	U-238	9.51E-01 +- 1.2E-01		pCi/g		79%	-0.2	4.16E-02
SRTOT_SEP_PRECIP_GPC								
3255037 BLANK QC,								
M1W8X1AA	STRONTIUM	2.02E-01 +- 1.6E-01	U	pCi/g	81%			2.99E-01
3255037 LCS,								
M1W8X1AC	STRONTIUM	2.12E+00 +- 5.8E-01		pCi/g	63%	92%	-0.1	3.84E-01
906.0_H3_LSC								
3255039 BLANK QC,								
M1W811AA	H-3	2.34E-02 +- 4.1E-02	U	pCi/g	100%			9.34E-02
3255039 LCS,								
M1W811AC	H-3	5.31E-01 +- 8.5E-02		pCi/g	100%	101%	0.0	1.17E-01
NI63_LSC								
3255040 BLANK QC,								
M1W821AA	Ni-63	5.41E+00 +- 3.8E+00	U	pCi/g	82%			7.95E+00
3255040 LCS,								
M1W821AC	Ni-63	2.66E+02 +- 2.2E+01		pCi/g	95%	92%	-0.1	6.58E+00
7196_CR6								
3259052 MATRIX SPIKE, J1RPX5								
M1W3Q1AQ	HEXCHROME	2.78E+01 +- 0.0E+00		mg/kg	N/A	91%	-0.1	1.55E-01
3259052 LCS,								

TestAmerica Inc

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Bias - (Result/Expected)-1 as defined by ANSI N13.30.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

QC Results Summary

Date: 19-Sep-13

TestAmerica Inc TARL

Ordered by Method, Batch No, QC Type,.

Report No. : 56993

SDG No.: JP0629

Batch Work Order	Parameter	Result +- Uncertainty (2s)	Qual	Units	Tracer Yield	LCS Recovery	Bias	MDL
M10JJ1AC	HEXCHROME	1.87E+01 +- 0.0E+00		mg/kg	N/A	98%	0.0	1.55E-01
3259052 BLANK QC,								
M10JJ1AA	HEXCHROME	1.55E-01 +- 0.0E+00	U	mg/kg	N/A			1.55E-01

No. of Results: 24

TestAmerica Inc

rptSTLRchQcSummary V5.2.24
A2002

Bias - (Result/Expected)-1 as defined by ANSI N13.30.

U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 19-Sep-13

Lab Name:	**TestAmerica Inc**	**SDG:**	JP0629	**Collection Date:**	9/10/2013 9:30:00 AM
Lot-Sample No.:	**J3I110449-1**	**Report No. :**	56993	**Received Date:**	9/11/2013 3:45:00 PM
Client Sample ID:	**J1RPX5**	**COC No. :**	RC-238-002	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3255036	GAMMA_GS			**Work Order:**	M1W3Q1AG		**Report DB ID:**	9M1W3Q10				
CO-60	**-1.73E-02**	U	1.7E-02	1.7E-02	2.75E-02	pCi/g		*-0.63*	9/13/13 10:42 p		317.0	GER19$1
							5.00E-02	*-(2.)*			g	
CS-137	**8.50E-02**		2.9E-02	2.9E-02	2.88E-02	pCi/g		*(2.9)*	9/13/13 10:42 p		317.0	GER19$1
							1.00E-01	*(5.8)*			g	
EU-152	**6.43E-02**	U	3.9E-02	3.9E-02	6.98E-02	pCi/g		*0.92*	9/13/13 10:42 p		317.0	GER19$1
							1.00E-01	*(3.3)*			g	
EU-154	**5.43E-03**	U	5.9E-02	5.9E-02	1.03E-01	pCi/g		*0.05*	9/13/13 10:42 p		317.0	GER19$1
							1.00E-01	*0.18*			g	
EU-155	**7.71E-02**	U	3.6E-02	3.6E-02	6.13E-02	pCi/g		*(1.3)*	9/13/13 10:42 p		317.0	GER19$1
							1.00E-01	*(4.3)*			g	
K-40	**1.71E+01**		2.0E+00	2.0E+00	2.47E-01	pCi/g		*(69.4)*	9/13/13 10:42 p		317.0	GER19$1
								(16.8)			g	
Batch: 3255037	SRTOT_SEP_PRECIP_GPC			**Work Order:**	M1W3Q1AC		**Report DB ID:**	9M1W3Q10				
STRONTIUM	**8.78E-02**	U	1.4E-01	1.4E-01	2.90E-01	pCi/g	78%	*0.3*	9/14/13 08:29 a		3.04	GPC32B
						1.34E-01		*(1.3)*			g	
Batch: 3255038	C14_LSC			**Work Order:**	M1W3Q1AH		**Report DB ID:**	9M1W3Q10				
C-14	**1.48E-01**	U	2.1E-01	2.3E-01	4.91E-01	pCi/g	100%	*0.3*	9/13/13 05:11 a		5.003	LSC9
						2.31E-01	5.00E+01	*(1.3)*			g	
Batch: 3255039	906.0_H3_LSC			**Work Order:**	M1W3Q1AF		**Report DB ID:**	9M1W3Q10				
H-3	**-1.91E-02**	U	4.1E-02	4.6E-02	1.10E-01	pCi/g	100%	*-0.17*	9/18/13 04:23 p		40.9	LSC8
						5.01E-02	4.00E+02	*-0.82*			g	

TestAmerica Inc
rptSTLRchSample
V5.2.24 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM I

SAMPLE RESULTS

Date: 19-Sep-13

Lab Name:	TestAmerica Inc	**SDG:**	JP0629	**Collection Date:**	9/10/2013 9:30:00 AM
Lot-Sample No.:	J3I110449-1	**Report No. :**	56993	**Received Date:**	9/11/2013 3:45:00 PM
Client Sample ID:	J1RPX5	**COC No. :**	RC-238-002	**Matrix:**	SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3255040	NI63_LSC			**Work Order:**	M1W3Q1AD		**Report DB ID:**	9M1W3Q10				
Ni-63	**3.35E+00**	U	2.7E+00	3.4E+00	6.40E+00	pCi/g	96%	*0.52*	9/17/13 09:13 a		0.53	LSC4
						2.99E+00	3.00E+01	*(2.)*			g	
Batch: 3255041	PUISO_PLATE_AEA			**Work Order:**	M1W3Q1AE		**Report DB ID:**	9M1W3Q10				
Pu-238	**-4.31E-03**	U	3.1E-02	3.1E-02	7.95E-02	pCi/g	100%	*-0.05*	9/16/13 02:47 p		1.01	ALP401
						1.89E-02	1.00E+00	*-0.28*			g	
PU239/40	**-1.85E-03**	U	3.1E-02	3.1E-02	6.64E-02	pCi/g	100%	*-0.03*	9/16/13 02:47 p		1.01	ALP401
						1.24E-02	1.00E+00	*-0.12*			g	
Batch: 3259052	7196_CR6			**Work Order:**	M1W3Q1AA		**Report DB ID:**	9M1W3Q10				
HEXCHROME	**7.72E-01**			0.0E+00	1.55E-01	mg/kg	N/A	*(5.)*	9/17/13 10:45 a		2.5144	
							1.55E-01	*N/A*			g	

No. of Results: 13 **Comments:**

TestAmerica Inc
rptSTLRchSample
V5.2.24 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II

Date: 19-Sep-13

DUPLICATE RESULTS

Lab Name:	TestAmerica Inc	**SDG:**	JP0629	**Collection Date:**	9/10/2013 9:30:00 AM
Lot-Sample No.:	J3I110449-1	**Report No. :**	56993	**Received Date:**	9/11/2013 3:45:00 PM
Client Sample ID:	J1RPX5	**COC No. :**	RC-238-002	**Matrix:**	SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3259052	7196_CR6			**Work Order:** M1W3Q1AR		**Report DB ID:** M1W3Q1ER			**Orig Sa DB ID:** 9M1W3Q10			
HEXCHROME	8.48E-01			0.0E+00	1.55E-01	mg/kg	N/A	(5.5)	9/17/13 10:45 a		2.5193	
	7.72E-01		**RPD**	**9.4**		1.55E-01		N/A			g	

No. of Results: 1 **Comments:**

TestAmerica Inc
rptSTLRchDupV5.
2.24 A2002

RPD - Relative Percent Difference.
MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

FORM II

Date: 19-Sep-13

DUPLICATE RESULTS

Lab Name:	**TestAmerica Inc**	**SDG:**	JP0629	**Collection Date:**	9/10/2013 9:30:00 AM
Lot-Sample No.:	**J3I110449-1**	**Report No. :**	56993	**Received Date:**	9/11/2013 3:45:00 PM
Client Sample ID:	**J1RPX5 DUP**	**COC No. :**	RC-238-002	**Matrix:**	SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3255036	GAMMA_GS			**Work Order:** M1W3Q1AJ		**Report DB ID:** M1W3Q1JR			**Orig Sa DB ID:** 9M1W3Q10			
CO-60	7.05E-03	U	1.8E-02	1.8E-02	3.26E-02	pCi/g		0.22	9/14/13 11:57 p		317.0	GER18$1
	-1.73E-02	U	**RPD**	**-474.1**		5.00E-02		0.78			g	
CS-137	1.04E-01		3.0E-02	3.0E-02	2.68E-02	pCi/g		(3.9)	9/14/13 11:57 p		317.0	GER18$1
	8.50E-02		**RPD**	**19.7**		1.00E-01		(6.9)			g	
EU-152	5.49E-02	U	4.9E-02	4.9E-02	6.43E-02	pCi/g		0.85	9/14/13 11:57 p		317.0	GER18$1
	6.43E-02	U	**RPD**	**15.9**		1.00E-01		(2.2)			g	
EU-154	-8.97E-03	U	5.9E-02	5.9E-02	1.02E-01	pCi/g		-0.09	9/14/13 11:57 p		317.0	GER18$1
	5.43E-03	U	**RPD**	**-814.9**		1.00E-01		-0.3			g	
EU-155	1.78E-02	U	2.8E-02	2.8E-02	4.96E-02	pCi/g		0.36	9/14/13 11:57 p		317.0	GER18$1
	7.71E-02	U	**RPD**	**125.0**		1.00E-01		(1.3)			g	
K-40	1.69E+01		2.0E+00	2.0E+00	2.51E-01	pCi/g		(67.4)	9/14/13 11:57 p		317.0	GER18$1
	1.71E+01		**RPD**	**1.5**				(16.8)			g	
Batch: 3255037	SRTOT_SEP_PRECIP_GPC			**Work Order:** M1W3Q1AK		**Report DB ID:** M1W3Q1KR			**Orig Sa DB ID:** 9M1W3Q10			
STRONTIUM	3.10E-01	U	1.9E-01	2.0E-01	3.63E-01	pCi/g	62%	0.85	9/14/13 08:29 a		3.01	GPC32C
	8.78E-02	U	**RPD**	**111.7**				(3.)			g	
Batch: 3255038	C14_LSC			**Work Order:** M1W3Q1AL		**Report DB ID:** M1W3Q1LR			**Orig Sa DB ID:** 9M1W3Q10			
C-14	-2.76E-01	U	1.8E-01	2.1E-01	4.89E-01	pCi/g	100%	-0.56	9/13/13 05:33 a		5.016	LSC9
	1.48E-01	U	**RPD**	**-663.6**		5.00E+01		-(2.6)			g	
Batch: 3255039	906.0_H3_LSC			**Work Order:** M1W3Q1AM		**Report DB ID:** M1W3Q1MR			**Orig Sa DB ID:** 9M1W3Q10			

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RPD - Relative Percent Difference.
MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II

