

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica St. Louis
13715 Rider Trail North
Earth City, MO 63045
Tel: (314)298-8566

TestAmerica Job ID: 160-27864-1

TestAmerica Sample Delivery Group: SL2844
Client Project/Site: F18-025

For:

CH2M Hill Plateau Remediation Company
PO BOX 1600, MS H8-41
Richland, Washington 99352

Attn: Mr. Scot Fitzgerald



Authorized for release by:
5/1/2018 10:28:06 AM

Jayna Awalt, Project Manager II
(314)298-8566
jayna.awalt@testamericainc.com



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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: CH2M Hill Plateau Remediation Company
Project/Site: F18-025

TestAmerica Job ID: 160-27864-1
SDG: SL2844

Job ID: 160-27864-1

Laboratory: TestAmerica St. Louis

Narrative

CASE NARRATIVE

CH2MHill Plateau Remediation Company
P.O. Box 1600
Richland, Washington 99352
May 1, 2018
Attention: Scot Fitzgerald

SDG	: SL2844
Number of Samples	: 6 samples
Sample Matrix	: Soil
Data Deliverable	: Summary
Date SDG Closed	: April 18, 2018

II. Introduction

On April 18, 6 samples were received by TestAmerica - St. Louis for analysis. The samples were received within temperature criteria. See the COC and receipt checklists for documentation of any variations on receipt conditions and temperature. Upon receipt, samples were given laboratory Ids to correspond with specific client Ids. Please refer to the Sample Summary sheets attached to this case narrative. This report is incomplete without the narrative.

The following SAFs are associated with this SDG: F18-025

III. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits. All results are based upon samples as they were received, i.e. wet weight, unless otherwise noted on the data sheets. See the attached Methods Summary Form for the methods used in this SDG.

MS/MSD/Dup analysis was done per the client requirements. Analytical batches that did not contain matrix QC were analyzed with an LCS/LCS duplicate.

Note: For Metals analyses, per standard practice, all 6020 water and soil samples are initially prepared at 2x dilution. This standard dilution does not affect reporting limits as MDL studies are also prepared in the same manner. These dilutions do not necessitate a narrative note; however, they are flagged "D" due to a limitation in the LIMS.

For solid matrices, all Metals analyses (including Hg) use a Standard Reference Material for the Laboratory Control Sample (LCS). Certificate for this source material may be obtained from TASL.

For Anion analysis, samples have been started at a 2x dilution per CHPRC direction. The samples are flagged accordingly with a "D" flag if sample concentration is above the MDL/RL. Non-conformance will be included in the below section only if dilution is greater than 2x.

For WTPH methods, the lab utilizes method 8015B. Per CHPRC direction, the method name in the electronic data has been modified to read WTPH in the place of 8015B.

Per CHPRC direction, due to the short hold times for Nitrate, Nitrite and Phosphate by IC (48 hours) as well as pH analysis (24 hours), a SIR request is not needed when samples are run outside 1x hold but within 2x hold. A narrative comment will be included below if a sample is run outside the lab-specified hold time for waters.

For extractable and volatile organic analyses, several analytes are considered poor performers and will not meet CHPRC QC limits. Per CHPRC direction, the lab's statistical limits have been reported. Excursions outside these statistical limits will include a non-conformance in the sections below.

Case Narrative

Client: CH2M Hill Plateau Remediation Company
Project/Site: F18-025

TestAmerica Job ID: 160-27864-1
SDG: SL2844

Job ID: 160-27864-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

IV. Definitions

QCBLK-	Quality Control Blank, Method Blank
QCLCS-	Quality Control Laboratory Control Sample, Blank Spike
DUP-	Laboratory Duplicate
MS-	Matrix Spike
MSD-	Matrix Spike Duplicate

The term "Detection Limit" used in the analytical data report refers to either the lab's standard reporting limits or contractually required reporting limits, whichever is applicable.

The following data qualifiers may be applicable to the results in this report, as appropriate.

- **B** - For inorganic analyses, the sample result is greater than the MDL but less than the RL.
- **B** - For organic analyses, Method Blank contamination. The Method Blank contains the target analyte above the MDL/RL and Method Blank is greater than 5% of the sample concentration.
- **B** - For inorganics and radiochemistry, Method Blank reported above the MDC/MDL.
- **J** - For organic analyses, the sample is estimated and less than the RL. If on Method Blank, indicates Method Blank contamination.
- **C** - For inorganic analyses, Method Blank contamination. The Method Blank contains the target analyte at a concentration above the MDL/RL and Method Blank concentration is greater than 5% of the sample concentration.
- **D** - For all analyses, the sample result was obtained from the analysis of a dilution. For ICPMS Metals analyses, per standard practice, all samples are initially prepared at a 2x dilution. This standard dilution does not affect reporting limits as MDL studies are also prepared in the same manner and will not be narrated below. Only dilutions above 2x will be narrated and considered a true dilution for these samples.
- **N** - For inorganics, rad and GC analyses, the spike/spike duplicate recoveries are outside QC limits.
- **T** - For GCMS analyses, the spike/spike duplicate recoveries are outside QC limits.
- **o** - For all analyses, the LCS (LCSD) recoveries are outside QC limits.
- **P** - For organic analyses (PCB/Pests only), the aroclor target analyte has greater than 25% difference for detected concentrations between the two GC columns.
- **X**- Organics and Anions IC - Sample concentration over calibration and/or surrogate recovery outside QC limits.
- **X**- Inorganics - The analyte present in the original sample is > 4x the spike concentration.
- **X**- Radiochemistry - Carrier or Tracer recovery is outside limits.
- **Z**- Sample was prepped or analyzed beyond the specified sample holding time.
- **y** - RPD is outside established limits.

