



November 21, 2017

Mr. Scot Fitzgerald
CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352

Re: CHPRC SAF F17-009
Work Order: 437167
SDG: GEL437167

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on November 07, 2017. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4505.

Sincerely,

Heather Shaffer
Project Manager

Purchase Order: 302632 - 8H

Chain of Custody: F17-009-866, F17-009-867, F17-009-868, F17-009-870, F17-009-871, F17-009-872,
F17-009-883, F17-009-884, F17-009-885, F17-009-889, F17-009-890, F17-009-891, F17-009-896,
F17-009-897, F17-009-898, F17-009-906, F17-009-911 and F17-009-915

Enclosures



SAMPLE ISSUE RESOLUTION (SIR) REPORT		SIR Number: SIR18-0201 Rev. Number: 0 Date Initiated: 11/29/2017
<u>SAMPLE EVENT INFORMATION</u>		
SAF NUM(S):	F17-009	
LABORATORY:	GEL	
<u>SAMPLING INFORMATION</u>		
NUMBER OF SAMPLES:	18	
SAMPLE NUMBERS:	B3FCK0, B3FCK1, B3FCK2, B3FCK4, B3FCK5, B3FCK6, B3FCL7, B3FCL8, B3FCL9, B3FCM3, B3FCM4, B3FCM5, B3FCN0, B3FCN1, B3FCN2, B3FLR5, B3FLR9, B3FLT3	
SAMPLE MATRIX:	SOIL	
SDG NUM(S):	GEL437167	
<u>ISSUE BACKGROUND</u>		
CLASS:	Laboratory Issue	
TYPE:	Chain of Custody Issue	
DESCRIPTION:	COC's in data package GEL437167 do not account for the time the sample was taken to the time on the first relinquished by line.	
<u>RESOLUTION</u>		
PROPOSED RESOLUTION:	DOCUMENT AND CLOSE	
FINAL RESOLUTION:	DOCUMENT AND CLOSE	
SUBMITTED BY:		
CALIXTO, SE	_____	11/27/2017 _____
ACCEPTED BY:		
KILLAND, KE	_____	11/29/2017 _____

Table of Contents

Case Narrative.....	1
Chain of Custody and Supporting Documentation.....	9
Data Review Qualifier Definitions.....	29
Laboratory Certifications.....	31
General Chem Analysis.....	33
Case Narrative.....	34
Sample Data Summary.....	40
Quality Control Summary.....	54
Radiological Analysis.....	59
Case Narrative.....	60
Sample Data Summary.....	75
Quality Control Summary.....	177

Case Narrative

**General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F17-009
SDG: GEL437167**

November 21, 2017

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary

Sample receipt

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on November 07, 2017, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Items of Note All efforts were made by the lab to meet any short hold times. Samples that were analyzed outside of the initial hold time but still within 2X hold time will be noted in the lab case narrative.

Sample Identification

The laboratory received the following samples:

<u>Laboratory Identification</u>	<u>Sample Description</u>
437167001	B3FCK0
437167002	B3FCK1
437167003	B3FCK2
437167004	B3FCK4
437167005	B3FCK5
437167006	B3FCK6
437167007	B3FCL7
437167008	B3FCL8
437167009	B3FCL9
437167010	B3FCM3
437167011	B3FCM4
437167012	B3FCM5
437167013	B3FCN0
437167014	B3FCN1
437167015	B3FCN2
437167016	B3FLR5
437167017	B3FLR9
437167018	B3FLT3

Case Narrative

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

Data Package

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: General Chemistry and Radiochemistry.

We certify that this 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 signatures on this report.



Heather Shaffer
Project Manager

Technical Case Narrative
CH2M Hill Plateau Remediation Company (CPRC)
SDG #: GEL437167
Work Order #: 437167

General Chemistry

Ion Chromatography

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Sample Dilutions

The following sample 437167015 (B3FCN2) was diluted because target analyte concentrations exceeded the calibration range.

	437167
Analyte	015
Fluoride	2X

Miscellaneous Information

Manual Integrations

Samples 1203918655 (B3FLT3DUP), 437167003 (B3FCK2), 437167006 (B3FCK6), 437167009 (B3FCL9), 437167012 (B3FCM5), 437167015 (B3FCN2), 437167016 (B3FLR5), 437167017 (B3FLR9) and 437167018 (B3FLT3) were manually integrated to correctly position the baseline as set in the calibration standards.

Hexavalent Chromium

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

Matrix Spike (MS)/Post Spike (PS) Recovery Statement

The matrix spike recovered outside of the established acceptance limits due to matrix interference and/or non-homogeneity.