Date: 19-Sep-13

DUPLICATE RESULTS

Lab Name:	TestAmerica Inc	**SDG:**	JP0629	**Collection Date:**	9/10/2013 9:30:00 AM
Lot-Sample No.:	J3I110449-1	**Report No. :**	56993	**Received Date:**	9/11/2013 3:45:00 PM
Client Sample ID:	J1RPX5 DUP	**COC No. :**	RC-238-002	**Matrix:**	SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
H-3	3.00E-02	U	4.3E-02	4.8E-02	1.04E-01	pCi/g	100%	0.29	9/18/13 04:45 p		42.8	LSC8
	-1.91E-02	U	**RPD**	**901.5**		4.00E+02		(1.3)			g	
Batch: 3255040	NI63_LSC			**Work Order:**	M1W3Q1AN	**Report DB ID:**	M1W3Q1NR		**Orig Sa DB ID:**	9M1W3Q10		
Ni-63	2.91E+00	U	2.7E+00	3.4E+00	6.57E+00	pCi/g	95%	0.44	9/17/13 09:35 a		0.52	LSC4
	3.35E+00	U	**RPD**	**14.1**		3.00E+01		(1.7)			g	
Batch: 3255041	PUISO_PLATE_AEA			**Work Order:**	M1W3Q1AP	**Report DB ID:**	M1W3Q1PR		**Orig Sa DB ID:**	9M1W3Q10		
Pu-238	-2.34E-03	U	2.9E-02	2.9E-02	6.69E-02	pCi/g	100%	-0.04	9/16/13 02:48 p		1.0	ALP403
	-4.31E-03	U	**RPD**	**-59.1**		1.00E+00		-0.16			g	
PU239/40	-5.85E-04	U	2.9E-02	2.9E-02	5.33E-02	pCi/g	100%	-0.01	9/16/13 02:48 p		1.0	ALP403
	-1.85E-03	U	**RPD**	**-103.7**		1.00E+00		-0.04			g	

No. of Results: 12 **Comments:**

TestAmerica Inc
rptSTLRchDupV5.
2.24 A2002

RPD - Relative Percent Difference.
MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II
BLANK RESULTS

Date: 19-Sep-13

Lab Name: TestAmerica Inc
Matrix: SOIL

SDG: JP0629
Report No. : 56993

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 3259052	7196_CR6			**Work Order:**	M10JJ1AA		**Report DB ID:**	M10JJ1AB				
HEXCHROME	1.55E-01	U		0.0E+00	1.55E-01	mg/kg	N/A	1.	9/17/13 10:45 a		2.5	
						1.55E-01		N/A			g	
Batch: 3255038	C14_LSC			**Work Order:**	M1W801AA		**Report DB ID:**	M1W801AB				
C-14	-4.65E-03	U	2.0E-01	2.3E-01	4.89E-01	pCi/g	100%	-0.01	9/13/13 05:55 a		5.027	LSC9
					2.31E-01	5.00E+01		-0.04			g	
Batch: 3255041	PUISO_PLATE_AEA			**Work Order:**	M1W831AA		**Report DB ID:**	M1W831AB				
Pu-238	-1.27E-03	U	3.2E-02	3.2E-02	6.40E-02	pCi/g	93%	-0.02	9/16/13 02:48 p		1.01	ALP404
					1.05E-02	1.00E+00		-0.08			g	
PU239/40	-1.91E-03	U	3.2E-02	3.2E-02	6.86E-02	pCi/g	93%	-0.03	9/16/13 02:48 p		1.01	ALP404
					1.28E-02	1.00E+00		-0.12			g	
Batch: 3255040	NI63_LSC			**Work Order:**	M1W821AA		**Report DB ID:**	M1W821AB				
Ni-63	5.41E+00	U	3.1E+00	3.8E+00	7.95E+00	pCi/g	82%	0.68	9/17/13 09:58 a		0.53	LSC4
					3.72E+00	3.00E+01		(2.8)			g	
Batch: 3255039	906.0_H3_LSC			**Work Order:**	M1W811AA		**Report DB ID:**	M1W811AB				
H-3	2.34E-02	U	3.7E-02	4.1E-02	9.34E-02	pCi/g	100%	0.25	9/18/13 05:07 p		70.8	LSC8
					4.24E-02	4.00E+02		(1.1)			g	
Batch: 3255036	GAMMA_GS			**Work Order:**	M1W8W1AA		**Report DB ID:**	M1W8W1AB				
CO-60	-3.47E-03	U	1.1E-02	1.1E-02	1.93E-02	pCi/g		-0.18	9/14/13 11:57 p		348.0	GER15$1
						5.00E-02		-0.63			g	
CS-137	4.96E-04	U	1.1E-02	1.1E-02	1.90E-02	pCi/g		0.03	9/14/13 11:57 p		348.0	GER15$1
						1.00E-01		0.09			g	

TestAmerica Inc
rptSTLRchBlank
V5.2.24 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II
BLANK RESULTS

Date: 19-Sep-13

Lab Name: TestAmerica Inc
Matrix: SOIL

SDG: JP0629
Report No. : 56993

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL, Lc	Rpt Unit, CRDL	Yield	Rst/MDL, Rst/TotUcert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
EU-152	1.01E-02	U	2.7E-02	2.7E-02	4.74E-02	pCi/g		0.21	9/14/13 11:57 p		348.0	GER15$1
						1.00E-01		0.75			g	
EU-154	-1.75E-02	U	3.2E-02	3.2E-02	5.43E-02	pCi/g		-0.32	9/14/13 11:57 p		348.0	GER15$1
						1.00E-01		-(1.1)			g	
EU-155	-3.51E-03	U	2.0E-02	2.0E-02	3.55E-02	pCi/g		-0.1	9/14/13 11:57 p		348.0	GER15$1
						1.00E-01		-0.34			g	
K-40	-5.79E-02	U	2.7E-01	2.7E-01	5.55E-01	pCi/g		-0.1	9/14/13 11:57 p		348.0	GER15$1
								-0.43			g	
Batch: 3255037	SRTOT_SEP_PRECIP_GPC			**Work Order:**	M1W8X1AA		**Report DB ID:**	M1W8X1AB				
STRONTIUM	2.02E-01	U	1.5E-01	1.6E-01	2.99E-01	pCi/g	81%	0.68	9/14/13 08:29 a		3.01	GPC32D
					1.39E-01			(2.5)			g	

No. of Results: 13 **Comments:**

TestAmerica Inc
rptSTLRchBlank
V5.2.24 A2002

MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
U Qual - Analyzed for but not detected above limiting criteria. Limit criteria is less than the Mdc/Mda/Mdl, Total Uncert, CRDL, RDL or not identified by gamma scan software.

FORM II

LCS RESULTS

Date: 19-Sep-13

Lab Name: TestAmerica Inc

Matrix: SOIL

SDG: JP0629

Report No. : 56993

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 3259052	7196_CR6			**Work Order:**	M10JJ1AC		**Report DB ID:**	M10JJ1AS					
HEXCHROME	1.87E+01			0.0E+00	1.55E-01	mg/kg	N/A	1.90E+01		98%	9/17/13 10:45 a	2.5	
							Rec Limits:	80	120	0.0		g	
Batch: 3255038	C14_LSC			**Work Order:**	M1W801AC		**Report DB ID:**	M1W801CS					
C-14	6.78E+00		4.2E-01	5.8E-01	4.88E-01	pCi/g	100%	7.22E+00	1.4E-01	94%	9/13/13 06:17 a	5.01	LSC9
							Rec Limits:			-0.1		g	
Batch: 3255041	PUISO_PLATE_AEA			**Work Order:**	M1W831AC		**Report DB ID:**	M1W831CS					
PU239/40	6.67E+00		6.2E-01	1.3E+00	6.49E-02	pCi/g	100%	6.54E+00	2.0E-01	102%	9/16/13 02:49 p	1.04	ALP405
							Rec Limits:	70	130	0.0		g	
Batch: 3255040	NI63_LSC			**Work Order:**	M1W821AC		**Report DB ID:**	M1W821CS					
Ni-63	2.66E+02		9.4E+00	2.2E+01	6.58E+00	pCi/g	95%	2.88E+02	4.8E+00	92%	9/17/13 10:21 a	0.53	LSC4
							Rec Limits:	70	130	-0.1		g	
Batch: 3255039	906.0_H3_LSC			**Work Order:**	M1W811AC		**Report DB ID:**	M1W811CS					
H-3	5.31E-01		7.9E-02	8.5E-02	1.17E-01	pCi/g	100%	5.25E-01	1.6E-02	101%	9/18/13 05:28 p	60.1	LSC8
							Rec Limits:	70	130	0.0		g	
Batch: 3255036	GAMMA_GS			**Work Order:**	M1W8W1AC		**Report DB ID:**	M1W8W1CS					
CS-137	9.86E-01		1.3E-01	1.3E-01	2.68E-02	pCi/g		1.03E+00	1.1E-02	96%	9/14/13 11:58 p	350.1	GER16$1
							Rec Limits:	70	130	0.0		g	
RA-226	9.05E-01		1.3E-01	1.3E-01	4.53E-02	pCi/g		1.14E+00	1.2E-02	80%	9/14/13 11:58 p	350.1	GER16$1
							Rec Limits:	70	130	-0.2		g	
RA-228	8.15E-01		1.4E-01	1.4E-01	8.36E-02	pCi/g		6.99E-01	7.2E-03	116%	9/14/13 11:58 p	350.1	GER16$1
							Rec Limits:	70	130	0.2		g	

TestAmerica Inc **Bias** - (Result/Expected)-1 as defined by ANSI N13.30.

rptSTLRchLcs
V5.2.24 A2002

FORM II

LCS RESULTS

Date: 19-Sep-13

Lab Name: TestAmerica Inc

Matrix: SOIL

SDG: JP0629

Report No. : 56993

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDL	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Aliquot Size	Primary Detector
U-238	9.51E-01		1.2E-01	1.2E-01	4.16E-02	pCi/g		1.20E+00	1.2E-02	79%	9/14/13 11:58 p	350.1	GER16$1
							Rec Limits:	70	130	-0.2		g	
Batch: 3255037	SRTOT_SEP_PRECIP_GPC			**Work Order:**	M1W8X1AC		**Report DB ID:**	M1W8X1CS					
STRONTIUM	2.12E+00		3.3E-01	5.8E-01	3.84E-01	pCi/g	63%	2.30E+00	4.8E-02	92%	9/14/13 09:27 a	3.01	GPC31A
							Rec Limits:	70	130	-0.1		g	

No. of Results: 10 **Comments:**

FORM II

MATRIX SPIKE RESULTS

Date: 19-Sep-13

Lab Name: TestAmerica Inc **SDG:** JP0629

Lot-Sample No.: J3I110449-1, J1RPX5 **Report No. :** 56993 **Matrix:** SOIL

Parameter	SpikeResult, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC|MDA	Rpt Unit, CRDL	Yield	Rec-overy	Expected, Uncert	Analysis, Prep Date	Aliquot Size	Analy Method, Primary Detector
Batch: 3259052	**Work Order:**	M1W3Q1AQ		**Report DB ID:**	M1W3Q1CW		**Orig Sa DB ID:**	9M1W3Q10				
HEXCHROME	2.78E+01			0.0E+00	1.55E-01	mg/kg	N/A	90.56%	3.07E+01	9/17/13 10:45 a	2.5011	7196_CR6
	7.72E-01										g	

Number of Results: 1

Comments:

TestAmerica Inc
rptSTLRchMs
V5.2.24 A2002

RER - Replicate Error Ratio = (S-D)/[sqrt(sq(TPUs)+sq(TPUd))] as defined by ICPT BOA.
Bias - (Result/Expected)-1 as defined by ANSI N13.30.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

9/17/2013 9:45:55 AM

Lot No., Due Date: J3I110449; 09/18/2013
Client, Site: 127642; S00X235B00 HANFORD
QC Batch No., Method Test: 3255041; RPUISO Pulso by ALP
SDG, Matrix: JP0629; SOIL

1.0 COC

	Yes	No	N/A
1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?	✓		

2.0 QC Batch

	Yes	No	N/A
2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2.2 Are the QC appropriate for the analysis included in the batch?	✓		
2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?	✓		
2.4 Does the Worksheets include a Tracer Vial label for each sample?			✓

3.0 QC & Samples

	Yes	No	N/A
3.1 Is the blank results, yield, and MDA within contract limits?	✓		
3.2 Is the LCS result, yield, and MDA within contract limits?	✓		
3.3 Are the MS/MSD results, yields, and MDA within contract limits?			✓
3.4 Are the duplicate result, yields, and MDAs within contract limits?	✓		
3.5 Are the sample yields and MDAs within contract limits?	✓		