Gamma Spec

Prep Batch: 361905

The client has requested RPD be reported as precision criteria. The RPD tends to inflate at low sample activity (near and below the MDC) due to the high relative uncertainty of the measurements. At low activity the RER (relative error ratio) or DER (duplicate error ratio) are better indicators. The laboratory typically uses a dual criterion: either the RER is ≤ 1 or the RPD $\leq 40\%$ (or 30%, depending upon the matrix). The following samples did not meet the RPD criteria; however, the RER is within limits demonstrating good replicate precision. B3J6B0 (160-27864-1) and (160-27864-A-1-F DU)

Strontium

Prep Batch: 362500

The client has requested RPD be reported as precision criteria. The RPD tends to inflate at low sample activity (near and below the MDC) due to the high relative uncertainty of the measurements. At low activity the RER (relative error ratio) or DER (duplicate error ratio) are better indicators. The laboratory typically uses a dual criterion: either the RER is ≤ 1 or the RPD $\leq 40\%$ (or 30%, depending upon the matrix). The following samples did not meet the RPD criteria; however, the RER is within limits demonstrating good replicate precision.

Case Narrative

Client: CH2M Hill Plateau Remediation Company
Project/Site: F18-025

TestAmerica Job ID: 160-27864-1
SDG: SL2844

Job ID: 160-27864-1 (Continued)

Laboratory: TestAmerica St. Louis (Continued)

B3J6B0 (160-27864-1) and (160-27864-A-1-F DU)

We certify that this data package is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager or designee and the laboratory's client services representative as verified by their signature on this report.

Reviewed and approved:

Jayna Awalt
St. Louis Project Manager

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Login Sample Receipt Checklist

Client: CH2M Hill Plateau Remediation Company

Job Number: 160-27864-1

SDG Number: SL2844

Login Number: 27864

List Source: TestAmerica St. Louis

List Number: 1

Creator: Daniels, Brian J

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
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	0.2,0.4
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 $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F18-025-026	PAGE 1 OF 1
COLLECTOR Tim Callaway CHPRC		COMPANY CONTACT LYNCH, SA	TELEPHONE NO. 373-5586	PROJECT COORDINATOR LYNCH, SA	REQUIRED TAT 15 Days	
SAMPLING LOCATION C9920, I-005 SL2844		PROJECT DESIGNATION 100-KR-4 Long Term & Interim Action Monitoring - Soil		SAF NO. F18-025	ORIGINAL	
ICE CHEST NO. GWS-729		FIELD LOGBOOK NO. HNF-N-645 6-90	ACTUAL SAMPLE DEPTH 24.8	PURCHASE ORDER/CHARGE CODE 304762	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. 9311		BILL OF LADING/AIR BILL NO. 7720 1723 7897		

MATRIX* A=Air DL=Drum L=Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION		None	None	
		HOLDING TIME		6 Months	6 Months	
		TYPE OF CONTAINER		G/P	G/P	
		NO. OF CONTAINER(S)		1	1	
		VOLUME		1L	60mL	
SPECIAL HANDLING AND/OR STORAGE N/A		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SRTOT_SEP_PR ECIP_GPC; COMMON (Total beta radiostrontium);	
SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B336B0	N/A	SOIL	APR 16 2018	1445	/	/

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CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
Tim Callaway CHPRC APR 16 2018 1530	SSU-1 APR 16 2018 1530	TRVL-18-102 (1) GAMMA_GS: COMMON {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
SSU-1 APR 17 2018 0845	Troy Bacon CHPRC APR 17 2018 0845	
Troy Bacon CHPRC APR 17 2018 1400	FEDEX	
FEDEX	B J Brown APR 17 2018 0915	

