TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Richland
2800 George Washington Way
Richland, WA 99352
Tel: (509)375-3131

TestAmerica Job ID: 300-9060-1
TestAmerica Sample Delivery Group: RL9060-1
Client Project/Site: I19-006

For:
CH2M Hill Plateau Remediation Company
825 Jadwin Avenue
Richland, Washington 99352

Attn: CPP Sample Management

Authorized for release by:
3/22/2019 11:03:06 AM

Ashley Worthy, Project Manager I
(509)375-3131
ashley.worthy@testamericainc.com

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

The laboratory is accredited to EPA 7196A in Solid and Chemical Materials, per Washington State Department of Ecology this is approved for non-discharge water samples.

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Definitions/Glossary

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-006

TestAmerica Job ID: 300-9060-1
SDG: RL9060-1

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.
y	Duplicate analysis not within control limits.
X	Tracer is outside acceptance limits.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-006

TestAmerica Job ID: 300-9060-1
SDG: RL9060-1

Job ID: 300-9060-1

Laboratory: TestAmerica Richland

Narrative

Job Narrative
300-9060-1

Comments
No additional comments.

Receipt
The samples were received on 12/18/2018 11:35 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 7.9º C.

RAD
The PuISO tracer yield is outside acceptance criteria. For more information see the attached SIR.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

SAMPLE ISSUE RESOLUTION (SIR) REPORT

SIR Number: SIR19-0343
Rev. Number: 0
Date Initiated: 12/20/2018

SAMPLE EVENT INFORMATION

SAF NUM(S): I19-006

LABORATORY: TARL

SAMPLING INFORMATION

NUMBER OF SAMPLES: 1

SAMPLE NUMBERS: B3M893

SAMPLE MATRIX: WATER

SDG NUM(S): RL9060-1

ISSUE BACKGROUND

CLASS: General Laboratory Direction

TYPE: Other General Laboratory Direction (Specify)

DESCRIPTION: SE79 were received at TARL and the lab requests to transfer these to TASL.

RESOLUTION

PROPOSED RESOLUTION: Photocopy the COC for B3M893 and append the COC number and sample container number with "A." Also, cross off additional analyses, lab (hand-write "TASL"), initial and date, and ship the appended COC and sample container to TASL for SE79 analysis.

FINAL RESOLUTION: See as proposed.

SUBMITTED BY:

WORTHY, A 12/20/2018

ACCEPTED BY:

CUTSFORTH, EC 12/20/2018

SAMPLE ISSUE RESOLUTION (SIR) REPORT

SIR Number: SIR19-0539
Rev. Number: 0
Date Initiated: 03/21/2019

SAMPLE EVENT INFORMATION

SAF NUM(S): I19-006

LABORATORY: TARL

SAMPLING INFORMATION

NUMBER OF SAMPLES: 2

SAMPLE NUMBERS: B3M893, B3M8B9

SAMPLE MATRIX: WATER

SDG NUM(S): RL9060-1

ISSUE BACKGROUND

CLASS: Laboratory Issue

TYPE: Quality Control Failure

DESCRIPTION: The PuISO tracer yield for the LCS is outside acceptance criteria at 107%. The sample result is a nondetect.

RESOLUTION

PROPOSED RESOLUTION: Report results and narrate.

FINAL RESOLUTION: Report results and narrate.

SUBMITTED BY:

WORTHY, A 03/21/2019

ACCEPTED BY:

HEY, BE 03/21/2019

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-006

TestAmerica Job ID: 300-9060-1
SDG: RL9060-1

Client Sample ID: B3M8B9
Date Collected: 12/18/18 10:36
Date Received: 12/18/18 11:35

Lab Sample ID: 300-9060-1
Matrix: Water

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
K-40	-30	U		28.0		55.3	pCi/L	01/07/19 12:37	01/11/19 10:54	1
Co-60	-2.3	U		5.67	25.0	4.44	pCi/L	01/07/19 12:37	01/11/19 10:54	1
Sb-125	2.92	U		9.75	50.0	11.2	pCi/L	01/07/19 12:37	01/11/19 10:54	1
Cs-134	-2.1	U		5.81	80.0	5.16	pCi/L	01/07/19 12:37	01/11/19 10:54	1
Cs-137	-1.9	U		4.59	15.0	4.35	pCi/L	01/07/19 12:37	01/11/19 10:54	1
Eu-152	**11.6**			9.71	50.0	9.01	pCi/L	01/07/19 12:37	01/11/19 10:54	1
Eu-154	-3.2	U		13.6	50.0	6.45	pCi/L	01/07/19 12:37	01/11/19 10:54	1
Eu-155	-4.1	U		10.0	50.0	11.9	pCi/L	01/07/19 12:37	01/11/19 10:54	1