4.0 Raw Data

	Yes	No	N/A
4.1 Were results calculated in the correct units?	✓		
4.2 Were analysis volumes entered correctly?	✓		
4.3 Were Yields entered correctly?			✓
4.4 Were spectra reviewed/meet contractual requirements?	✓		
4.5 Were raw counts reviewed for anomalies?	✓		

5.0 Other

	Yes	No	N/A
5.1 Are all nonconformances included and noted?			✓
5.2 Are all required forms filled out?	✓		
5.3 Was the correct methodology used?	✓		
5.4 Was transcription checked?	✓		
5.5 Were all calculations checked at a minimum frequency?			✓
5.6 Are worksheet entries complete and correct?	✓		

6.0 Comments on any No response:

First Level Lisa Antonson **Date** 9/17/13

TestAmerica Richland
QAS_RADCALCv4.8.44

Page 1

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Data Review Checklist

RADIOCHEMISTRY

Second Level Review

Batch Number: 3255041

Review Item	Yes (√)	No (√)	NA (√)
A. Sample Analysis 1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery within contract acceptance criteria?	✓		
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
7. Do the MS/MSD results and yields meet acceptance criteria?			✓
8. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other 1. Are all Non-conformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: CRDL= 1.0pCi/g

Second Level Review: Brandon Jan Date: 9/17/13

LS-038B, Rev. 10, 9/07

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

9/16/2013 11:11:47 AM

Lot No., Due Date: J3I110449; 09/18/2013
Client, Site: 127642; S00X235B00 HANFORD
QC Batch No., Method Test: 3255037; RSRTOT SrTot by GPC
SDG, Matrix: JP0629; SOIL

1.0 COC			
1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?	Yes ✓	No	N/A
2.0 QC Batch			
2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	Yes ✓	No	N/A
2.2 Are the QC appropriate for the analysis included in the batch?	Yes ✓	No	N/A
2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?	Yes ✓	No	N/A
2.4 Does the Worksheets include a Tracer Vial label for each sample?	Yes ✓	No	N/A
3.0 QC & Samples			
3.1 Is the blank results, yield, and MDA within contract limits?	Yes ✓	No	N/A
3.2 Is the LCS result, yield, and MDA within contract limits?	Yes ✓	No	N/A
3.3 Are the MS/MSD results, yields, and MDA within contract limits?	Yes	No	N/A ✓
3.4 Are the duplicate result, yields, and MDAs within contract limits?	Yes ✓	No	N/A
3.5 Are the sample yields and MDAs within contract limits?	Yes ✓	No	N/A
4.0 Raw Data			
4.1 Were results calculated in the correct units?	Yes ✓	No	N/A
4.2 Were analysis volumes entered correctly?	Yes ✓	No	N/A
4.3 Were Yields entered correctly?	Yes ✓	No	N/A
4.4 Were spectra reviewed/meet contractual requirements?	Yes	No	N/A ✓
4.5 Were raw counts reviewed for anomalies?	Yes ✓	No	N/A
5.0 Other			
5.1 Are all nonconformances included and noted?	Yes	No	N/A ✓
5.2 Are all required forms filled out?	Yes ✓	No	N/A
5.3 Was the correct methodology used?	Yes ✓	No	N/A
5.4 Was transcription checked?	Yes ✓	No	N/A
5.5 Were all calculations checked at a minimum frequency?	Yes	No	N/A ✓
5.6 Are worksheet entries complete and correct?	Yes ✓	No	N/A
6.0 Comments on any No response:			

Thomas DMEJ

First Level _____ **Date** 9/16/13

TestAmerica Richland
QAS_RADCALCv4.8.44

Page 1

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Data Review Checklist

RADIOCHEMISTRY

Second Level Review

Batch Number: 3255037

Review Item	Yes (√)	No (√)	NA (√)
A. Sample Analysis 1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery within contract acceptance criteria?	✓		
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
7. Do the MS/MSD results and yields meet acceptance criteria?			✓
8. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other 1. Are all Non-conformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: CRDL = 1.0 pci/g

Second Level Review: Rhonda Wyer Date: 9/10/13

LS-038B, Rev. 10, 9/07

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

9/17/2013 2:10:59 PM

Lot No., Due Date: J3I110449; 09/18/2013
Client, Site: 127642; S00X235B00 HANFORD
QC Batch No., Method Test: 3255036; RGAMMA Gamma by GER
SDG, Matrix: JP0629; SOIL

1.0 COC

	Yes	No	N/A
1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?	✓		

2.0 QC Batch

	Yes	No	N/A
2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2.2 Are the QC appropriate for the analysis included in the batch?	✓		
2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?	✓		
2.4 Does the Worksheets include a Tracer Vial label for each sample?			✓

3.0 QC & Samples

	Yes	No	N/A
3.1 Is the blank results, yield, and MDA within contract limits?	✓		
3.2 Is the LCS result, yield, and MDA within contract limits?	✓		
3.3 Are the MS/MSD results, yields, and MDA within contract limits?			✓
3.4 Are the duplicate result, yields, and MDAs within contract limits?		✓	
3.5 Are the sample yields and MDAs within contract limits?		✓	

4.0 Raw Data

	Yes	No	N/A
4.1 Were results calculated in the correct units?	✓		
4.2 Were analysis volumes entered correctly?	✓		
4.3 Were Yields entered correctly?			✓
4.4 Were spectra reviewed/meet contractual requirements?	✓		
4.5 Were raw counts reviewed for anomalies?	✓		

5.0 Other

	Yes	No	N/A
5.1 Are all nonconformances included and noted?	✓		
5.2 Are all required forms filled out?	✓		
5.3 Was the correct methodology used?	✓		
5.4 Was transcription checked?	✓		
5.5 Were all calculations checked at a minimum frequency?			✓
5.6 Are worksheet entries complete and correct?	✓		

6.0 Comments on any No response:
NCM 10-24673

First Level Lea Anderson **Date** 9/17/13

TestAmerica Richland
QAS_RADCALCv4.8.44

Page 1

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Data Review Checklist

RADIOCHEMISTRY

Second Level Review

Batch Number: 3255036

Review Item	Yes (√)	No (√)	NA (√)
A. Sample Analysis 1. Are the sample yields within acceptance criteria?			✓
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓	✓	
3. Are the correct isotopes reported?	✓		
B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery within contract acceptance criteria?	✓		
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
7. Do the MS/MSD results and yields meet acceptance criteria?			✓
8. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other 1. Are all Non-conformances included and noted?	✓		
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?		✓	
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: SRDL: 0.1 pCi/g
See NCM#: 10-24673

Second Level Review: [signature] Date: 9/17/13

LS-038B, Rev. 10, 9/07

Clouseau
Nonconformance Memo

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

NCM #: **10-24673**
NCM Initiated By: Lisa Antonson
Date Opened: 09/17/2013
Date Closed:

Classification: **Anomaly**
Status: **PMREVIEW**
Production Area: Counting
Tests: Gamma by GER
Lot #'s (Sample #'s): J3I110449 (1), J3I120000 (36),
QC Batches: 3255036,

Nonconformance: MDA not met
Subcategory: Data accepted

Problem Description / Root Cause

Name	Date	Description
Lisa Antonson	09/17/2013	Sample M1W3Q and it's dup do not meet CRDL for Eu-154.

Corrective Action

Name	Date	Corrective Action
Lisa Antonson	09/17/2013	None

Client Notification Summary

Client	Project Manager	Notified	Response	How Notified	Note	Response	Response Note

Quality Assurance Verification

Verified By	Due Date	Status	Notes
		This section not yet completed by QA.	

Approval History

Date Approved	Approved By	Position

Date Printed: 9/17/2013

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

9/19/2013 8:25:47 AM

Lot No., Due Date: J3I110449; 09/18/2013
Client, Site: 127642; S00X235B00 HANFORD
QC Batch No., Method Test: 3255039; RTRITIUM H-3 by LSC
SDG, Matrix: JP0629; SOIL

	Yes	No	N/A
1.0 COC			
1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?	✓		
2.0 QC Batch			
2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2.2 Are the QC appropriate for the analysis included in the batch?	✓		
2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?	✓		
2.4 Does the Worksheets include a Tracer Vial label for each sample?			✓
3.0 QC & Samples			
3.1 Is the blank results, yield, and MDA within contract limits?	✓		
3.2 Is the LCS result, yield, and MDA within contract limits?	✓		
3.3 Are the MS/MSD results, yields, and MDA within contract limits?			✓
3.4 Are the duplicate result, yields, and MDAs within contract limits?	✓		
3.5 Are the sample yields and MDAs within contract limits?	✓		
4.0 Raw Data			
4.1 Were results calculated in the correct units?	✓		
4.2 Were analysis volumes entered correctly?	✓		
4.3 Were Yields entered correctly?			✓
4.4 Were spectra reviewed/meet contractual requirements?			✓
4.5 Were raw counts reviewed for anomalies?	✓		
5.0 Other			
5.1 Are all nonconformances included and noted?			✓
5.2 Are all required forms filled out?	✓		
5.3 Was the correct methodology used?	✓		
5.4 Was transcription checked?	✓		
5.5 Were all calculations checked at a minimum frequency?			✓
5.6 Are worksheet entries complete and correct?	✓		

6.0 Comments on any No response:

Thomas D McEl

First Level _____ **Date** 9/19/13

TestAmerica Richland
QAS_RADCALCv4.8.44

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Data Review Checklist

RADIOCHEMISTRY

Second Level Review

Batch Number: 3255039

Review Item	Yes (√)	No (√)	NA (√)
A. Sample Analysis 1. Are the sample yields within acceptance criteria?			✓
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery within contract acceptance criteria?	✓		
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
7. Do the MS/MSD results and yields meet acceptance criteria?			✓
8. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other 1. Are all Non-conformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: SRDL = 400 pCi/g

Second Level Review: [signature] Date: 9/19/13

LS-038B, Rev. 10, 9/07

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

9/13/2013 2:34:32 PM

Lot No., Due Date: J3I110449; 09/18/2013
Client, Site: 127642; S00X235B00 HANFORD
QC Batch No., Method Test: 3255038; RC14LSCC C-14 Digestion
SDG, Matrix: JP0629; SOIL

1.0 COC

	Yes	No	N/A
1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?	✓		

2.0 QC Batch

	Yes	No	N/A
2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	✓		
2.2 Are the QC appropriate for the analysis included in the batch?	✓		
2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?	✓		
2.4 Does the Worksheets include a Tracer Vial label for each sample?			✓

3.0 QC & Samples

	Yes	No	N/A
3.1 Is the blank results, yield, and MDA within contract limits?	✓		
3.2 Is the LCS result, yield, and MDA within contract limits?	✓		
3.3 Are the MS/MSD results, yields, and MDA within contract limits?			✓
3.4 Are the duplicate result, yields, and MDAs within contract limits?	✓		
3.5 Are the sample yields and MDAs within contract limits?	✓		

4.0 Raw Data

	Yes	No	N/A
4.1 Were results calculated in the correct units?	✓		
4.2 Were analysis volumes entered correctly?	✓		
4.3 Were Yields entered correctly?			✓
4.4 Were spectra reviewed/meet contractual requirements?			✓
4.5 Were raw counts reviewed for anomalies?	✓		

5.0 Other

	Yes	No	N/A
5.1 Are all nonconformances included and noted?			✓
5.2 Are all required forms filled out?	✓		
5.3 Was the correct methodology used?	✓		
5.4 Was transcription checked?	✓		
5.5 Were all calculations checked at a minimum frequency?			✓
5.6 Are worksheet entries complete and correct?	✓		

6.0 Comments on any No response:

First Level Lisa Anderson **Date** 9/13/13

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Data Review Checklist

RADIOCHEMISTRY

Second Level Review

Batch Number: 3255038

Review Item	Yes (√)	No (√)	NA (√)
A. Sample Analysis 1. Are the sample yields within acceptance criteria?			✓
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery within contract acceptance criteria?	✓		
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
7. Do the MS/MSD results and yields meet acceptance criteria?			✓
8. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other 1. Are all Non-conformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: CRDL = 50pCi/g