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME



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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F18-025-016	PAGE 1 OF 1
COLLECTOR Malcom Chunn CHPRC		COMPANY CONTACT LYNCH, SA	TELEPHONE NO. 373-5586	PROJECT COORDINATOR LYNCH, SA		REQUIRED TAT 15 Days
SAMPLING LOCATION C9920, I-002 <i>SL284A</i>		PROJECT DESIGNATION 100-KR-4 Long Term & Interim Action Monitoring - Soil		SAF NO. F18-025		
ICE CHEST NO. <i>GWS-729</i>		FIELD LOGBOOK NO. HNF-N-645 <i>12-19</i>	ACTUAL SAMPLE DEPTH <i>10.0 to 12.5 ft</i>	PURCHASE ORDER/CHARGE CODE 304762	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. <i>9311</i>		BILL OF LADING/AIR BILL NO. <i>772017237897</i>		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION		None	None
		HOLDING TIME		6 Months	6 Months
		TYPE OF CONTAINER		G/P	G/P
		NO. OF CONTAINER(S)		1	1
		VOLUME		1L	60mL
SPECIAL HANDLING AND/OR STORAGE RADIOACTIVE TIE TO: B33687 Ed Kauer CHPRE <i>APR 12 2018</i>		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SRTOT_SEP_PR ECIP_GPC: COMMON {Total beta radiostrontium};

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B33690	N/A	SOIL	APR 12 2018	<i>1015</i>	✓	✓

CHAIN OF POSSESSION	RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME	SPECIAL INSTRUCTIONS
	Malcom Chunn CHPRC	<i>ml</i> APR 12 2018 1535	SSU-1	<i>ml</i> APR 12 2018 1535		TRVL-18-102 (1) GAMMA_GS: COMMON {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
	SSU-1	APR 17 2018 <i>0845</i>	Troy Bacon CHPRC	<i>Troy L. Bacon</i> APR 17 2018 <i>0845</i>		
	Troy Bacon CHPRC	<i>Troy L. Bacon</i> APR 17 2018 <i>1400</i>	FEDEX			
			FEDEX	<i>Ed Kauer</i> <i>4/18/18 0915</i>		

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F18-025-020	PAGE 1 OF 1
COLLECTOR Malcom Chunn CHPRC		COMPANY CONTACT LYNCH, SA	TELEPHONE NO. 373-5586	PROJECT COORDINATOR LYNCH, SA	REQUIRED TAT 15 Days	
SAMPLING LOCATION C9920, I-003 SL2844		PROJECT DESIGNATION 100-KR-4 Long Term & Interim Action Monitoring - Soil		SAF NO. F18-025	ORIGINAL	
ICE CHEST NO. GWS-729		FIELD LOGBOOK NO. HNF-N-645 12-19	ACTUAL SAMPLE DEPTH 17.8 FT	PURCHASE ORDER/CHARGE CODE 304762	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. 9311		BILL OF LADING/AIR BILL NO. 772017237897		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION	None	None		
		HOLDING TIME	6 Months	6 Months		
		TYPE OF CONTAINER	G/P	G/P		
		NO. OF CONTAINER(S)	1	1		
		VOLUME	1L	60mL		
SPECIAL HANDLING AND/OR STORAGE RADIOACTIVE PIECE TO B33692		SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS SRTOT_SEP_PR ECIP_GPC: COMMON (Total beta radiostrontium);				
APR 12 2018 Ed Kauer CHPRC						
SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B33694	N/A	SOIL	APR 12 2018	1500	/	/

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CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
DATE/TIME	DATE/TIME	
Malcom Chunn CHPRC M.R. Chunn APR 12 2018 1535	SSU-1 APR 12 2018 1535	TRVL-18-102 (1) GAMMA_GS: COMMON {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
SSU-1 APR 17 2018 0845	Troy Bacon CHPRC Troy L. Bacon APR 17 2018 0845	
Troy Bacon CHPRC Troy L. Bacon APR 17 2018 1400	FEDEX	
FEDEX	B.L. Branham 4/18/18 0915	

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
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CH2Mhill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F18-025-023	PAGE 1 OF 1
COLLECTOR Tim Callaway /CHPRC		COMPANY CONTACT LYNCH, SA	TELEPHONE NO. 373-5586	PROJECT COORDINATOR LYNCH, SA	REQUIRED TAT 15 Days	
SAMPLING LOCATION C9920, I-004		PROJECT DESIGNATION 100-KR-4 Long Term & Interim Action Monitoring - Soil		SAF NO. F18-025	ORIGINAL	
ICE CHEST NO. GWS-729		FIELD LOGBOOK NO. HNF-N-645 6-90	ACTUAL SAMPLE DEPTH 20.6	PURCHASE ORDER/CHARGE CODE 304762	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. 9311		BILL OF LADING/AIR BILL NO. 7720 17237897		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION		None	None
		HOLDING TIME		6 Months	6 Months
		TYPE OF CONTAINER		G/P	G/P
		NO. OF CONTAINER(S)		1	1
		VOLUME		1L	60mL
SPECIAL HANDLING AND/OR STORAGE N/A		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SRTOT_SEP_PR ECIP_GPC: COMMON (Total beta radiostrontium);