Other Detected Radionuclides	*Result*	*Qualifier*	*Count Uncert. (2σ+/-)*	*Total Uncert. (2σ+/-)*	*RL*	*MDC*	*Unit*	*Prepared*	*Analyzed*	*Dil Fac*
Other Detected Radionuclide	*None*						*pCi/L*	*01/07/19 12:37*	*01/11/19 10:54*	*1*

Method: A-01-R - Isotopic Curium and/or Americium 241 (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Americium 241	-0.011	U	0.143	0.143	1.00	0.309	pCi/L	12/26/18 10:18	01/21/19 09:47	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Am-243(T)	*95.6*		*30 - 105*	*12/26/18 10:18*	*01/21/19 09:47*	*1*

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Pu-238	-0.049	U	0.146	0.146	1.00	0.415	pCi/L	01/14/19 15:20	02/21/19 13:11	1
Pu-239/240	-0.0086	U	0.144	0.144	1.00	0.299	pCi/L	01/14/19 15:20	02/21/19 13:11	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Pu-242(T)	*99.9*		*30 - 105*	*01/14/19 15:20*	*02/21/19 13:11*	*1*

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
U-238	**3.18**		0.986	1.10	1.00	0.330	pCi/L	12/21/18 08:03	01/21/19 09:49	1
U-233/234	**4.64**		1.19	1.39	1.00	0.279	pCi/L	12/21/18 08:03	01/21/19 09:49	1
U-235/236	0.0731	U	0.152	0.153	1.00	0.279	pCi/L	12/21/18 08:03	01/21/19 09:49	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
U-232(T)	*79.5*		*30 - 105*	*12/21/18 08:03*	*01/21/19 09:49*	*1*

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Pu-241	3.37	U	0.244	6.70	25.0	11.2	pCi/L	01/22/19 11:30	03/02/19 02:38	1

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-006

TestAmerica Job ID: 300-9060-1
SDG: RL9060-1

Client Sample ID: B3M8B9
Date Collected: 12/18/18 10:36
Date Received: 12/18/18 11:35

Lab Sample ID: 300-9060-1
Matrix: Water

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	99.9			01/22/19 11:30	03/02/19 02:38	1

Method: TC-02-RC - Technetium-99 (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tc-99	13.0		1.10	5.97	50.0	11.9	pCi/L	03/05/19 15:02	03/20/19 20:00	1

Client Sample ID: B3M893
Date Collected: 12/18/18 09:59
Date Received: 12/18/18 11:35

Lab Sample ID: 300-9060-2
Matrix: Water

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
K-40	30.5	U		39.5		46.8	pCi/L	01/07/19 12:37	01/11/19 10:55	1
Co-60	1.59	U		3.21	25.0	3.30	pCi/L	01/07/19 12:37	01/11/19 10:55	1
Sb-125	-3.4	U		6.51	50.0	7.02	pCi/L	01/07/19 12:37	01/11/19 10:55	1
Cs-134	-0.59	U		3.12	80.0	3.03	pCi/L	01/07/19 12:37	01/11/19 10:55	1
Cs-137	0.555	U		2.40	15.0	2.86	pCi/L	01/07/19 12:37	01/11/19 10:55	1
Eu-152	-0.89	U		5.91	50.0	3.69	pCi/L	01/07/19 12:37	01/11/19 10:55	1
Eu-154	-11	U		14.2	50.0	2.12	pCi/L	01/07/19 12:37	01/11/19 10:55	1
Eu-155	-1.6	U		2.14	50.0	2.78	pCi/L	01/07/19 12:37	01/11/19 10:55	1

Other Detected Radionuclides	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Other Detected Radionuclide	None						pCi/L	01/07/19 12:37	01/11/19 10:55	1

Method: A-01-R - Isotopic Curium and/or Americium 241 (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Americium 241	-0.029	U	0.147	0.148	1.00	0.375	pCi/L	12/26/18 10:18	01/21/19 09:48	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Am-243(T)	91.7		30 - 105	12/26/18 10:18	01/21/19 09:48	1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Pu-238	0.0240	U	0.152	0.152	1.00	0.432	pCi/L	01/14/19 15:20	02/21/19 13:11	1
Pu-239/240	0.0688	U	0.150	0.150	1.00	0.295	pCi/L	01/14/19 15:20	02/21/19 13:11	1

Tracer	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242(T)	90.5		30 - 105	01/14/19 15:20	02/21/19 13:11	1

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-006

TestAmerica Job ID: 300-9060-1
SDG: RL9060-1

Client Sample ID: B3M893
Date Collected: 12/18/18 09:59
Date Received: 12/18/18 11:35

Lab Sample ID: 300-9060-2
Matrix: Water

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
U-238	5.02		1.19	1.42	1.00	0.307	pCi/L	12/21/18 08:03	01/21/19 09:49	1
U-233/234	11.0		1.76	2.43	1.00	0.260	pCi/L	12/21/18 08:03	01/21/19 09:49	1
U-235/236	0.210	U	0.245	0.247	1.00	0.260	pCi/L	12/21/18 08:03	01/21/19 09:49	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
U-232(T)	*80.4*		*30 - 105*	*12/21/18 08:03*	*01/21/19 09:49*	*1*