Second Level Review: Rhonda Wyatt Date: 9/13/13

LS-038B, Rev. 10, 9/07

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Data Review/Verification Checklist

RADIOCHEMISTRY, First Level Review

9/18/2013 10:36:31 AM

Lot No., Due Date: J3I110449; 09/18/2013
Client, Site: 127642; S00X235B00 HANFORD
QC Batch No., Method Test: 3255040; RNI63 Ni-63 by LSC
SDG, Matrix: JP0629; SOIL

1.0 COC			
1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions?	Yes ✓	No	N/A
2.0 QC Batch			
2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	Yes ✓	No	N/A
2.2 Are the QC appropriate for the analysis included in the batch?	Yes ✓	No	N/A
2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc?	Yes ✓	No	N/A
2.4 Does the Worksheets include a Tracer Vial label for each sample?	Yes ✓	No	N/A
3.0 QC & Samples			
3.1 Is the blank results, yield, and MDA within contract limits?	Yes ✓	No	N/A
3.2 Is the LCS result, yield, and MDA within contract limits?	Yes ✓	No	N/A
3.3 Are the MS/MSD results, yields, and MDA within contract limits?	Yes	No	N/A ✓
3.4 Are the duplicate result, yields, and MDAs within contract limits?	Yes ✓	No	N/A
3.5 Are the sample yields and MDAs within contract limits?	Yes ✓	No	N/A
4.0 Raw Data			
4.1 Were results calculated in the correct units?	Yes ✓	No	N/A
4.2 Were analysis volumes entered correctly?	Yes ✓	No	N/A
4.3 Were Yields entered correctly?	Yes ✓	No	N/A
4.4 Were spectra reviewed/meet contractual requirements?	Yes	No	N/A ✓
4.5 Were raw counts reviewed for anomalies?	Yes ✓	No	N/A
5.0 Other			
5.1 Are all nonconformances included and noted?	Yes	No	N/A ✓
5.2 Are all required forms filled out?	Yes ✓	No	N/A
5.3 Was the correct methodology used?	Yes ✓	No	N/A
5.4 Was transcription checked?	Yes ✓	No	N/A
5.5 Were all calculations checked at a minimum frequency?	Yes	No	N/A ✓
5.6 Are worksheet entries complete and correct?	Yes ✓	No	N/A
6.0 Comments on any No response:			

First Level [signature] **Date** 9/18/13

TestAmerica Richland
QAS_RADCALCv4.8.44

Page 1

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Data Review Checklist

RADIOCHEMISTRY

Second Level Review

Batch Number: 325040

Review Item	Yes (√)	No (√)	NA (√)
A. Sample Analysis 1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples 1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery within contract acceptance criteria?	✓		
6. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
7. Do the MS/MSD results and yields meet acceptance criteria?			✓
8. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other 1. Are all Non-conformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: CRDL = 30pCi/g

Second Level Review: [signature] Date: 9/18/13

LS-038B, Rev. 10, 9/07

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Richland Laboratory
Data Review Check List
Hexavalent Chromium

Batch Number(s):	3259052	Lab Sample Numbers or SDG:	JP0629
Method/Test/Parameter: Cr+6 ☐ RL-WC-003(Aqueous) ☒ RL-WC-004(Solid)			

Review Item	Yes (✓)	No (✓)	N/A (✓)	2nd Level Review (✓)
A. Initial Calibration 1. Performed at required frequency with required number of levels?	✓			✓
2. Correlation coefficient greater than 0.97?	✓			✓
3. Initial calibration verification (ICV) analyzed immediately after calibration and results within 10% of expected?	✓			✓
4. Initial calibration blank (ICB) analyzed immediately after ICV and concentrations of all parameters ≤ reporting limit?	✓			✓
B. Continuing Calibration 1. CCV analyzed at required frequency and all parameters within 10% of expected?	✓			✓
2. CCB analyzed at required frequency and all results ≤ reporting limit?	✓			✓
C. Sample Analysis 1. Were any samples with concentrations above the linear range diluted and reanalyzed?			✓	✓
2. Were all sample holding times met?	✓			✓
D. QC Samples 1. All results for the preparation blank below limits?	✓			✓
2. LCS percent recovery within 85-115%	✓			✓
3. $PbCrO_4$ percent recovery within 75-125%?	✓			✓
4. Sample and Duplicate within 20% (aqueous) or 35% (solid) RPD?	✓			✓
5. MS or MS/MSD recoveries within 85-115% (aqueous) or 75-125% (solid)?	✓			✓
6. On MS failure, PDMS within 85-115%?			✓	✓
E. Other 1. Are all nonconformances included and noted?			✓	✓
2. Is the correct date and time of analysis shown?	✓			✓
3. Did the analyst sign and date the front page of the analytical run?	✓			✓
4. Correct methodology used?	✓			✓
5. Transcriptions checked?	✓			✓
6. Calculations checked at minimum frequency?	✓			✓
7. Units checked?	✓			✓

Comments on any "No" response or list NCM number:

Analyst M. Rahar Date 9/18/13 2nd Review [signature] Date 9/18/13

CG-231 Rev 1 5/12

Washington Closure Hanford

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-238-002

Collector: WHITE, EC	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: ~~15~~ 7 Days DWS 9/10/13		
Project Designation: 100K Shoreline Characterization	Sampling Location: 100-K-64 - 100-K-64 Focused Samples		SAF No.: RC-238
Ice Chest No.: NA	Field Logbook No.: EL-1668	COA: 0ESKSH6250	Method of Shipment: Local Delivery
Shipped To: TestAmerica - Richland	Offsite Property No.: NA		Bill of Lading/Air Bill No.: NA

POSSIBLE SAMPLE HAZARDS/REMARKS
Potentially radioactive & DOT limits 9-11-13 CMB

Special Handling and/or Storage
All Test America Cr-VI analyses must be processed at the Richland facility

Cool 4C 9-10-13 CMB

Preservation	Cool 4C	None	None	None							
Type of Container	G/P	G/P	G/P	G/P							
No. of Container(s)	1	1	1	1							
Volume	250mL	500mL	250mL	250mL							
SAMPLE ANALYSIS	Chromium Hex - 7196 {Hexavalent Chromium}	See item (2) in Special Instructions	Isotopic Plutonium; Nickel-63; Strontium-89,90 – Total Sr	Carbon-14; Tritium - H3			RCF				

Sample No.	Matrix	Sample Date	Sample Time										
JH 9.10.13 ~~JIRXP5~~	SOIL	9/10/13	0930	✓	✓	✓	✓	57	2A	36128	MW	30	
JIRPX5	SOIL												
	SOIL												
	SOIL												
	SOIL												

CHAIN OF POSSESSION / Sign/Print Names

Relinquished By/Removed From	Date/Time	Received By/Stored In	Date/Time
E. White	9-10-13 1000	Joan Kessner	9.10.13 1000
Joan Kessner	9.10.13 1335	Cindra Bingham	9-10-13 1335
Cindra Bingham	9-10-13 1340	1060 Battelle, fridge 23	9-10-13 1340
1060 Battelle fridge 23	9-11-13 1300	Cindra Bingham	9-11-13 1300
Cindra Bingham	9-11-13 1545	J. Stock TALL	9-11-13 1545

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

SPECIAL INSTRUCTIONS

All test America Cr-VI analyses must be processed a the Richland Facility
The 500 ml GEA samples will be sent to RCF for shipping screen then foward on to the rad lab.

(2) Gamma Spec (Client List) {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155}

J3I110449

J3I110449
Blue 9-18-13

JP0629

REVIEWED BY K. Wood via email DATE 9-11-13

WCH-EE-011

Generated Date/Time: 06/26/2013 06:32, PDT

Washington Closure Hanford — CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

RC-238-002 | Page 2 of 2

Collector: WHITE, EC	Company Contact: Joan Kessner	Telephone No.: 375-4688	Project Coordinator: KESSNER, JH
Price Code: 8C	Data Turnaround: ~~15 Days~~ 7 DWS 9/10/13		
Project Designation: 100K Shoreline Characterization	Sampling Location: 100-K-64 - 100-K-64 Focused Sampling		SAF No.: RC-238
Ice Chest No.: NA	Field Logbook No.: EL-1668	COA: 0ESKSH6250	Method of Shipment: Local Delivery
Shipped To: Radiological Counting Facility TO / THIR	Offsite Property No.: NA		Bill of Lading/Air Bill No.: NA

POSSIBLE SAMPLE HAZARDS/REMARKS: Potentially radioactive < DOT limits 9-11-13 CMB

Special Handling and/or Storage

All Test America Cr-VI analyses must be processed at the Richland facility

~~Cool 4C~~ 9-11-13 CMB

Preservation	None											
Type of Container	G/P											
No. of Container(s)	1											
Volume	500 ml ~~60g~~ DWS 9/10/13											
SAMPLE ANALYSIS	RCF GEA Shipping Screen											
Sample No. (JH 9.10.13)	Matrix	Sample Date	Sample Time									
~~J1RXP5~~	SOIL	9/10/13	0930	✓	57-2A	36128	283g					
J1RPX5	SOIL											
	SOIL											
	SOIL											
	SOIL											

CHAIN OF POSSESSION	Sign/Print Names	Date/Time
Relinquished By/Removed From: E. White for WCH		9-10-13 1000
Received By/Stored In: John Harris		9.10.13 1000
Relinquished By/Removed From: John Harris		9.10.13 1335
Received By/Stored In: Cindra Bingham		9-10-13 1335
Relinquished By/Removed From: Cindra Bingham	WCH	9-10-13 1415
Received By/Stored In: RCF D. Miller		9-10-13 1415
Relinquished By/Removed From: RCF D. Miller		9-11-13 1240
Received By/Stored In: Cindra Bingham		9-11-13 1240
Relinquished By/Removed From: Cindra Bingham	WCH	9-11-13 1545
Received By/Stored In: J. Beck	TALL	9-11-13 1545
Relinquished By/Removed From		
Received By/Stored In		
Relinquished By/Removed From		
Received By/Stored In		

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

SPECIAL INSTRUCTIONS

All test America Cr-VI analyses must be processed a the Richland Facility
The 500 ml GEA samples will be sent to RCF for shipping screen then foward on to the rad lab.

* Sample transhipped to THIR on pg. 1 for Gamma Spec. 9-10-13 ~~CMB~~

REVIEWED BY K. Woodrum DATE 9-11-13

J3I110449
Due 9-18-13

J3I110449

JP0629

WCH-EE-011

Generated Date/Time: 06/26/2013 06:32, PDT

Apex™

Analysis Report for RCF36128

J1RPX5 SAF:RC-238 100K/100-K-64 Focused Sample 500ml aG

GAMMA SPECTRUM ANALYSIS

Sample Identification	: RCF36128
Sample Description	: J1RPX5 SAF:RC-238 100K/100-K-64 Focused Sample 500ml aG
Sample Type	: Non Standard Geometry
Sample Size	: 2.830E+02 grams
Facility	: Default
Sample Taken On	: 9/10/2013 9:30:00AM
Acquisition Started	: 9/11/2013 9:00:26AM
Procedure	: Non Standard Geometry
Operator	: eswallac
Detector Name	: NEWBEGE
Geometry	: 50 ml Pill Box
Live Time	: 3600.0 seconds
Real Time	: 3600.7 seconds
Dead Time	: 0.02 %
Peak Locate Threshold	: 3.00
Peak Locate Range (in channels)	: 40 - 4096
Peak Area Range (in channels)	: 40 - 4096
Identification Energy Tolerance	: 1.000 keV
Energy Calibration Used Done On	: 6/24/2013
Efficiency Calibration Used Done On	: 2/22/2013
Efficiency Calibration Description	: NBEGE 50ml PB EC022213 SN92492
Sample Number	: 34719

"Qualitative Only"

INTERFERENCE CORRECTED REPORT

Nuclide Name		Nuclide Id Confidence	Wt mean Activity (pCi/grams)	Wt mean Activity Uncertainty	Comments
K-40		1.000	5.87E+00	6.71E-01	
PB-212		0.709	2.84E-01	3.19E-02	
RA-226d	@	0.631	2.10E-01	2.77E-02	
TH-232d		0.859	1.97E-01	2.60E-02	

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sample Check-in List

Date/Time Received: 9-11-13 / 1545 Container GM Screen Result: (Airlock) 40 cpm Initials [JB]
Sample GM Screen Result (Sample Receiving) 40 cpm Initials [JB]

Client: WCH SDG #: JP0629 SAF #: RC-238-002 NA [JB] JB 9-11-13

Lot Number: J3I110449

Chain of Custody # RC-238-002

Shipping Container ID or Air Bill Number : hand delivered NA [JW]

Samples received inside shipping container/cooler/box Yes [JB] 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 [JB]
2. Custody Seals dated and signed? Yes [ ] No [ ] No Custody Seal [JB]
3. Cooler temperature: 3 coolers - 4.1-8.8°C on Ice NA [ ]
4. Vermiculite/packing materials is NA [JB] Wet [ ] Dry [ ]

Item 5 through 16 for samples. Initial appropriate response.