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME		
83J697	N/A	SOIL	APR 16 2018	1013	✓	✓

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
DATE/TIME	DATE/TIME	
Tim Callaway /CHPRC	SSU-1	TRVL-18-102 (1) GAMMA_GS: COMMON {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};
APR 16 2018 1530	APR 16 2018 1530	
SSU-1	Troy Bacon CHPRC	
APR 17 2018 0845	APR 17 2018 0845	
Troy Bacon CHPRC	FEDEX	
APR 17 2018 1400		
FEDEX	Brian Davis	
	4/10/18 0915	

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F18-025-029	PAGE 1 OF 1
COLLECTOR Malcom Chunn CHPRC		COMPANY CONTACT LYNCH, SA	TELEPHONE NO. 373-5586	PROJECT COORDINATOR LYNCH, SA	REQUIRED TAT 15 Days	
SAMPLING LOCATION C9920, I-006 <i>S2844</i>		PROJECT DESIGNATION 100-KR-4 Long Term & Interim Action Monitoring - Soil		SAF NO. F18-025	ORIGINAL	
ICE CHEST NO. <i>GWS-602</i>		FIELD LOGBOOK NO. HNF-N-645 <i>G-91</i>	ACTUAL SAMPLE DEPTH <i>27.8 to 30.3</i>	PURCHASE ORDER/CHARGE CODE 304762	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. <i>9312</i>		BILL OF LADING/AIR BILL NO. <i>77201921 8460</i>		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION	None	None
		HOLDING TIME	6 Months	6 Months
		TYPE OF CONTAINER	G/P	G/P
		NO. OF CONTAINER(S)	1	1
		VOLUME	1L	60mL
SPECIAL HANDLING AND/OR STORAGE N/A		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SRTOT_SEP_PR ECIP_GPC: COMMON (Total beta radiostrontium);

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME		
B3J6B3	N/A	SOIL	4-17-18	0916	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	TRVL-18-102 (1) GAMMA_GS: COMMON {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};	
Malcom Chunn CHPRC	<i>1020</i> APR 17 2018	Lesly Wall CHPRC	<i>1020</i> APR 17 2018		
Lesly Wall CHPRC	<i>1400</i> APR 17 2018	FEDEX			
	FEDEX	<i>8 - J Brian Davis 4/18/18 09:18</i>			
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME		



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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F18-025-032	PAGE 1 OF 1
COLLECTOR Malcom Chunn CHPRC		COMPANY CONTACT LYNCH, SA	TELEPHONE NO. 373-5586	PROJECT COORDINATOR LYNCH, SA	REQUIRED TAT 15 Days	
SAMPLING LOCATION C9920, I-006 FTB SL2844		PROJECT DESIGNATION 100-KR-4 Long Term & Interim Action Monitoring - Soil		SAF NO. F18-025	ORIGINAL	
ICE CHEST NO. GWS-602		FIELD LOGBOOK NO. HNF-N-645 6-81	ACTUAL SAMPLE DEPTH (N/A)	PURCHASE ORDER/CHARGE CODE 304762	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO TestAmerica St. Louis		OFFSITE PROPERTY NO. 9312		BILL OF LADING/AIR BILL NO. 772019218460		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION	None	None
		HOLDING TIME	6 Months	6 Months
		TYPE OF CONTAINER	G/P	G/P
		NO. OF CONTAINER(S)	1	1
		VOLUME	1L	60mL
SPECIAL HANDLING AND/OR STORAGE N/A		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SRTOT_SEP_PR ECIP_GPC; COMMON (Total beta radiostrontium);

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CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	TRVL-18-102 (1) GAMMA_GS: COMMON {Cesium-137, Cobalt-60, Europium-152, Europium-154, Europium-155};	
Malcom Chunn CHPRC	mech APR 17 2018 1020	Lesly Wall CHPRC	APR 17 2018 1620		
Lesly Wall CHPRC	Lesly Wall APR 17 2018 1400	FEDEX			
	FED EX	B-C Brown Hand	4/16/18 0915		
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY		DATE/TIME	

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FedEx® Tracking

772017237897

Ship date:

Tue 4/17/2018

Actual delivery:

Wed 4/18/2018 9:09 am

Richland, WA US

Delivered

Signed for by: B.DANIELS

EARTH CITY, MO US

Travel History

Date/Time	Activity	Location
4/18/2018 - Wednesday		
9:09 am	Delivered	EARTH CITY, MO
7:18 am	On FedEx vehicle for delivery	EARTH CITY, MO
7:10 am	At local FedEx facility	EARTH CITY, MO
5:20 am	At destination sort facility	BERKELEY, MO
4:33 am	Departed FedEx location	MEMPHIS, TN
12:25 am	Arrived at FedEx location	MEMPHIS, TN
4/17/2018 - Tuesday		
4:34 pm	Left FedEx origin facility	PASCO, WA
11:17 am	Picked up	PASCO, WA
11:11 am	Shipment information sent to FedEx	