Method: ST-RC-0058 - Total Beta Strontium by GFPC (Extraction Chromatography)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Beta Strontium	0.384	U	0.684	0.690	10.0	1.17	pCi/L	12/20/18 12:39	01/22/19 09:59	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Sr(C)	*87.6*		*30 - 105*	*12/20/18 12:39*	*01/22/19 09:59*	*1*

Method: ST-RC-0245 - Plutonium-241 (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Pu-241	1.11	U	0.257	6.58	25.0	11.2	pCi/L	01/22/19 11:30	03/02/19 04:43	1

Tracer	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Pu-242 (T)	*90.5*			*01/22/19 11:30*	*03/02/19 04:43*	*1*

Method: TC-02-RC - Technetium-99 (LSC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tc-99	15.7		1.33	5.85	50.0	11.4	pCi/L	03/05/19 15:02	03/20/19 21:24	1

Tracer/Carrier Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-006

TestAmerica Job ID: 300-9060-1
SDG: RL9060-1

Method: A-01-R - Isotopic Curium and/or Americium 241 (Alpha Spectrometry)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Am-243(T) (30-105)
300-9060-1	B3M8B9	95.6
300-9060-1 DU	B3M8B9	87.5
300-9060-2	B3M893	91.7
LCS 300-16958/2-A	Lab Control Sample	91.8
MB 300-16958/1-A	Method Blank	102

Tracer/Carrier Legend

Am-243(T) = Am-243(T)

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Pu-242(T) (30-105)
300-9037-D-2-B DU	Duplicate	95.3
300-9060-1	B3M8B9	99.9
300-9060-2	B3M893	90.5
LCS 300-17335/2-A	Lab Control Sample	107 X
MB 300-17335/1-A	Method Blank	96.0

Tracer/Carrier Legend

Pu-242(T) = Pu-242(T)

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	U-232(T) (30-105)
300-9045-A-1-E DU	Duplicate	97.7
300-9060-1	B3M8B9	79.5
300-9060-2	B3M893	80.4
LCS 300-16876/2-A	Lab Control Sample	82.4
MB 300-16876/1-A	Method Blank	70.8

Tracer/Carrier Legend

U-232(T) = U-232(T)

Method: ST-RC-0058 - Total Beta Strontium by GFPC (Extraction Chromatography)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Sr(C) (30-105)
300-9035-A-1-C DU	Duplicate	89.3
300-9060-2	B3M893	87.6
LCS 300-16861/2-A	Lab Control Sample	84.3
MB 300-16861/1-A	Method Blank	85.1

Tracer/Carrier Legend

Tracer/Carrier Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-006

TestAmerica Job ID: 300-9060-1
SDG: RL9060-1

Sr(C) = Sr(C)

Method: ST-RC-0245 - Plutonium-241 (LSC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
		Pu-242 (T)
Lab Sample ID	**Client Sample ID**	
300-9037-D-2-D DU	Duplicate	95.3
300-9060-1	B3M8B9	99.9
300-9060-2	B3M893	90.5
LCS 300-17479/2-A	Lab Control Sample	107
MB 300-17479/1-A	Method Blank	96.0

Tracer/Carrier Legend

Pu-242 (T) = Pu-242 (T)

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-006

TestAmerica Job ID: 300-9060-1
SDG: RL9060-1

Method: 901.1 - Cesium 137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 300-17167/1-A
Matrix: Water
Analysis Batch: 17356

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 17167

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
K-40	12.71	U		42.6		42.2	pCi/L	01/07/19 12:37	01/11/19 10:54	1
Co-60	-1.49	U		5.28	25.0	4.09	pCi/L	01/07/19 12:37	01/11/19 10:54	1
Sb-125	2.457	U		5.44	50.0	6.98	pCi/L	01/07/19 12:37	01/11/19 10:54	1
Cs-134	0.978	U		2.95	80.0	3.47	pCi/L	01/07/19 12:37	01/11/19 10:54	1
Cs-137	2.356	U		2.55	15.0	3.38	pCi/L	01/07/19 12:37	01/11/19 10:54	1
Eu-152	-5.48	U		6.65	50.0	3.75	pCi/L	01/07/19 12:37	01/11/19 10:54	1
Eu-154	-6.04	U		12.5	50.0	2.20	pCi/L	01/07/19 12:37	01/11/19 10:54	1
Eu-155	0.949	U		2.26	50.0	2.97	pCi/L	01/07/19 12:37	01/11/19 10:54	1

Other Detected Radionuclides	*MB Result*	*MB Qualifier*	*Count Uncert. (2σ+/-)*	*Total Uncert. (2σ+/-)*	*RL*	*MDC*	*Unit*	*Prepared*	*Analyzed*	*Dil Fac*
Other Detected Radionuclide	*None*						*pCi/L*	*01/07/19 12:37*	*01/11/19 10:54*	*1*