5. Chain of Custody record present? Yes [JB] No [ ]
6. Number of samples received (Each sample may contain multiple bottles): 1
7. Containers received: 1x500 mLAG, 3x250 mLAG
8. Sample holding times exceeded? NA [ ] Yes [ ] No [JB]
9. Samples have: ____tape ____hazard labels JB custody seals JB appropriate sample labels
10. Matrix: JB A (FLT, Wipe, Solid, Soil) ____I (Water) ____S (Air, Niosh 7400) ____T (Biological, Ni-63)
11. Samples:
    JB 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 [JB]
    (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 [JB]
14. Description of anomalies (include sample numbers): NA [JB] ____
15. Sample Location, Sample Collector Listed on COC? * Yes [JB] No [ ]
    *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: [signature] Date: 9-11-13

Client Notification needed? Yes [ ] No [✓] Date: ____
By: ____
Person contacted: ____

[✓] No action necessary; process as is

Project Manager [signature] Date 9/12/13

LS-023 Rev. 17, 05/13

9/12/2013 2:14:12 PM

Sample Preparation/Analysis

Balance Id:1120373922

127642, Washington Closure Hanford LLC ,
Bechtel Hanford, Inc.

6A Pu Prp PRP003/PRP005, Sep ALP002(ALP015)
SO Plutonium-238,239/40 by Alpha Spec
5I CLIENT: HANFORD

Pipet #: _____

AnalyDueDate: 09/18/2013

Sep1 DT/Tm Tech:

Batch: 3255041 SOIL pCi/g PM, Quote: RW2, 27038

SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: SannohS

Work Ord, Lot, Sample Date	Total Amt/Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 M1W3Q-1-AE J3I110449-1-SAMP 09/10/2013 09:30			1.01g,in AmtRec: 1X500MLAG;3X250MLAG	1.01g #Containers: 4	PUTC13755 09/10/13,pd 01/01/10,r				100 min Scr:	401 Alpha:	1537	9/16/13	Beta:
2 M1W3Q-1-AP-X J3I110449-1-DUP 09/10/2013 09:30			1.00g,in AmtRec: 1X500MLAG;3X250MLAG	1.00g #Containers: 4	PUTC13756 09/10/13,pd 01/01/10,r				Scr:	403 Alpha:	1538		Beta:
3 M1W83-1-AA-B J3I120000-41-BLK 09/12/2013 08:13 pd			1.01g,in AmtRec:	1.01g #Containers: 1	PUTC13757 09/10/13,pd 01/01/10,r				Scr:	404 Alpha:	1538		Beta:
4 M1W83-1-AC-C J3I120000-41-LCS 09/12/2013 08:13 pd			1.04g,in AmtRec:	1.04g #Containers: 1	PUSK1042 09/10/13,pd 01/01/10,r				Scr:	405 Alpha:	1539		Beta:

9/12/2013 2:14:14 PM

Sample Preparation/Analysis

6A Pu Prp PRP003/PRP005, Sep ALP002(ALP015)
SO Plutonium-238,239/40 by Alpha Spec
5I CLIENT: HANFORD

Balance Id:1120373922

Pipet #: _____

AnalyDueDate: 09/18/2013

Sep1 DT/Tm Tech:

Batch: 3255041 pCi/g

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: SannohS

Work Ord, Lot, Sample Date	Total Amt/Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:

Comments: M1W3Q-SAMP "CommentsISV-Recount DUP On Different Detector"
M1W83-BLK CommentsP-13-00430,P-13-00493,P-13-00479

All Clients for Batch:
127642, Washington Closure Hanford LLC Bechtel Hanford, Inc. , RW2, 27038

M1W3Q1AE-SAMP Constituent List:

PU-238	RDL:1	pCi/g	LCL:	UCL:	RPD:	PU-239	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35
Pu-242	RDL:	pCi/g	LCL:20	UCL:105	RPD:35						

M1W831AA-BLK:

M1W831AC-LCS:

M1W3Q1AE-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M1W831AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M1W831AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

9/17/2013 9:44:53 AM

ICOC Fraction Transfer/Status Report

ByDate: 9/17/2012, 9/22/2013, Batch: '3255041', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting				Comments
3255041							
AC		**Rev1C**	**SannohS**	9/12/2013 2:07:19 PM			
SC			mcginnist	IsBatched	9/12/2013 8:25:21 AM		ICOC_RADCALC v4.8.49
SC			SannohS	InPrep	9/12/2013 2:07:19 PM		RL-PRP-003 REVISION 4
SC			BourneD	Sep2C	9/13/2013 12:00:26 PM		RL-ALP-001 REVISION 4
SC			RichardsonB	Sep2C	9/16/2013 9:28:44 AM		RL-ALP-016 REVISION 3
SC			BullJ	InCnt1	9/16/2013 10:19:48 AM		RL-CI-008 REVISION 3
SC			antonsonl	Rev1C	9/17/2013 9:44:44 AM		RL-DR-001 Rev 4
AC			**BourneD**	9/13/2013 12:00:26			
AC			**RichardsonB**	9/16/2013 9:28:44			
AC			**BullJ**	9/16/2013 10:19:48			
AC			**antonsonl**	9/17/2013 9:44:44			

AC: Accepting Entry; SC: Status Change

TestAmerica Richland

Richland Wa.

Page 1

Grp Rec Cnt: 5

ICOCFractions v4.8.44

31/32

9/13/2013 7:32:43 PM

Sample Preparation/Analysis

Balance Id:1120373922

127642, Washington Closure Hanford LLC ,
Bechtel Hanford, Inc.

CH Sr-Total Prp PRP003, Sep GPC003
TH Total Strontium by GPC
5I CLIENT: HANFORD

Pipet #: _____

AnalyDueDate: 09/18/2013

Sep1 DT/Tm Tech: 09/13/2013 15:30,JorgensonD

Batch: 3255037 SOIL pCi/g PM, Quote: RW2, 27038

SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: SannohS

Work Ord, Lot, Sample Date	Total Amt/Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 M1W3Q-1-AC J3I110449-1-SAMP			3.04g,in	3.04g	SRTC1451 09/05/13			9.4mg	50	32B	0854	9/14/13 JB	
09/10/2013 09:30			AmtRec: 1X500MLAG;3X250MLAG	#Containers: 4	09/13/2013 15:30,s1				Scr:		Alpha:		Beta:
2 M1W3Q-1-AK-X J3I110449-1-DUP			3.01g,in	3.01g	SRTC1452 09/05/13			7.5mg		32C			
09/10/2013 09:30			AmtRec: 1X500MLAG;3X250MLAG	#Containers: 4					Scr:		Alpha:		Beta:
3 M1W8X-1-AA-B J3I120000-37-BLK			3.01g,in	3.01g	SRTC1453 09/05/13			9.8mg		32D	—	—	
09/12/2013 08:11 pd			AmtRec:	#Containers: 1					Scr:		Alpha:		Beta:
4 M1W8X-1-AC-C J3I120000-37-LCS			3.01g,in	3.01g	STSF0329 09/05/13			7.6mg		31H	0952	9/14/13 JB	
09/12/2013 08:11 pd			AmtRec:	#Containers: 1					Scr:		Alpha:		Beta:

9/13/2013 7:32:44 PM

Sample Preparation/Analysis

CH Sr-Total Prp PRP003, Sep GPC003
TH Total Strontium by GPC
5I CLIENT: HANFORD

Balance Id:1120373922

Pipet #: _____

Sep1 DT/Tm Tech:

Sep2 DT/Tm Tech:

Prep Tech: SannohS

AnalyDueDate: 09/18/2013

Batch: 3255037 **pCi/g**
SEQ Batch, Test: None

Work Ord, Lot, Sample Date	Total Amt/Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:

Comments: M1W3Q-SAMP "CommentsISV-Recount DUP On Different Detector"
M1W8X-BLK CommentsP-13-00479,P-13-00430

All Clients for Batch:
127642, Washington Closure Hanford LLC Bechtel Hanford, Inc. , RW2, 27038

M1W3Q1AC-SAMP Constituent List:

Sr-90	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35

M1W8X1AA-BLK:

Sr-90	RDL:1	pCi/g	LCL:	UCL:	RPD:

M1W8X1AC-LCS:

Sr-90	RDL:1	pCi/g	LCL:70	UCL:130	RPD:35

M1W3Q1AC-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M1W8X1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M1W8X1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

9/16/2013 11:11:11 AM

ICOC Fraction Transfer/Status Report

ByDate: 9/16/2012, 9/21/2013, Batch: '3255037', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3255037						
AC		**Rev1C**	**SannohS**	9/12/2013 1:41:57 PM		
SC			mcginnist	IsBatched	9/12/2013 8:25:13 AM	ICOC_RADCALC v4.8.49
SC			SannohS	InPrep	9/12/2013 1:41:57 PM	RL-PRP-003 REVISION 4
SC			JorgensonD	Sep2C	9/13/2013 7:44:43 PM	RL-GPC-010 REVISION 2
SC			DawkinsO	InCnt1	9/13/2013 8:21:29 PM	RL-CI-006 REVISION 4
SC			BullJ	CalcC	9/14/2013 10:36:34 AM	RL-CI-006 REVISION 4
SC			mcginnist	Rev1C	9/16/2013 11:11:06 AM	RL-DR-001 Rev 4
AC			**JorgensonD**	9/13/2013 7:44:43 PM		
AC			**DawkinsO**	9/13/2013 8:21:29 PM		
AC			**BullJ**	9/14/2013 10:36:34		
AC			**mcginnist**	9/16/2013 11:11:06		

AC: Accepting Entry; SC: Status Change

TestAmerica Richland

Richland Wa.

Page 1

Grp Rec Cnt: 5

ICOCFractions v4.8.44

9/12/2013 12:57:21 PM

Sample Preparation/Analysis

Balance Id:1120421763

127642, Washington Closure Hanford LLC , Bechtel Hanford, Inc.