Shipment Facts

Tracking Number	772017237897	Service	FedEx Priority Overnight
Weight	60 lbs / 27.22 kgs	Signature services	Direct signature required
Delivered To	Shipping/Receiving	Total pieces	1
Total shipment weight	60 lbs / 27.22 kgs	Terms	Third Party
Shipper reference	ptr# 9311/cooler# gws-729	Packaging	Your Packaging
Special handling section	Deliver Weekday, Direct Signature Required	Standard transit	4/18/2018 by 10:30 am

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FedEx® Tracking

772019218460

Ship date:

Tue 4/17/2018

Actual delivery:

Wed 4/18/2018 9:09 am

Richland, WA US

Delivered

Signed for by: B.DANIELS

EARTH CITY, MO US

Travel History

Date/Time	Activity	Location
4/18/2018 - Wednesday		
9:09 am	Delivered	EARTH CITY, MO
7:26 am	On FedEx vehicle for delivery	EARTH CITY, MO
7:21 am	At local FedEx facility	EARTH CITY, MO
5:20 am	At destination sort facility	BERKELEY, MO
4:33 am	Departed FedEx location	MEMPHIS, TN
12:25 am	Arrived at FedEx location	MEMPHIS, TN
4/17/2018 - Tuesday		
4:34 pm	Left FedEx origin facility	PASCO, WA
1:06 pm	Shipment information sent to FedEx	
11:17 am	Picked up	PASCO, WA

Shipment Facts

Tracking Number	772019218460	Service	FedEx Priority Overnight
Weight	53 lbs / 24.04 kgs	Signature services	Direct signature required
Delivered To	Shipping/Receiving	Total pieces	1
Total shipment weight	53 lbs / 24.04 kgs	Terms	Third Party
Shipper reference	ptr# 9312/cooler# gws-602	Packaging	Your Packaging
Special handling section	Deliver Weekday, Direct Signature Required	Standard transit	4/18/2018 by 10:30 am

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Definitions/Glossary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F18-025

TestAmerica Job ID: 160-27864-1
SDG: SL2844

Qualifiers

Rad

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

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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)

Method Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F18-025

TestAmerica Job ID: 160-27864-1
SDG: SL2844

Method	Method Description	Protocol	Laboratory
GA-01-R	Cesium-137 & Other Gamma Emitters (GS)	DOE	TAL SL
SR-03-RC	Total Beta Strontium (GFPC)	DOE	TAL SL
DPS-0	Preparation, Digestion/ Precipitate	None	TAL SL
Dry and Grind	Preparation, Dry and Grind	None	TAL SL
Fill_Geo-0	Fill Geometry, No In-Growth	None	TAL SL

Protocol References:

DOE = U.S. Department of Energy
None = None

Laboratory References:

TAL SL = TestAmerica St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Sample Summary

Client: CH2M Hill Plateau Remediation Company
Project/Site: F18-025

TestAmerica Job ID: 160-27864-1
SDG: SL2844

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-27864-1	B3J6B0	Soil	04/16/18 14:45	04/18/18 09:15
160-27864-2	B3J690	Soil	04/12/18 10:15	04/18/18 09:15
160-27864-3	B3J694	Soil	04/12/18 15:00	04/18/18 09:15
160-27864-4	B3J697	Soil	04/16/18 10:13	04/18/18 09:15
160-27864-5	B3J6B3	Soil	04/17/18 09:16	04/18/18 09:15
160-27864-6	B3J6B6	Soil	04/17/18 06:38	04/18/18 09:15



Client Sample Results

Client: CH2M Hill Plateau Remediation Company
 Project/Site: F18-025

TestAmerica Job ID: 160-27864-1
 SDG: SL2844

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS)

Client Sample ID: B3J6B0
Date Collected: 04/16/18 14:45
Date Received: 04/18/18 09:15

Lab Sample ID: 160-27864-1
Matrix: Soil

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	0.0143	U	0.0272	0.0272	0.100	0.0457	pCi/g	04/19/18 18:56	04/19/18 20:16	1
Cobalt-60	0.0176	U	0.0322	0.0322		0.0350	pCi/g	04/19/18 18:56	04/19/18 20:16	1
Europium-152	0.0722	U	0.153	0.153		0.222	pCi/g	04/19/18 18:56	04/19/18 20:16	1
Europium-154	0.0280	U	0.0349	0.0350		0.339	pCi/g	04/19/18 18:56	04/19/18 20:16	1
Europium-155	0.000	U	0.0633	0.0633		0.260	pCi/g	04/19/18 18:56	04/19/18 20:16	1

Client Sample ID: B3J690
Date Collected: 04/12/18 10:15
Date Received: 04/18/18 09:15