Lab Sample ID: LCS 300-17167/2-A
Matrix: Water
Analysis Batch: 17356

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 17167

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Co-60			37.2	35.53		3.45	25.0	3.96	pCi/L	96	80 - 120		
Cs-137			49.5	48.23		4.78	15.0	4.00	pCi/L	97	80 - 120		
Eu-152			76.0	67.25		4.68	50.0	6.65	pCi/L	88	80 - 120		

Lab Sample ID: 300-9141-C-1-B DU
Matrix: Water
Analysis Batch: 17356

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 17167

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RPD	RPD Limit
K-40	2.76	U		-30.6	U y	75.9		134	pCi/L			240	20
Co-60	1.45	U		2.994	U y	5.58	25.0	6.08	pCi/L			70	20
Sb-125	5.05	U		0.770	U y	12.8	50.0	14.6	pCi/L			147	20
Cs-134	-0.49	U		2.999	U y	6.15	80.0	5.93	pCi/L			279	20
Cs-137	0.384	U		-0.606	U y	5.92	15.0	6.21	pCi/L			893	20
Eu-152	-5.5	U		-0.146	U y	14.3	50.0	12.8	pCi/L			190	20
Eu-154	-7.9	U		6.002	U y	17.5	50.0	9.13	pCi/L			1495	20
Eu-155	-3.3	U		-1.97	U y	11.3	50.0	15.4	pCi/L			49	20

Other Detected Radionuclides	*Sample Result*	*Sample Qual*		*DU Result*	*DU Qual*	*Total Uncert. (2σ+/-)*	*RL*	*MDC*	*Unit*			*RPD*	*RPD Limit*
Other Detected Radionuclide	*None*			*None*					*pCi/L*				

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-006

TestAmerica Job ID: 300-9060-1
SDG: RL9060-1

Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Lab Sample ID: MB 300-16876/1-A
Matrix: Water
Analysis Batch: 17443

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 16876

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
U-238	-0.0301	U	0.168	0.168	1.00	0.419	pCi/L	12/21/18 08:03	01/21/19 09:48	1
U-233/234	-0.0234	U	0.168	0.168	1.00	0.399	pCi/L	12/21/18 08:03	01/21/19 09:48	1
U-235/236	0.000	U	0.167	0.167	1.00	0.307	pCi/L	12/21/18 08:03	01/21/19 09:48	1

Tracer	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
U-232(T)	*70.8*		*30 - 105*	*12/21/18 08:03*	*01/21/19 09:48*	*1*

Lab Sample ID: LCS 300-16876/2-A
Matrix: Water
Analysis Batch: 17443

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 16876

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
U-238			17.5	17.46		3.51	1.00	0.382	pCi/L	100	80 - 120		
U-233/234			16.7	17.69		3.54	1.00	0.358	pCi/L	106	80 - 120		

Tracer	*LCS %Yield*	*LCS Qualifier*	*Limits*
U-232(T)	*82.4*		*30 - 105*

Lab Sample ID: 300-9045-A-1-E DU
Matrix: Water
Analysis Batch: 17443

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 16876

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RPD	RPD Limit
U-238	1.55			1.697		0.717	1.00	0.378	pCi/L			9	20
U-233/234	3.13			2.949		0.980	1.00	0.316	pCi/L			6	20
U-235/236	0.0712	U		-0.00258	U	0.129	1.00	0.237	pCi/L			215	

Tracer	*DU %Yield*	*DU Qualifier*	*Limits*
U-232(T)	*97.7*		*30 - 105*

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Lab Sample ID: MB 300-17335/1-A
Matrix: Water
Analysis Batch: 18011

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 17335

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Pu-238	-0.0261	U	0.146	0.146	1.00	0.364	pCi/L	01/14/19 15:20	02/21/19 13:10	1
Pu-239/240	0.0145	U	0.147	0.147	1.00	0.435	pCi/L	01/14/19 15:20	02/21/19 13:10	1

Tracer	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Pu-242(T)	*96.0*		*30 - 105*	*01/14/19 15:20*	*02/21/19 13:10*	*1*

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-006

TestAmerica Job ID: 300-9060-1
SDG: RL9060-1

Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry) (Continued)

Lab Sample ID: LCS 300-17335/2-A
Matrix: Water
Analysis Batch: 18011

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 17335

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Pu-239/240			23.6	21.71		3.98	1.00	0.369	pCi/L	92	80 - 120		

Tracer	*LCS %Yield*	*LCS Qualifier*	*Limits*
Pu-242(T)	*107*	*X*	*30 - 105*

Lab Sample ID: 300-9037-D-2-B DU
Matrix: Water
Analysis Batch: 18011

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 17335

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RPD	RPD Limit
Pu-238	-0.079	U		-0.0845	U	0.150	1.00	0.482	pCi/L			6	20
Pu-239/240	-0.0095	U		-0.0291	U y	0.147	1.00	0.373	pCi/L			102	20