AX Gamma Prp PRP003/GAM001
TA Gamma by HPGE
5I CLIENT: HANFORD

Pipet #: _____

AnalyDueDate: 09/18/2013

Sep1 DT/Tm Tech:

Batch: 3255036 SOIL pCi/g PM, Quote: RW2, 27038

SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: SannohS

Work Ord, Lot, Sample Date	Total Amt/Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 M1W3Q-1-AG J3I110449-1-SAMP 09/10/2013 09:30			317.00g,in	317.00g				S200	200 min	G19	0202	9/13/13	
			AmtRec: 1X500MLAG;3X250MLAG		#Containers: 4				Scr:		Alpha:		Beta:
2 M1W3Q-1-AJ-X J3I110449-1-DUP 09/10/2013 09:30						I, S N				G18	0316	9/14/13	
			AmtRec: 1X500MLAG;3X250MLAG		#Containers: 4				Scr:		Alpha:		Beta:
3 M1W8W-1-AA-B J3I120000-36-BLK 09/12/2013 08:11 pd			348.00g,in	348.00g				S200		G15	0317		
			AmtRec:		#Containers: 1				Scr:		Alpha:		Beta:
4 M1W8W-1-AC-C J3I120000-36-LCS 09/12/2013 08:11 pd			350.10g,in	350.10g	QC20009 08/04/09,pd 09/01/09,r					G16	0318		
			AmtRec:		#Containers: 1				Scr:		Alpha:		Beta:

9/12/2013 12:57:21 PM

Sample Preparation/Analysis

AX Gamma Prp PRP003/GAM001
TA Gamma by HPGE
5I CLIENT: HANFORD

Balance Id:1120421763

Pipet #: _____

AnalyDueDate: 09/18/2013

Sep1 DT/Tm Tech:

Batch: 3255036 pCi/g

SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: ,SannohS

Work Ord, Lot, Sample Date	Total Amt/Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:

Comments: M1W3Q-SAMP "CommentsISV-Recount DUP On Different Detector"

All Clients for Batch:
127642, Washington Closure Hanford LLC Bechtel Hanford, Inc. , RW2, 27038

M1W3Q1AG-SAMP Constituent List:

Co-60	RDL:5.00E-02	pCi/g	LCL:	UCL:	RPD:	Cs-137	RDL:1.00E-01	pCi/g	LCL:70	UCL:130	RPD:35
Cs-137DA	RDL:1.00E-01	pCi/g	LCL:70	UCL:130	RPD:35	Eu-152	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
Eu-154	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:	Eu-155	RDL:1.00E-01	pCi/g	LCL:	UCL:	RPD:
K-40	RDL:	pCi/g	LCL:	UCL:	RPD:						

M1W8W1AA-BLK:

M1W8W1AC-LCS:

M1W3Q1AG-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M1W8W1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M1W8W1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

9/17/2013 1:51:09 PM

ICOC Fraction Transfer/Status Report

ByDate: 9/17/2012, 9/22/2013, Batch: '3255036', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3255036						
AC		**Rev1C**	**SannohS**	9/12/2013 8:35:03		
SC			mcginnlst	IsBatched	9/12/2013 8:25:08 AM	ICOC_RADCALC v4.8.49
SC			SannohS	InPrep	9/12/2013 8:35:03 AM	RL-GAM-001 REV.002
SC			SannohS	Prep1C	9/12/2013 1:38:58 PM	RL-GAM-001 REVISION 2
SC			BullJ	InCnt1	9/12/2013 1:42:56 PM	RL-CI-007 REVISION 3
SC			antonsonl	Rev1C	9/17/2013 1:50:59 PM	RL-DR-001 Rev 4
AC			**SannohS**	9/12/2013 1:38:58 PM		
AC			**BullJ**	9/12/2013 1:42:56 PM		
AC			**antonsonl**	9/17/2013 1:50:59 PM		

AC: Accepting Entry; SC: Status Change

TestAmerica Richland

Richland Wa.

Page 1

Grp Rec Cnt: 4

ICOCFractions v4.8.44

6

9/12/2013 8:19:23 AM

Sample Preparation/Analysis

PRIORITY

127642, Washington Closure Hanford LLC , Bechtel Hanford, Inc.

AT H-3 Prp/Sep LSC002
S6 Tritium by Liquid Scint
5I CLIENT: HANFORD

AnalyDueDate: 09/18/2013

Balance Id:
Pipet #:
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech:

Batch: 3255039 SOIL pCi/g PM, Quote: RW2, 27038
SEQ Batch, Test: None All Tests: DWEA, 3255036 AXTA, 3255037 CHTH, 3255038 5STC, 3255039 ATS6, 3255040 AFS4, 3255041 6ASO,

Work Ord, Lot, Sample Date	Total Amt/Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 M1W3Q-1-AF J3I110449-1-SAMP 09/10/2013 09:30	AmtRec: 1X500MLAG;3X250MLAG	#Containers: 4	Scr:	Alpha:	Beta:								
2 M1W3Q-1-AM-X J3I110449-1-DUP 09/10/2013 09:30	AmtRec: 1X500MLAG;3X250MLAG	#Containers: 4	Scr:	Alpha:	Beta:								
3 M1W81-1-AA-B J3I120000-39-BLK 09/12/2013 08:19 pd	AmtRec:	#Containers: 1	Scr:	Alpha:	Beta:								
4 M1W81-1-AC-C J3I120000-39-LCS 09/12/2013 08:19 pd	AmtRec:	#Containers: 1	Scr:	Alpha:	Beta:								
5 M1W81-1-AD-BN J3I120000-39-IBLK 09/12/2013 08:19 pd	AmtRec:	#Containers: 1	Scr:	Alpha:	Beta:								

Comments:

All Clients for Batch:
127642, Washington Closure Hanford LLC Bechtel Hanford, Inc. , RW2, 27038

M1W3Q1AF-SAMP Constituent List:
H-3 RDL:400 pCi/g LCL:70 UCL:130 RPD:35

TestAmerica Richland Wa. Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 pd - Prep Dt, dc - Date Chg, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added Page 1 ISV - Insufficient Volume for Analysis WO Cnt: 5 ICOC v4.8.49

9/12/2013 8:19:23 AM

Sample Preparation/Analysis

AT H-3 Prp/Sep LSC002
S6 Tritium by Liquid Scint
5I CLIENT: HANFORD

AnalyDueDate: 09/18/2013

Batch: 3255039 **pCi/g**
SEQ Batch, Test: None

Balance Id:
Pipet #: _____
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech:

Work Ord, Lot, Sample Date	Total Amt/Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:

```
M1W811AA-BLK:

M1W811AC-LCS:

M1W811AD-IBLK:

M1W3Q1AF-SAMP Calc Info:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M1W811AA-BLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M1W811AC-LCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M1W811AD-IBLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
```

9/19/2013 8:24:48 AM

ICOC Fraction Transfer/Status Report

ByDate: 9/19/2012, 9/24/2013, Batch: '3255039', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3255039						
AC		**Rev1C**	**NortonP**	9/18/2013 9:40:19		
SC			nortonp	IsBatched	9/13/2013 8:59:52 AM	ICOC_RADCALC v4.8.49
SC			NortonP	Sep1C	9/18/2013 9:40:19 AM	RL-LSC-002 REVISION 4
SC			BullJ	InCnt1	9/18/2013 9:51:40 AM	RL-CI-005 REVISION 3
SC			BullJ	CalcC	9/19/2013 8:20:35 AM	RL-CI-005 REVISION 3
SC			mcginnist	Rev1C	9/19/2013 8:24:41 AM	RL-DR-001 Rev 4
AC			**BullJ**	9/18/2013 9:51:40		
AC			**BullJ**	9/19/2013 8:20:35		
AC			**mcginnist**	9/19/2013 8:24:41		

AC: Accepting Entry; SC: Status Change

TestAmerica Richland

Richland Wa.

Page 1

Grp Rec Cnt: 4

ICOCFractions v4.8.44

9/12/2013 9:58:47 AM

Sample Preparation/Analysis

127642, Washington Closure Hanford LLC , Bechtel Hanford, Inc.

5S C-14 Prp/Sep LSC008
TC C-14 by LSC, Carbosorb
01 STANDARD TEST SET

AnalyDueDate: 09/18/2013

Balance Id:
Pipet #:
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech:

Batch: 3255038 SOIL pCi/g PM, Quote: RW2, 27038

SEQ Batch, Test: None All Tests: DWEA, 3255036 AXTA, 3255037 CHTH, 3255038 5STC, 3255039 ATS6, 3255040 AFS4, 3255041 6ASO,

Work Ord, Lot, Sample Date	Total Amt/Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 M1W3Q-1-AH J3I110449-1-SAMP 09/10/2013 09:30	AmtRec: 1X500MLAG;3X250MLAG				#Containers: 4				Scr:		Alpha:		Beta:
2 M1W3Q-1-AL-X J3I110449-1-DUP 09/10/2013 09:30	AmtRec: 1X500MLAG;3X250MLAG				#Containers: 4				Scr:		Alpha:		Beta:
3 M1W80-1-AA-B J3I120000-38-BLK 09/12/2013 08:11 pd	AmtRec:				#Containers: 1				Scr:		Alpha:		Beta:
4 M1W80-1-AC-C J3I120000-38-LCS 09/12/2013 08:11 pd	AmtRec:				#Containers: 1				Scr:		Alpha:		Beta:
5 M1W80-1-AD-BN J3I120000-38-IBLK 09/12/2013 08:11 pd	AmtRec:				#Containers: 1				Scr:		Alpha:		Beta:

Comments:

All Clients for Batch:
127642, Washington Closure Hanford LLC Bechtel Hanford, Inc. , RW2, 27038

M1W3Q1AH-SAMP Constituent List:

C-14	RDL:5.00E+01	pCi/g	LCL:	UCL:	RPD:

9/12/2013 9:58:48 AM

Sample Preparation/Analysis

5S C-14 Prp/Sep LSC008
TC C-14 by LSC, Carbosorb
01 STANDARD TEST SET

AnalyDueDate: 09/18/2013

Batch: 3255038 **pCi/g**
SEQ Batch, Test: None

Balance Id:
Pipet #: _____
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech:

Work Ord, Lot, Sample Date	Total Amt/Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:

M1W801AA-BLK:

M1W801AC-LCS:

M1W801AD-IBLK:

M1W3Q1AH-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M1W801AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M1W801AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M1W801AD-IBLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

9/13/2013 2:33:41 PM

ICOC Fraction Transfer/Status Report

ByDate: 9/13/2012, 9/18/2013, Batch: '3255038', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3255038						
AC		**Rev1C**	**WindischT**	9/12/2013 2:05:14 PM		
SC			WindischT	IsBatched	9/12/2013 9:55:46 AM	ICOC_RADCALC v4.8.49
SC			WindischT	Sep1C	9/12/2013 2:05:14 PM	RL-LSC-008 REVISION 3
SC			BullJ	InCnt1	9/12/2013 2:16:54 PM	RL-CI-005 REVISION 3
SC			NortonJ	CalcC	9/13/2013 8:32:24 AM	RL-CI-005 REVISION 3
SC			antonsonl	Rev1C	9/13/2013 2:33:33 PM	RL-DR-001 Rev 4
AC			**BullJ**	9/12/2013 2:16:54 PM		
AC			**NortonJ**	9/13/2013 8:32:24		
AC			**antonsonl**	9/13/2013 2:33:33 PM		

AC: Accepting Entry; SC: Status Change

TestAmerica Richland

Richland Wa.

Page 1

Grp Rec Cnt: 4

ICOCFractions v4.8.44

9/12/2013 2:04:23 PM

Sample Preparation/Analysis

Balance Id:1120373922

127642, Washington Closure Hanford LLC
Bechtel Hanford, Inc.