Lab Sample ID: 160-27864-2
Matrix: Soil

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-0.028	U	0.0494	0.0495	0.100	0.0827	pCi/g	04/19/18 18:56	04/19/18 20:17	1
Cobalt-60	0.00164	U	0.0597	0.0597		0.0683	pCi/g	04/19/18 18:56	04/19/18 20:17	1
Europium-152	0.111	U	0.218	0.218		0.297	pCi/g	04/19/18 18:56	04/19/18 20:17	1
Europium-154	0.159	U	0.268	0.268		0.672	pCi/g	04/19/18 18:56	04/19/18 20:17	1
Europium-155	-0.00028	U	0.105	0.105		0.232	pCi/g	04/19/18 18:56	04/19/18 20:17	1

Client Sample ID: B3J694
Date Collected: 04/12/18 15:00
Date Received: 04/18/18 09:15

Lab Sample ID: 160-27864-3
Matrix: Soil

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-0.028	U	0.0432	0.0433	0.100	0.0718	pCi/g	04/19/18 18:56	04/19/18 23:00	1
Cobalt-60	0.00541	U	0.00762	0.00764		0.0552	pCi/g	04/19/18 18:56	04/19/18 23:00	1
Europium-152	0.101	U	0.0686	0.0694		0.208	pCi/g	04/19/18 18:56	04/19/18 23:00	1
Europium-154	0.0536	U	0.0838	0.0839		0.337	pCi/g	04/19/18 18:56	04/19/18 23:00	1
Europium-155	0.0226	U	0.0788	0.0788		0.309	pCi/g	04/19/18 18:56	04/19/18 23:00	1

Client Sample ID: B3J697
Date Collected: 04/16/18 10:13
Date Received: 04/18/18 09:15

Lab Sample ID: 160-27864-4
Matrix: Soil

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	0.000	U	0.0227	0.0227	0.100	0.0572	pCi/g	04/19/18 18:56	04/19/18 20:19	1
Cobalt-60	-0.033	U	0.0678	0.0679		0.0647	pCi/g	04/19/18 18:56	04/19/18 20:19	1
Europium-152	-0.0022	U	0.00398	0.00399		0.324	pCi/g	04/19/18 18:56	04/19/18 20:19	1
Europium-154	0.140	U	0.137	0.138		0.362	pCi/g	04/19/18 18:56	04/19/18 20:19	1
Europium-155	-0.067	U	0.0920	0.0923		0.469	pCi/g	04/19/18 18:56	04/19/18 20:19	1

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: F18-025

TestAmerica Job ID: 160-27864-1
SDG: SL2844

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS)

Client Sample ID: B3J6B3
Date Collected: 04/17/18 09:16
Date Received: 04/18/18 09:15

Lab Sample ID: 160-27864-5
Matrix: Soil

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	-0.013	U	0.0696	0.0696	0.100	0.0929	pCi/g	04/19/18 18:56	04/19/18 20:20	1
Cobalt-60	0.0127	U	0.0410	0.0410		0.0567	pCi/g	04/19/18 18:56	04/19/18 20:20	1
Europium-152	0.0721	U	0.137	0.137		0.272	pCi/g	04/19/18 18:56	04/19/18 20:20	1
Europium-154	0.00953	U	0.0239	0.0239		0.721	pCi/g	04/19/18 18:56	04/19/18 20:20	1
Europium-155	-0.0018	U	0.0900	0.0900		0.268	pCi/g	04/19/18 18:56	04/19/18 20:20	1

Client Sample ID: B3J6B6
Date Collected: 04/17/18 06:38
Date Received: 04/18/18 09:15

Lab Sample ID: 160-27864-6
Matrix: Soil

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	0.0201	U	0.0385	0.0386	0.100	0.0652	pCi/g	04/19/18 18:56	04/19/18 20:21	1
Cobalt-60	0.0236		0.0157	0.0159		0.0193	pCi/g	04/19/18 18:56	04/19/18 20:21	1
Europium-152	0.0384	U	0.0437	0.0439		0.225	pCi/g	04/19/18 18:56	04/19/18 20:21	1
Europium-154	-0.23	U	0.324	0.325		0.538	pCi/g	04/19/18 18:56	04/19/18 20:21	1
Europium-155	0.0173	U	0.0555	0.0555		0.178	pCi/g	04/19/18 18:56	04/19/18 20:21	1

Method: SR-03-RC - Total Beta Strontium (GFPC)

Client Sample ID: B3J6B0
Date Collected: 04/16/18 14:45
Date Received: 04/18/18 09:15

Lab Sample ID: 160-27864-1
Matrix: Soil

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Beta Strontium	0.0420	U	0.0792	0.0792	2.00	0.135	pCi/g	04/24/18 18:20	04/30/18 09:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	90.0		40 - 110					04/24/18 18:20	04/30/18 09:51	1