Tracer	*DU %Yield*	*DU Qualifier*	*Limits*
Pu-242(T)	*95.3*		*30 - 105*

Method: A-01-R - Isotopic Curium and/or Americium 241 (Alpha Spectrometry)

Lab Sample ID: MB 300-16958/1-A
Matrix: Water
Analysis Batch: 17445

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 16958

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Americium 241	-0.0104	U	0.130	0.130	1.00	0.287	pCi/L	12/26/18 10:18	01/21/19 09:47	1

Tracer	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Am-243(T)	*102*		*30 - 105*	*12/26/18 10:18*	*01/21/19 09:47*	*1*

Lab Sample ID: LCS 300-16958/2-A
Matrix: Water
Analysis Batch: 17445

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 16958

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Americium 241			22.6	21.37		4.16	1.00	0.337	pCi/L	95	80 - 120		

Tracer	*LCS %Yield*	*LCS Qualifier*	*Limits*
Am-243(T)	*91.8*		*30 - 105*

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-006

TestAmerica Job ID: 300-9060-1
SDG: RL9060-1

Method: A-01-R - Isotopic Curium and/or Americium 241 (Alpha Spectrometry) (Continued)

Lab Sample ID: 300-9060-1 DU
Matrix: Water
Analysis Batch: 17445

Client Sample ID: B3M8B9
Prep Type: Total/NA
Prep Batch: 16958

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RPD	RPD Limit
Americium 241	-0.011	U		0.0217	U y	0.157	1.00	0.452	pCi/L			644	20

Tracer	*DU %Yield*	*DU Qualifier*	*Limits*
Am-243(T)	*87.5*		*30 - 105*

Method: ST-RC-0058 - Total Beta Strontium by GFPC (Extraction Chromatography)

Lab Sample ID: MB 300-16861/1-A
Matrix: Water
Analysis Batch: 17483

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 16861

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Beta Strontium	0.0575	U	0.597	0.597	10.0	1.09	pCi/L	12/20/18 12:39	01/22/19 09:07	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Sr(C)	*85.1*		*30 - 105*	*12/20/18 12:39*	*01/22/19 09:07*	*1*

Lab Sample ID: LCS 300-16861/2-A
Matrix: Water
Analysis Batch: 17483

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 16861

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Total Beta Strontium			13.5	15.42		3.94	10.0	1.21	pCi/L	114	80 - 120		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Sr(C)	*84.3*		*30 - 105*

Lab Sample ID: 300-9035-A-1-C DU
Matrix: Water
Analysis Batch: 17483

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 16861

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RPD	RPD Limit
Total Beta Strontium	0.511	U		-0.215	U y	0.580	10.0	1.12	pCi/L			491	20

Carrier	*DU %Yield*	*DU Qualifier*	*Limits*
Sr(C)	*89.3*		*30 - 105*

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-006

TestAmerica Job ID: 300-9060-1
SDG: RL9060-1

Method: ST-RC-0245 - Plutonium-241 (LSC)

Lab Sample ID: MB 300-17479/1-A
Matrix: Water
Analysis Batch: 18141

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 17479

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Pu-241	0.0556	U	0.311	6.46	25.0	11.0	pCi/L	01/22/19 11:30	03/01/19 16:12	1

Tracer	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Pu-242 (T)	*96.0*			*01/22/19 11:30*	*03/01/19 16:12*	*1*

Lab Sample ID: LCS 300-17479/2-A
Matrix: Water
Analysis Batch: 18141

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 17479

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Pu-241			1100	1126		72.1	25.0	11.1	pCi/L	102	80 - 120		

Tracer	*LCS %Yield*	*LCS Qualifier*	*Limits*
Pu-242 (T)	*107*		

Lab Sample ID: 300-9037-D-2-D DU
Matrix: Water
Analysis Batch: 18141

Client Sample ID: Duplicate
Prep Type: Total/NA
Prep Batch: 17479

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RPD	RPD Limit
Pu-241	-0.59	U		-1.55	U y	6.45	25.0	11.2	pCi/L			89	20

Tracer	*DU %Yield*	*DU Qualifier*	*Limits*
Pu-242 (T)	*95.3*		

Method: TC-02-RC - Technetium-99 (LSC)

Lab Sample ID: MB 300-18120/1-A
Matrix: Water
Analysis Batch: 18285

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 18120

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Tc-99	2.686	U	0.508	5.67	50.0	12.1	pCi/L	03/05/19 15:02	03/20/19 17:11	1

Lab Sample ID: LCS 300-18120/2-A
Matrix: Water
Analysis Batch: 18285

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 18120

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Tc-99			103	99.38		8.78	50.0	11.5	pCi/L	96	80 - 120		

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-006

TestAmerica Job ID: 300-9060-1
SDG: RL9060-1

Method: TC-02-RC - Technetium-99 (LSC) (Continued)