AF Ni-63 Prp PRP003/PRP005, Sep LSC017
S4 Nickel by ICP and Nickel-63 by Liquid Scint
5I CLIENT: HANFORD

Pipet #: _____

AnalyDueDate: 09/18/2013

Sep1 DT/Tm Tech:

Batch: 3255040 SOIL pCi/g PM, Quote: RW2, 27038

SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech: SannohS

Work Ord, Lot, Sample Date	Total Amt/Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 **M1W3Q-1-AD** J3I110449-1-SAMP			0.53g,in	0.53g	NITA10432 08/27/13								
09/10/2013 09:30			AmtRec: 1X500MLAG;3X250MLAG		#Containers: 4				Scr:		Alpha:		Beta:
2 **M1W3Q-1-AN-X** J3I110449-1-DUP			0.52g,in	0.52g	NITA10433 08/27/13								
09/10/2013 09:30			AmtRec: 1X500MLAG;3X250MLAG		#Containers: 4				Scr:		Alpha:		Beta:
3 **M1W82-1-AA-B** J3I120000-40-BLK			0.53g,in	0.53g	NITA10434 08/27/13								
09/12/2013 08:13 pd			AmtRec:		#Containers: 1				Scr:		Alpha:		Beta:
4 **M1W82-1-AC-C** J3I120000-40-LCS			0.53g,in	0.53g	NISA1969 08/29/13								
09/12/2013 08:13 pd			AmtRec:		#Containers: 1				Scr:		Alpha:		Beta:
5 **M1W82-1-AD-BN** J3I120000-40-IBLK													
09/12/2013 08:13 pd			AmtRec:		#Containers: 1				Scr:		Alpha:		Beta:

9/12/2013 2:04:24 PM

Sample Preparation/Analysis

AF Ni-63 Prp PRP003/PRP005, Sep LSC017
S4 Nickel by ICP and Nickel-63 by Liquid Scint
5I CLIENT: HANFORD

Balance Id:

Pipet #: _____

AnalyDueDate: 09/18/2013

Sep1 DT/Tm Tech:

Batch: 3255040 **pCi/g**
SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech:

Work Ord, Lot, Sample Date	Total Amt/Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:

Comments: M1W3Q-SAMP "CommentsISV-Recount DUP On Different Detector"
M1W82-BLK CommentsP-13-00479,P-13-00493,P-13-00430

```
All Clients for Batch:
   127642, Washington Closure Hanford LLC          Bechtel Hanford, Inc.        ,  RW2, 27038

M1W3Q1AD-SAMP Constituent List:
  Ni-63       RDL:30          pCi/g     LCL:70      UCL:130     RPD:35
M1W821AA-BLK:

M1W821AC-LCS:

M1W821AD-IBLK:


M1W3Q1AD-SAMP Calc Info:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M1W821AA-BLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M1W821AC-LCS:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
M1W821AD-IBLK:
     Uncert Level (#s).: 2     Decay to SaDt: Y     Blk Subt.: N     Sci.Not.: Y     ODRs: B
```

9/18/2013 10:35:47 AM

ICOC Fraction Transfer/Status Report

ByDate: 9/18/2012, 9/23/2013, Batch: '3255040', User: *ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting			Comments
3255040						
AC		**Rev1C**	**SannohS**	9/12/2013 1:56:00 PM		
SC			mcginnist	IsBatched	9/12/2013 8:25:20 AM	ICOC_RADCALC v4.8.49
SC			SannohS	InPrep	9/12/2013 1:56:00 PM	RL-PRP-003 REVISION 4
SC			JorgensonD	Sep2C	9/16/2013 6:51:11 PM	RL-LSC-017 REVISION 3
SC			BullJ	CalcC	9/18/2013 9:40:10 AM	RL-CI-005 REVISION 3
SC			mcginnist	Rev1C	9/18/2013 10:35:41 AM	RL-DR-001 Rev 4
AC			**JorgensonD**	9/16/2013 6:51:11 PM		
AC			**BullJ**	9/18/2013 9:40:10		
AC			**mcginnist**	9/18/2013 10:35:41		

AC: Accepting Entry; SC: Status Change

TestAmerica Richland

Richland Wa.

Page 1

Grp Rec Cnt: 4

ICOCFractions v4.8.44

9.8

9/17/2013 7:47:42 AM

Sample Preparation/Analysis

127642, Washington Closure Hanford LLC
Bechtel Hanford, Inc.

DW Alkaline Digestion by method 3060A
EA Chromium, Hexavalent (7196A)
5I CLIENT: HANFORD

Balance Id:

Pipet #:

AnalyDueDate: 09/18/2013

Sep1 DT/Tm Tech:

Batch: 3259052 SOIL mg/kg PM, Quote: RW2, 27038
SEQ Batch, Test: None

Sep2 DT/Tm Tech:

Prep Tech:

Work Ord, Lot, Sample Date	Total Amt/Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 M1W3Q-1-AA													
J3I110449-1-SAMP													
09/10/2013 09:30			AmtRec: 1X500MLAG;3X250MLAG		#Containers: 4				Scr:		Alpha:		Beta:
2 M1W3Q-1-AQ-S													
J3I110449-1-MS													
09/10/2013 09:30			AmtRec: 1X500MLAG;3X250MLAG		#Containers: 4				Scr:		Alpha:		Beta:
3 M1W3Q-1-AR-X													
J3I110449-1-DUP													
09/10/2013 09:30			AmtRec: 1X500MLAG;3X250MLAG		#Containers: 4				Scr:		Alpha:		Beta:
4 M1W3Q-1-AT-S													
J3I110449-1-MS													
09/10/2013 09:30			AmtRec: 1X500MLAG;3X250MLAG		#Containers: 4				Scr:		Alpha:		Beta:
5 M10JJ-1-AA-B													
J3I160000-52-BLK													
09/17/2013 07:47 pd			AmtRec:		#Containers: 1				Scr:		Alpha:		Beta:
6 M10JJ-1-AC-C													
J3I160000-52-LCS													
09/17/2013 07:47 pd			AmtRec:		#Containers: 1				Scr:		Alpha:		Beta:

9/17/2013 7:47:42 AM

Sample Preparation/Analysis

DW Alkaline Digestion by method 3060A
EA Chromium, Hexavalent (7196A)
5I CLIENT: HANFORD

Balance Id:
Pipet #:
Sep1 DT/Tm Tech:
Sep2 DT/Tm Tech:
Prep Tech:

AnalyDueDate: 09/18/2013

Batch: 3259052 mg/kg
SEQ Batch, Test: None

Work Ord, Lot, Sample Date	Total Amt/Unit	Total Acidified/Unit	Initial Aliquot Amt/Unit	Adj Aliq Amt (Un-Acidified)	QC Tracer Prep Date	Tracer Yield	Dish Size	Ppt or Geometry	Count Time Min	Detector Id	Count On | Off (24hr) Circle	CR Analyst, Init/Date	Comments:

Comments: M1W3Q-SAMP "CommentsISV-Recount DUP On Different Detector"

All Clients for Batch:
127642, Washington Closure Hanford LLC Bechtel Hanford, Inc. , RW2, 27038

M1W3Q1AA-SAMP Constituent List:
HEXCHROME RDL:.1548 mg/kg LCL:80 UCL:120 RPD:20
M1W3Q1AQ-MS Constituent List:
HEXCHROME RDL:0.35 mg/kg LCL:75 UCL:125 RPD:20
M1W3Q1AT-MS:
HEXCHROME RDL:0.35 mg/kg LCL:75 UCL:125 RPD:20
M10JJ1AA-BLK:
HEXCHROME RDL:.1548 mg/kg LCL: UCL: RPD:
M10JJ1AC-LCS:
HEXCHROME RDL:0.35 mg/kg LCL:80 UCL:120 RPD:20

M1W3Q1AA-SAMP Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M1W3Q1AQ-MS Calc Info:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M1W3Q1AT-MS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M10JJ1AA-BLK:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B
M10JJ1AC-LCS:
Uncert Level (#s).: 2 Decay to SaDt: Y Blk Subt.: N Sci.Not.: Y ODRs: B

ANALYTICAL REPORT

Job Number: 280-46548-1

SDG Number: JP0629

Job Description: SAF# RC-238

For:
Washington Closure Hanford
2620 Fermi Avenue
Richland, WA 99354

Attention: Joan H Kessner

Approved for release.
Kae E Yoder
Project Manager II
9/19/2013 11:46 AM

Kae E Yoder, Project Manager II
4955 Yarrow Street, Arvada, CO, 80002
(303)736-0190
kae.yoder@testamericainc.com
09/19/2013

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 E87667.

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

Table of Contents

Cover Title Page 1
Report Narrative 3
Data Qualifiers 4
Sample Summary 5
Method Summary 6
Method / Analyst Summary 7
Sample Results 8
Sample Datasheets 9
QC Results 11
Qc Reports 12
Qc Association Summary 19
Client Chain of Custody 20
Sample Receipt Checklist 21

CASE NARRATIVE

Client: Washington Closure Hanford

Project: WASHINGTON CLOSURE HANFORD

Report Number: 280-46548-1

SDG #: JP0629
SAF#: RC-238

Date SDG Closed: September 12, 2013
Data Deliverable: 7 Day / Summary

CLIENT ID	LAB ID	ANALYSES REQUESTED	ANALYSES PERFORMED
J1RPX5	280-46548-1	6010/7471	6010B/7471A

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 sample was received on 9/12/2013 9:30 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.3º C.

TOTAL METALS - SW846 6010B/7471A
Serial dilution of a digestate in batch 280-191231 indicates that physical and chemical interferences are present for several elements. Results have been flagged with an "X".

Low levels of Barium are present in the method blank associated with batch 280-191231. Because the concentration in the method blank is not present at a level greater than half the reporting limit, corrective action is deemed unnecessary.

It can be noted that the sample amount was greater than four times the spike amount for Aluminum, Iron and Manganese in the Matrix Spike performed on sample J1RPX5; therefore, control limits are not applicable.

The Matrix Spike performed on sample J1RPX5 exhibited percent recoveries outside the control limits for Boron and Silicon, and the associated sample results have been flagged "N". There is no indication that the analytical system was operating out of control, and method accuracy has been verified by the acceptable LCS analysis data; therefore, corrective action is deemed unnecessary.

The duplicate analysis of sample J1RPX5 exhibited RPD data outside the control limits for Silicon, 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.

No other anomalies were encountered.

DATA REPORTING QUALIFIERS

Client: Washington Closure Hanford

Job Number: 280-46548-1
Sdg Number: JP0629

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 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
	N	Recovery exceeds upper or lower control limits
	M	Sample duplicate precision not met.
	X	Serial dilution in the analytical batch indicates that physical and chemical interferences are present.

SAMPLE SUMMARY

Client: Washington Closure Hanford

Job Number: 280-46548-1
Sdg Number: JP0629

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
280-46548-1	J1RPX5	Solid	09/10/2013 0930	09/12/2013 0930

METHOD SUMMARY

Client: Washington Closure Hanford

Job Number: 280-46548-1
Sdg Number: JP0629

Description	Lab Location	Method	Preparation Method
Matrix: Solid			
Metals (ICP)	TAL DEN	SW846 6010B	
Mercury (CVAA)	TAL DEN	SW846 7471A	
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: 280-46548-1
Sdg Number: JP0629

Method	Analyst	Analyst ID
SW846 6010B	Harre, John K	JKH
SW846 7471A	Mooney, Joseph C	JM
ASTM D-2216	Benson, Alex F	AFB

SAMPLE RESULTS

Client: Washington Closure Hanford

Job Number: 280-46548-1
Sdg Number: JP0629

Client Sample ID: **J1RPX5**

Lab Sample ID: 280-46548-1
Client Matrix: Solid
% Moisture: 4.7

Date Sampled: 09/10/2013 0930
Date Received: 09/12/2013 0930

6010B Metals (ICP)

Analysis Method:	6010B	Analysis Batch:	280-191782	Instrument ID:	MT_025
	N/A	Prep Batch:	280-191231	Lab File ID:	25A2091613.asc
Dilution:	1.0			Initial Weight/Volume:	1.01 g
Analysis Date:	09/16/2013 1712			Final Weight/Volume:	100 mL
Prep Date:					

Analyte	DryWt Corrected: Y	Result (mg/Kg)	Qualifier	MDL	RL
Aluminum		7550	X	1.6	5.2
Antimony		0.39	U	0.39	0.62
Arsenic		2.8		0.69	1.0
Barium		59.0	X	0.079	0.52
Beryllium		0.26		0.034	0.21
Boron		1.1	B N	1.0	2.1
Cadmium		0.16	B	0.043	0.21
Calcium		3530	X	14.6	51.9
Chromium		27.4	X	0.060	0.21
Cobalt		5.2		0.10	1.0
Copper		10.8		0.23	1.0
Iron		13500	X	3.9	5.2
Magnesium		3800	X	3.8	20.8
Manganese		203	X	0.10	1.0
Molybdenum		0.27	U	0.27	2.1
Nickel		11.4	X	0.13	4.2
Potassium		1490		42.6	312
Selenium		0.89	U	0.89	1.0
Silicon		326	N X M	5.9	10.4
Silver		0.17	U	0.17	0.21
Sodium		172		61.3	125
Vanadium		28.8	X	0.098	2.1
Zinc		32.4	X	0.41	1.0
Lead		4.3		0.28	0.52

7471A Mercury (CVAA)

Analysis Method:	7471A	Analysis Batch:	280-191796	Instrument ID:	MT_034
	N/A	Prep Batch:	280-191604	Lab File ID:	130916tad.txt
Dilution:	1.0			Initial Weight/Volume:	.59 g
Analysis Date:	09/16/2013 2103			Final Weight/Volume:	50 mL
Prep Date:					