Client Sample ID: B3J690
Date Collected: 04/12/18 10:15
Date Received: 04/18/18 09:15

Lab Sample ID: 160-27864-2
Matrix: Soil

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Beta Strontium	0.160		0.0919	0.0926	2.00	0.139	pCi/g	04/24/18 18:20	04/30/18 09:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Sr Carrier	91.4		40 - 110					04/24/18 18:20	04/30/18 09:51	1

Client Sample ID: B3J694
Date Collected: 04/12/18 15:00
Date Received: 04/18/18 09:15

Lab Sample ID: 160-27864-3
Matrix: Soil

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Beta Strontium	-0.011	U	0.0755	0.0755	2.00	0.137	pCi/g	04/24/18 18:20	04/30/18 09:51	1

TestAmerica St. Louis

Client Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: F18-025

TestAmerica Job ID: 160-27864-1
SDG: SL2844

Method: SR-03-RC - Total Beta Strontium (GFPC) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	88.2		40 - 110	04/24/18 18:20	04/30/18 09:51	1

Client Sample ID: B3J697
Date Collected: 04/16/18 10:13
Date Received: 04/18/18 09:15

Lab Sample ID: 160-27864-4
Matrix: Soil

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Beta Strontium	0.0668	U	0.0900	0.0902	2.00	0.150	pCi/g	04/24/18 18:20	04/30/18 09:51	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	89.6		40 - 110	04/24/18 18:20	04/30/18 09:51	1

Client Sample ID: B3J6B3
Date Collected: 04/17/18 09:16
Date Received: 04/18/18 09:15

Lab Sample ID: 160-27864-5
Matrix: Soil

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Beta Strontium	-0.052	U	0.0774	0.0775	2.00	0.147	pCi/g	04/24/18 18:20	04/30/18 09:52	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	86.4		40 - 110	04/24/18 18:20	04/30/18 09:52	1

Client Sample ID: B3J6B6
Date Collected: 04/17/18 06:38
Date Received: 04/18/18 09:15

Lab Sample ID: 160-27864-6
Matrix: Soil

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Total Beta Strontium	0.0321	U	0.0761	0.0761	2.00	0.131	pCi/g	04/24/18 18:20	04/30/18 09:52	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	87.5		40 - 110	04/24/18 18:20	04/30/18 09:52	1

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
Project/Site: F18-025

TestAmerica Job ID: 160-27864-1
SDG: SL2844

Method: GA-01-R - Cesium-137 & Other Gamma Emitters (GS)

Lab Sample ID: MB 160-361905/1-A
Matrix: Solid
Analysis Batch: 361686

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 361905

Analyte	MB MB		Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier								
Cesium-137	0.00639	U	0.0302	0.0302	0.100	0.0368	pCi/g	04/19/18 18:56	04/19/18 20:13	1
Cobalt-60	-0.0227	U	0.0544	0.0544		0.0584	pCi/g	04/19/18 18:56	04/19/18 20:13	1
Europium-152	0.0482	U	0.0661	0.0663		0.240	pCi/g	04/19/18 18:56	04/19/18 20:13	1
Europium-154	-0.220	U	0.306	0.307		0.508	pCi/g	04/19/18 18:56	04/19/18 20:13	1
Europium-155	0.000	U	0.0292	0.0292		0.196	pCi/g	04/19/18 18:56	04/19/18 20:13	1

Lab Sample ID: LCS 160-361905/2-A
Matrix: Solid
Analysis Batch: 361693

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 361905

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits
Cesium-137	28.4	28.21		2.98	0.100	0.187	pCi/g	99	80 - 120
Cobalt-60	13.4	13.07		1.35		0.101	pCi/g	97	80 - 120

Lab Sample ID: 160-27864-1 DU
Matrix: Soil
Analysis Batch: 361686

Client Sample ID: B3J6B0
Prep Type: Total/NA
Prep Batch: 361905

Analyte	Sample Sample		DU DU		Total Uncert. (2σ+/-)	RL	MDC	Unit	RPD	RPD Limit
	Result	Qual	Result	Qual						
Cesium-137	0.0143	U	-0.0241	U y	0.0376	0.100	0.0624	pCi/g	785	30
Cobalt-60	0.0176	U	0.0292	y	0.0271		0.0273	pCi/g	50	30
Europium-152	0.0722	U	0.0233	U y	0.0417		0.240	pCi/g	102	30
Europium-154	0.0280	U	0.130	U y	0.146		0.284	pCi/g	129	30
Europium-155	0.000	U	0.0331	U y	0.119		0.198	pCi/g	200	30

Method: SR-03-RC - Total Beta Strontium (GFPC)