Lab Sample ID: 300-9487-A-1-C MS
Matrix: Water
Analysis Batch: 18285

Client Sample ID: Matrix Spike
Prep Type: Total/NA
Prep Batch: 18120

Analyte	Sample Result	Sample Qual	Spike Added	MS Result	MS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Tc-99	157		541	514.6		27.0	50.0	12.1	pCi/L	95	75 - 125		

Lab Sample ID: 300-9060-1 DU
Matrix: Water
Analysis Batch: 18285

Client Sample ID: B3M8B9
Prep Type: Total/NA
Prep Batch: 18120

Analyte	Sample Result	Sample Qual		DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit			RPD	RPD Limit
Tc-99	13.0			6.299	U y	5.83	50.0	12.1	pCi/L			69	20

TestAmerica Richland

QC Association Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-006

TestAmerica Job ID: 300-9060-1
SDG: RL9060-1

Rad

Prep Batch: 16861

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-9060-2	B3M893	Total/NA	Water	ExtChrom	
MB 300-16861/1-A	Method Blank	Total/NA	Water	ExtChrom	
LCS 300-16861/2-A	Lab Control Sample	Total/NA	Water	ExtChrom	
300-9035-A-1-C DU	Duplicate	Total/NA	Water	ExtChrom	

Prep Batch: 16876

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-9060-1	B3M8B9	Total/NA	Water	ExtChrAct	
300-9060-2	B3M893	Total/NA	Water	ExtChrAct	
MB 300-16876/1-A	Method Blank	Total/NA	Water	ExtChrAct	
LCS 300-16876/2-A	Lab Control Sample	Total/NA	Water	ExtChrAct	
300-9045-A-1-E DU	Duplicate	Total/NA	Water	ExtChrAct	

Prep Batch: 16958

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-9060-1	B3M8B9	Total/NA	Water	ExtChrAct	
300-9060-2	B3M893	Total/NA	Water	ExtChrAct	
MB 300-16958/1-A	Method Blank	Total/NA	Water	ExtChrAct	
LCS 300-16958/2-A	Lab Control Sample	Total/NA	Water	ExtChrAct	
300-9060-1 DU	B3M8B9	Total/NA	Water	ExtChrAct	

Prep Batch: 17167

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-9060-1	B3M8B9	Total/NA	Water	Evaporation	
300-9060-2	B3M893	Total/NA	Water	Evaporation	
MB 300-17167/1-A	Method Blank	Total/NA	Water	Evaporation	
LCS 300-17167/2-A	Lab Control Sample	Total/NA	Water	Evaporation	
300-9141-C-1-B DU	Duplicate	Total/NA	Water	Evaporation	

Prep Batch: 17335

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-9060-1	B3M8B9	Total/NA	Water	ExtChrAct	
300-9060-2	B3M893	Total/NA	Water	ExtChrAct	
MB 300-17335/1-A	Method Blank	Total/NA	Water	ExtChrAct	
LCS 300-17335/2-A	Lab Control Sample	Total/NA	Water	ExtChrAct	
300-9037-D-2-B DU	Duplicate	Total/NA	Water	ExtChrAct	

Prep Batch: 17479

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-9060-1	B3M8B9	Total/NA	Water	ExtChr_LSC	
300-9060-2	B3M893	Total/NA	Water	ExtChr_LSC	
MB 300-17479/1-A	Method Blank	Total/NA	Water	ExtChr_LSC	
LCS 300-17479/2-A	Lab Control Sample	Total/NA	Water	ExtChr_LSC	
300-9037-D-2-D DU	Duplicate	Total/NA	Water	ExtChr_LSC	

Prep Batch: 18120

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-9060-1	B3M8B9	Total/NA	Water	ExtChr_LSC	
300-9060-2	B3M893	Total/NA	Water	ExtChr_LSC	
MB 300-18120/1-A	Method Blank	Total/NA	Water	ExtChr_LSC	
LCS 300-18120/2-A	Lab Control Sample	Total/NA	Water	ExtChr_LSC	

QC Association Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-006

TestAmerica Job ID: 300-9060-1
SDG: RL9060-1

Rad (Continued)

Prep Batch: 18120 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
300-9487-A-1-C MS	Matrix Spike	Total/NA	Water	ExtChr_LSC	
300-9060-1 DU	B3M8B9	Total/NA	Water	ExtChr_LSC	