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

Client: Washington Closure Hanford

Job Number: 280-46548-1
Sdg Number: JP0629

General Chemistry

Client Sample ID: **J1RPX5**

Lab Sample ID: 280-46548-1
Client Matrix: Solid

Date Sampled: 09/10/2013 0930
Date Received: 09/12/2013 0930

Analyte	Result	Qual	Units	RL	RL	Dil	Method
Percent Moisture	4.7		%	0.10	0.10	1.0	D-2216

Analysis Batch: 280-191214 Analysis Date: 09/12/2013 1908 DryWt Corrected: N

QUALITY CONTROL RESULTS

Client: Washington Closure Hanford

Job Number: 280-46548-1
Sdg Number: JP0629

Method Blank - Batch: 280-191231

Method: 6010B
Preparation: N/A

Lab Sample ID:	MB 280-191231/1-A	Analysis Batch:	280-191782	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-191231	Lab File ID:	25A2091613.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	09/16/2013 1708	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	09/16/2013 0730				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Aluminum	1.6	U	1.6	5.0
Antimony	0.38	U	0.38	0.60
Arsenic	0.66	U	0.66	1.0
Barium	0.0800	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	14.1	U	14.1	50.0
Chromium	0.058	U	0.058	0.20
Cobalt	0.10	U	0.10	1.0
Copper	0.22	U	0.22	1.0
Iron	3.8	U	3.8	5.0
Magnesium	3.7	U	3.7	20.0
Manganese	0.10	U	0.10	1.0
Molybdenum	0.26	U	0.26	2.0
Nickel	0.12	U	0.12	4.0
Potassium	41.0	U	41.0	300
Selenium	0.86	U	0.86	1.0
Silicon	5.7	U	5.7	10.0
Silver	0.16	U	0.16	0.20
Sodium	59.0	U	59.0	120
Vanadium	0.094	U	0.094	2.0
Zinc	0.40	U	0.40	1.0
Lead	0.27	U	0.27	0.50

Client: Washington Closure Hanford

Job Number: 280-46548-1
Sdg Number: JP0629

Lab Control Sample - Batch: 280-191231

Method: 6010B
Preparation: N/A

Lab Sample ID:	LCS 280-191231/2-A	Analysis Batch:	280-191782	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-191231	Lab File ID:	25A2091613.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1 g
Analysis Date:	09/16/2013 1756	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	09/16/2013 0730				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	200	205.4	103	82 - 116	
Antimony	50.0	46.83	94	82 - 110	
Arsenic	100	98.92	99	85 - 110	
Barium	200	202.5	101	87 - 112	
Beryllium	5.00	4.86	97	84 - 114	
Boron	100	95.17	95	80 - 120	
Cadmium	10.0	10.37	104	87 - 110	
Calcium	5000	4899	98	82 - 114	
Chromium	20.0	19.82	99	84 - 114	
Cobalt	50.0	49.71	99	87 - 110	
Copper	25.0	25.25	101	88 - 110	
Iron	100	105.9	106	87 - 120	
Magnesium	5000	4836	97	90 - 110	
Manganese	50.0	49.86	100	88 - 110	
Molybdenum	100	96.09	96	86 - 110	
Nickel	50.0	49.09	98	87 - 110	
Potassium	5000	4973	99	89 - 110	
Selenium	200	195.1	98	83 - 110	
Silicon	1000	160.6	16	10 - 70	
Silver	5.00	4.89	98	87 - 114	
Sodium	5000	4962	99	90 - 112	
Vanadium	50.0	50.16	100	88 - 110	
Zinc	50.0	48.88	98	76 - 114	
Lead	50.0	48.71	97	86 - 110	

Client: Washington Closure Hanford

Job Number: 280-46548-1
Sdg Number: JP0629

Matrix Spike - Batch: 280-191231

Method: 6010B
Preparation: N/A

Lab Sample ID:	280-46548-1	Analysis Batch:	280-191782	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-191231	Lab File ID:	25A2091613.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.07 g
Analysis Date:	09/16/2013 1719	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	09/16/2013 0730				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Aluminum	7550		196	10230	1364	50 - 200	4
Antimony	0.39	U	49.0	20.47	42	20 - 200	
Arsenic	2.8		98.0	82.57	81	76 - 111	
Barium	59.0		196	233.1	89	52 - 159	
Beryllium	0.26		4.90	4.26	82	72 - 105	
Boron	1.1	B	98.0	76.12	77	80 - 120	N
Cadmium	0.16	B	9.80	8.60	86	40 - 130	
Calcium	3530		4900	8564	103	43 - 165	
Chromium	27.4		19.6	45.25	91	70 - 200	
Cobalt	5.2		49.0	44.89	81	72 - 106	
Copper	10.8		24.5	32.89	90	37 - 187	
Iron	13500		98.0	14990	1521	70 - 200	4
Magnesium	3800		4900	8257	91	64 - 145	
Manganese	203		49.0	272.0	141	40 - 200	4
Molybdenum	0.27	U	98.0	75.02	77	75 - 103	
Nickel	11.4		49.0	51.10	81	61 - 126	
Potassium	1490		4900	5948	91	56 - 172	
Selenium	0.89	U	196	157.4	80	76 - 104	
Silicon	326		980	512.6	19	20 - 200	N
Silver	0.17	U	4.90	3.83	78	75 - 141	
Sodium	172		4900	4417	87	78 - 111	
Vanadium	28.8		49.0	76.65	98	50 - 169	
Zinc	32.4		49.0	75.75	88	70 - 200	
Lead	4.3		49.0	43.33	80	70 - 200	

Client: Washington Closure Hanford

Job Number: 280-46548-1
Sdg Number: JP0629

Duplicate - Batch: 280-191231

Method: 6010B
Preparation: N/A

Lab Sample ID:	280-46548-1	Analysis Batch:	280-191782	Instrument ID:	MT_025
Client Matrix:	Solid	Prep Batch:	280-191231	Lab File ID:	25A2091613.asc
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	1.15 g
Analysis Date:	09/16/2013 1717	Units:	mg/Kg	Final Weight/Volume:	100 mL
Prep Date:	09/16/2013 0730				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Aluminum	7550		8420	11	40	
Antimony	0.39	U	0.35	NC	40	U
Arsenic	2.8		2.83	2	30	
Barium	59.0		64.93	10	30	
Beryllium	0.26		0.288	12	30	
Boron	1.1	B	1.07	2	30	B
Cadmium	0.16	B	0.171	9	30	B
Calcium	3530		3798	7	30	
Chromium	27.4		29.12	6	40	
Cobalt	5.2		5.57	8	30	
Copper	10.8		12.04	11	30	
Iron	13500		14960	10	40	
Magnesium	3800		4035	6	30	
Manganese	203		219.8	8	40	
Molybdenum	0.27	U	0.24	NC	30	U
Nickel	11.4		12.52	9	30	
Potassium	1490		1648	10	40	
Selenium	0.89	U	0.78	NC	30	U
Silicon	326		494.0	41	40	M
Silver	0.17	U	0.15	NC	30	U
Sodium	172		183.5	7	30	
Vanadium	28.8		32.41	12	30	
Zinc	32.4		35.66	10	40	
Lead	4.3		4.73	10	40	

Client: Washington Closure Hanford

Job Number: 280-46548-1
Sdg Number: JP0629

Method Blank - Batch: 280-191604

Method: 7471A
Preparation: N/A

Lab Sample ID:	MB 280-191604/1-A	Analysis Batch:	280-191796	Instrument ID:	MT_034
Client Matrix:	Solid	Prep Batch:	280-191604	Lab File ID:	130916tad.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	.6 g
Analysis Date:	09/16/2013 2058	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	09/16/2013 1300				
Leach Date:	N/A				

Analyte	Result	Qual	MDL	RL
Mercury	0.0055	U	0.0055	0.017

Lab Control Sample - Batch: 280-191604

Method: 7471A
Preparation: N/A

Lab Sample ID:	LCS 280-191604/2-A	Analysis Batch:	280-191796	Instrument ID:	MT_034
Client Matrix:	Solid	Prep Batch:	280-191604	Lab File ID:	130916tad.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	.6 g
Analysis Date:	09/16/2013 2101	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	09/16/2013 1300				
Leach Date:	N/A				

Analyte	Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.417	0.401	96	87 - 111	

Matrix Spike - Batch: 280-191604

Method: 7471A
Preparation: N/A

Lab Sample ID:	280-46548-1	Analysis Batch:	280-191796	Instrument ID:	MT_034
Client Matrix:	Solid	Prep Batch:	280-191604	Lab File ID:	130916tad.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	.66 g
Analysis Date:	09/16/2013 2112	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	09/16/2013 1300				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Spike Amount	Result	% Rec.	Limit	Qual
Mercury	0.0059	U	0.397	0.394	99	87 - 111	

Client: Washington Closure Hanford

Job Number: 280-46548-1
Sdg Number: JP0629

Duplicate - Batch: 280-191604

Method: 7471A
Preparation: N/A

Lab Sample ID:	280-46548-1	Analysis Batch:	280-191796	Instrument ID:	MT_034
Client Matrix:	Solid	Prep Batch:	280-191604	Lab File ID:	130916tad.txt
Dilution:	1.0	Leach Batch:	N/A	Initial Weight/Volume:	.52 g
Analysis Date:	09/16/2013 2110	Units:	mg/Kg	Final Weight/Volume:	50 mL
Prep Date:	09/16/2013 1300				
Leach Date:	N/A				

Analyte	Sample Result/Qual		Result	RPD	Limit	Qual
Mercury	0.0059	U	0.0067	NC	20	U

Client: Washington Closure Hanford

Job Number: 280-46548-1
Sdg Number: JP0629

Duplicate - Batch: 280-191214

Method: D-2216
Preparation: N/A

Lab Sample ID:	280-46548-1	Analysis Batch:	280-191214	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:	09/12/2013 1908	Units:	%	Final Weight/Volume:	
Prep Date:	N/A				
Leach Date:	N/A				

Analyte	Sample Result/Qual	Result	RPD	Limit	Qual
Percent Moisture	4.7	4.4	5	20	

Client: Washington Closure Hanford

Job Number: 280-46548-1
Sdg Number: JP0629

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
Metals					
Prep Batch: 280-191231					
LCS 280-191231/2-A	Lab Control Sample	T	Solid		
MB 280-191231/1-A	Method Blank	T	Solid		
280-46548-1	J1RPX5	T	Solid		
280-46548-1DU	Duplicate	T	Solid		
280-46548-1MS	Matrix Spike	T	Solid		
Prep Batch: 280-191604					
LCS 280-191604/2-A	Lab Control Sample	T	Solid		
MB 280-191604/1-A	Method Blank	T	Solid		
280-46548-1	J1RPX5	T	Solid		
280-46548-1DU	Duplicate	T	Solid		
280-46548-1MS	Matrix Spike	T	Solid		
Analysis Batch:280-191782					
LCS 280-191231/2-A	Lab Control Sample	T	Solid	6010B	280-191231
MB 280-191231/1-A	Method Blank	T	Solid	6010B	280-191231
280-46548-1	J1RPX5	T	Solid	6010B	280-191231
280-46548-1DU	Duplicate	T	Solid	6010B	280-191231
280-46548-1MS	Matrix Spike	T	Solid	6010B	280-191231
Analysis Batch:280-191796					
LCS 280-191604/2-A	Lab Control Sample	T	Solid	7471A	280-191604
MB 280-191604/1-A	Method Blank	T	Solid	7471A	280-191604
280-46548-1	J1RPX5	T	Solid	7471A	280-191604
280-46548-1DU	Duplicate	T	Solid	7471A	280-191604
280-46548-1MS	Matrix Spike	T	Solid	7471A	280-191604

Report Basis
T = Total

General Chemistry

Analysis Batch:280-191214					
280-46548-1	J1RPX5	T	Solid	D-2216	
280-46548-1DU	Duplicate	T	Solid	D-2216	

Report Basis
T = Total