Lab Sample ID: MB 160-362500/9-A
Matrix: Solid
Analysis Batch: 363266

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 362500

Analyte	MB MB		Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier								
Total Beta Strontium	0.0623	U	0.0710	0.0712	2.00	0.117	pCi/g	04/24/18 18:20	04/30/18 09:52	1
Carrier	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Sr Carrier	91.3		40 - 110		04/24/18 18:20	04/30/18 09:52	1			

QC Sample Results

Client: CH2M Hill Plateau Remediation Company
 Project/Site: F18-025

TestAmerica Job ID: 160-27864-1
 SDG: SL2844

Method: SR-03-RC - Total Beta Strontium (GFPC) (Continued)

Lab Sample ID: LCS 160-362500/1-A
 Matrix: Solid
 Analysis Batch: 363266

Client Sample ID: Lab Control Sample
 Prep Type: Total/NA
 Prep Batch: 362500

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	
Total Beta Strontium	8.26	7.126		0.597	2.00	0.126	pCi/g	86	80 - 120	
Carrier	%Yield	LCS Qualifier	LCS Limits							
Sr Carrier	94.5		40 - 110							

Lab Sample ID: 160-27864-1 DU
 Matrix: Soil
 Analysis Batch: 363266

Client Sample ID: B3J6B0
 Prep Type: Total/NA
 Prep Batch: 362500

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	RPD	RPD Limit
Total Beta Strontium	0.0420	U	-0.0103	U y	0.0688	2.00	0.126	pCi/g	330	30
Carrier	%Yield	DU Qualifier	DU Limits							
Sr Carrier	90.5		40 - 110							

QC Association Summary

Client: CH2M Hill Plateau Remediation Company
 Project/Site: F18-025

TestAmerica Job ID: 160-27864-1
 SDG: SL2844

Rad

Leach Batch: 361674

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-27864-1	B3J6B0	Total/NA	Soil	Dry and Grind	
160-27864-2	B3J690	Total/NA	Soil	Dry and Grind	
160-27864-3	B3J694	Total/NA	Soil	Dry and Grind	
160-27864-4	B3J697	Total/NA	Soil	Dry and Grind	
160-27864-5	B3J6B3	Total/NA	Soil	Dry and Grind	
160-27864-6	B3J6B6	Total/NA	Soil	Dry and Grind	
160-27864-1 DU	B3J6B0	Total/NA	Soil	Dry and Grind	

Prep Batch: 361905

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-27864-1	B3J6B0	Total/NA	Soil	Fill_Geo-0	361674
160-27864-2	B3J690	Total/NA	Soil	Fill_Geo-0	361674
160-27864-3	B3J694	Total/NA	Soil	Fill_Geo-0	361674
160-27864-4	B3J697	Total/NA	Soil	Fill_Geo-0	361674
160-27864-5	B3J6B3	Total/NA	Soil	Fill_Geo-0	361674
160-27864-6	B3J6B6	Total/NA	Soil	Fill_Geo-0	361674
MB 160-361905/1-A	Method Blank	Total/NA	Solid	Fill_Geo-0	
LCS 160-361905/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-0	
160-27864-1 DU	B3J6B0	Total/NA	Soil	Fill_Geo-0	361674

Prep Batch: 362500

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-27864-1	B3J6B0	Total/NA	Soil	DPS-0	361674
160-27864-2	B3J690	Total/NA	Soil	DPS-0	361674
160-27864-3	B3J694	Total/NA	Soil	DPS-0	361674
160-27864-4	B3J697	Total/NA	Soil	DPS-0	361674
160-27864-5	B3J6B3	Total/NA	Soil	DPS-0	361674
160-27864-6	B3J6B6	Total/NA	Soil	DPS-0	361674
MB 160-362500/9-A	Method Blank	Total/NA	Solid	DPS-0	
LCS 160-362500/1-A	Lab Control Sample	Total/NA	Solid	DPS-0	
160-27864-1 DU	B3J6B0	Total/NA	Soil	DPS-0	361674

Tracer/Carrier Summary

Client: CH2M Hill Plateau Remediation Company
 Project/Site: F18-025

TestAmerica Job ID: 160-27864-1
 SDG: SL2844

Method: SR-03-RC - Total Beta Strontium (GFPC)

Matrix: Soil

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr Carrier (40-110)
160-27864-1	B3J6B0	90.0
160-27864-1 DU	B3J6B0	90.5
160-27864-2	B3J690	91.4
160-27864-3	B3J694	88.2
160-27864-4	B3J697	89.6
160-27864-5	B3J6B3	86.4
160-27864-6	B3J6B6	87.5

Tracer/Carrier Legend

Sr Carrier = Sr Carrier

Method: SR-03-RC - Total Beta Strontium (GFPC)

Matrix: Solid

Prep Type: Total/NA

Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Sr Carrier (40-110)
LCS 160-362500/1-A	Lab Control Sample	94.5
MB 160-362500/9-A	Method Blank	91.3

Tracer/Carrier Legend

Sr Carrier = Sr Carrier