Lab Chronicle

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-006

TestAmerica Job ID: 300-9060-1
SDG: RL9060-1

Client Sample ID: B3M8B9

Date Collected: 12/18/18 10:36
Date Received: 12/18/18 11:35

Lab Sample ID: 300-9060-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation					17167	01/07/19 12:37	RH	TAL RCH
Total/NA	Analysis	901.1		1	2.00002 L	2.00002 L	17356	01/11/19 10:54	DJ	TAL RCH
Total/NA	Prep	ExtChrAct					16958	12/26/18 10:18	SHA	TAL RCH
Total/NA	Analysis	A-01-R		1	200 g	200 g	17445	01/21/19 09:47	DJ	TAL RCH
Total/NA	Prep	ExtChrAct					16876	12/21/18 08:03	SHA	TAL RCH
Total/NA	Analysis	A-01-R		1	200.79 g	200.79 g	17443	01/21/19 09:49	DJ	TAL RCH
Total/NA	Prep	ExtChrAct					17335	01/14/19 15:20	RH	TAL RCH
Total/NA	Analysis	A-01-R		1	200.02 g	200.02 g	18011	02/21/19 13:11	DJ	TAL RCH
Total/NA	Prep	ExtChr_LSC					17479	01/22/19 11:30	RH	TAL RCH
Total/NA	Analysis	ST-RC-0245		1	200.02 g	200.02 g	18141	03/02/19 02:38	DJ	TAL RCH
Total/NA	Prep	ExtChr_LSC					18120	03/05/19 15:02	SHA	TAL RCH
Total/NA	Analysis	TC-02-RC		1	127.35 g	127.35 g	18285	03/20/19 20:00	DJ	TAL RCH

Client Sample ID: B3M893

Date Collected: 12/18/18 09:59
Date Received: 12/18/18 11:35

Lab Sample ID: 300-9060-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	Evaporation					17167	01/07/19 12:37	RH	TAL RCH
Total/NA	Analysis	901.1		1	2.00007 L	2.00007 L	17356	01/11/19 10:55	DJ	TAL RCH
Total/NA	Prep	ExtChrAct					16958	12/26/18 10:18	SHA	TAL RCH
Total/NA	Analysis	A-01-R		1	200.52 g	200.52 g	17445	01/21/19 09:48	DJ	TAL RCH
Total/NA	Prep	ExtChrAct					16876	12/21/18 08:03	SHA	TAL RCH
Total/NA	Analysis	A-01-R		1	201.39 g	201.39 g	17443	01/21/19 09:49	DJ	TAL RCH
Total/NA	Prep	ExtChrAct					17335	01/14/19 15:20	RH	TAL RCH
Total/NA	Analysis	A-01-R		1	200.04 g	200.04 g	18011	02/21/19 13:11	DJ	TAL RCH
Total/NA	Prep	ExtChrom					16861	12/20/18 12:39	SHA	TAL RCH
Total/NA	Analysis	ST-RC-0058		1	506.87 g	506.87 g	17483	01/22/19 09:59	DJ	TAL RCH
Total/NA	Prep	ExtChr_LSC					17479	01/22/19 11:30	RH	TAL RCH
Total/NA	Analysis	ST-RC-0245		1	200.04 g	200.04 g	18141	03/02/19 04:43	DJ	TAL RCH
Total/NA	Prep	ExtChr_LSC					18120	03/05/19 15:02	SHA	TAL RCH
Total/NA	Analysis	TC-02-RC		1	133.11 g	133.11 g	18285	03/20/19 21:24	DJ	TAL RCH

Laboratory References:

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

Method Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-006

TestAmerica Job ID: 300-9060-1
SDG: RL9060-1

Method	Method Description	Protocol	Laboratory
901.1	Cesium 137 & Other Gamma Emitters (GS)	EPA	TAL RCH
A-01-R	Isotopic Curium and/or Americium 241 (Alpha Spectrometry)	DOE	TAL RCH
A-01-R	Isotopic Plutonium (Alpha Spectrometry)	DOE	TAL RCH
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL RCH
ST-RC-0058	Total Beta Strontium by GFPC (Extraction Chromatography)	TAL-STL	TAL RCH
ST-RC-0245	Plutonium-241 (LSC)	TAL-STL	TAL RCH
TC-02-RC	Technetium-99 (LSC)	DOE	TAL RCH
Evaporation	Preparation, Evaporation	None	TAL RCH
ExtChr_LSC	Preparation, Extraction Chromatography	None	TAL RCH
ExtChrAct	Preparation, Extraction Chromatography Resin Actinide Separation	None	TAL RCH
ExtChrom	Preparation, Extraction Chromatography Resin, Strontium	None	TAL RCH

Protocol References:

DOE = U.S. Department of Energy
EPA = US Environmental Protection Agency
None = None
TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL RCH = TestAmerica Richland, 2800 George Washington Way, Richland, WA 99352, TEL (509)375-3131

Sample Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: I19-006

TestAmerica Job ID: 300-9060-1
SDG: RL9060-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
300-9060-1	B3M8B9	Water	12/18/18 10:36	12/18/18 11:35
300-9060-2	B3M893	Water	12/18/18 09:59	12/18/18 11:35

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I19-006-156 Page 1 of 1

Collector: Larry Rosane /CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: I19-006	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: AEA, DECEMBER 2018	**Logbook No.:** HNF-N-506 102/94	**Ice Chest No.:** N/A
Shipped To (Lab): TestAmerica Incorporated, Rich	**Method of Shipment:** GOVERNMENT VEHICLE	**Bill of Lading/Air Bill No.:** N/A
Protocol: SURV	**Priority:** 15 Days PRIORITY	**Offsite Property No.:** N/A

POSSIBLE SAMPLE HAZARDS/REMARK
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3M8B9	N	W	DEC 18 2018	1036	1x1-L G/P	AMCMISO_EIE_PLATE_AEA: COMMON; PU241_IE_LSC: COMMON; PUISO_PLATE_AEA: COMMON; UISO_PLATE_AEA: COMMON	6 Months	HNO3 to pH <2
B3M8B9	N	W	↓	↓	1x4-L G/P	GAMMA_GS: COMMON; GAMMA_GS: GW 01	6 Months	HNO3 to pH <2
B3M8B9	N	W	DEC 18 2018	1036	1x500-mL P	TC99_ETVDSK_LSC: COMMON	6 Months	HNO3 to pH <2

9060

300-9060 COC

Relinquished By:	Received By:	Matrix *
Larry Rosane /CHPRC — Larry Rosane — DEC 18 2018 1135 (Print First and Last Name / Signature / Date/Time)	Charlotte Burgess CB TARL DEC 18 2018 1135 (Print First and Last Name / Signature / Date/Time)	S = Soil, SE = Sediment, SO = Solid, SL = Sludge, W = Water, O = Oil, A = Air; DS = Drum Solids, DL = Drum Liquids, T = Tissue, WI = Wipe, L = Liquid, V = Vegetation, X = Other
Relinquished By: (Print First and Last Name / Signature / Date/Time)	Received By: (Print First and Last Name / Signature / Date/Time)	
Relinquished By: (Print First and Last Name / Signature / Date/Time)	Received By: (Print First and Last Name / Signature / Date/Time)	
Relinquished By: (Print First and Last Name / Signature / Date/Time)	Received By: (Print First and Last Name / Signature / Date/Time)	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 10/29/2018 FSR ID = FSR71353 A-6004-842 (REV 3)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	C.O.C. # I19-006-150 Page 1 of 1

Collector: Larry Rosane /CHPRC	**Contact/Requester:** Karen Waters-Husted	**Telephone No.:** 509-376-4650
SAF No.: I19-006	**Sampling Origin:** Hanford Site	**Purchase Order/Charge Code:** 300071
Project Title: AEA, DECEMBER 2018	**Logbook No.:** HNF-N-506 102/94	**Ice Chest No.:** N/A
Shipped To (Lab): TestAmerica Incorporated, Rich	**Method of Shipment:** GOVERNMENT VEHICLE	**Bill of Lading/Air Bill No.:** N/A
Protocol: SURV	**Priority:** 15 Days PRIORITY	**Offsite Property No.:** N/A

POSSIBLE SAMPLE HAZARDS/REMARK
** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS
N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B3M893	N	W	DEC 18 2018	0959	1x1-L G/P	AMCMISO_EIE_PLATE_AEA: COMMON; PU241_IE_LSC: COMMON; PUISO_PLATE_AEA: COMMON; UISO_PLATE_AEA: COMMON	6 Months	HNO3 to pH <2
B3M893	N	W	↓	↓	1x4-L G/P	GAMMA_GS: COMMON; GAMMA_GS: GW 01	6 Months	HNO3 to pH <2
B3M893	N	W			1x500-mL G/P	SE79_SEP_IE_LSC: COMMON	6 Months	HNO3 to pH <2
B3M893	N	W			1x1-L G/P	SRISO_SEP_PRECIP_GPC: COMMON	6 Months	HNO3 to pH <2
B3M893	N	W	DEC 18 2018	0959	1x500-mL P	TC99_ETVDSK_LSC: COMMON	6 Months	HNO3 to pH <2

9060

Relinquished By: Larry Rosane /CHPRG	Received By:
Print First and Last Name: Larry Rosane	Print First and Last Name: Charlette Burghard
Signature: Larry Rosane	Signature: CB TARL
Date/Time: DEC 18 2018 1135	Date/Time: DEC 18 2018 1135
Relinquished By:	Received By:
Print First and Last Name / Signature / Date/Time	Print First and Last Name / Signature / Date/Time
Relinquished By:	Received By:
Print First and Last Name / Signature / Date/Time	Print First and Last Name / Signature / Date/Time
Relinquished By:	Received By:
Print First and Last Name / Signature / Date/Time	Print First and Last Name / Signature / Date/Time

Matrix *

S = Soil	DS = Drum Solids
SE = Sediment	DL = Drum Liquids
SO = Solid	T = Tissue
SL = Sludge	WI = Wipe
W = Water	L = Liquid
O = Oil	V = Vegetation
A = Air	X = Other

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process):	Disposed By:	Date/Time:

Printed On 10/29/2018 FSR ID = FSR71391 A-6004-842 (REV 3)

Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 300-9060-1
SDG Number: RL9060-1

Login Number: 9060
List Number: 1
Creator: Burghard, Charlette JA

List Source: TestAmerica Richland

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	