Analyte	Sample	Value
Hexavalent Chromium	1203914415 (B3FCK1MS)	31.3* (75.0%-125.0%)

Radiochemistry

AMCMISO_EIE_PRECIP_AEA: COMMON

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts

Sample 1203914439 (MB) was recounted due to a peak shift. The recount is reported.

NP237_IE_PRECIP_AEA: COMMON

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

PUISO_PRECIP_AEA:COMMON

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts

Sample 437167001 (B3FCK0) was recounted due to a peak shift. The recount is reported.

Miscellaneous Information

Additional Comments

Sample 437167010 (B3FCM3) did not meet the resolution requirement of having a full width half maximum of 100 keV or less for the tracer; however, the tracer yield requirement was met and the tracer peak is within the tracer region of interest.

UIISO_IE_PRECIP_AEA:COMMON

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where

applicable, with the following exceptions.

Technical Information

Recounts

Sample 437167001 (B3FCK0) was recounted due to a peak shift. The recount is reported.

AMCMISO_EIE_PRECIP_AEA: COMMON

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

NP237_IE_PRECIP_AEA: COMMON

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

PUISO_PRECIP_AEA:COMMON

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

UIISO_IE_PRECIP_AEA:COMMON

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Dry Weight

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Dry Weight

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Dry Weight

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

I129_SEP_LEPS_GS

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

GAMMA_GS:COMMON

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts

Sample 1203914219 (LCS) was recounted due to high recovery. The recount is reported.

I129_SEP_LEPS_GS

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

SRTOT_SEP_PRECIP_GPC: COMMON

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts

Samples 437167001 (B3FCK0) and 437167013 (B3FCN0) were recounted due to results more negative than the three sigma TPU. The second counts are reported. Sample 437167010 (B3FCM3) was recounted due to a suspected false positive. The recount is reported.

TC99_SEP_GPC

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

NI63_LSC

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

TRITIUM_DIST_LSC: COMMON

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Miscellaneous Information**Additional Comments**

The matrix spike, 1203915037 (B3FCK0MS), aliquot was reduced to conserve sample volume.

C14_LSC: COMMON

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Miscellaneous Information**Additional Comments**

The matrix spike, 1203915058 (B3FCK0MS), aliquot was reduced to conserve sample volume.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

Chain of Custody and Supporting Documentation

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 437167		F17-009-866	PAGE 1 OF 1
COLLECTOR A. Dansie	COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL	REQUIRED TAT 30 Days 15 Days JR 11/17	
SAMPLING LOCATION C9555, Core 7, B3BK15	PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20		SAF NO. F17-009	ORIGINAL	
ICE CHEST NO. NA	FIELD LOGBOOK NO. CIBAL-463	ACTUAL SAMPLE DEPTH 60.2 - 62.0 ft	PURCHASE ORDER/CHARGE CODE 302632	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO GEL Laboratories, LLC	OFFSITE PROPERTY NO. NA		BILL OF LADING/AIR BILL NO. NA		

MATRIX*	PRESERVATION	None
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.	
	HOLDING TIME	6 Months
	TYPE OF CONTAINER	G/P
	NO. OF CONTAINER(S)	1
	VOLUME	500ml
	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
SPECIAL HANDLING AND/OR STORAGE N/A		
SAMPLE NO.	FILTERED	MATRIX*
B3FCK0	N/A	SOIL
	SAMPLE DATE	SAMPLE TIME
	11/02/17	09:00
		X

CHAIN OF POSSESSION RELINQUISHED BY/REMOVED FROM Andie Dansie (on airmail)	DATE/TIME 11/06/17 14:45	SIGN/ PRINT NAMES RECEIVED BY/STORED IN Zac Washburn	DATE/TIME 11/17/17 8:55
SPECIAL INSTRUCTIONS TRVL-17-242 (1) GAMMA_GS: COMMON; AMCMISO_IE_PRECIP_AEA: COMMON; PUISO_IE_PRECIP_AEA: COMMON; UIISO_IE_PRECIP_AEA: COMMON; C14_LSC: COMMON; I129_SEP_LEPS_GS: COMMON; NI63_LSC: COMMON; NP237_IE_PRECIP_AEA: COMMON; SRTOT_SEP_PRECIP_GPC: COMMON {Total beta radioisotritium}; TC99_EIE_LSC: COMMON; TRITIUM_DIST_LSC: COMMON;			
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
PRINTED ON 9/28/2017	FSR ID = FSR51844	TRVL NUM = TRVL-17-242	A-6003-618 (REV 3)

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F17-009-868	PAGE 1 OF 1
COLLECTOR A. Dansie	COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL	REQUIRED TAT -30-Days 15 Days AD 11/01/17	
SAMPLING LOCATION C9555, Core 7, B3BK5	PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20		SAF NO. F17-009	ORIGINAL	
ICE CHEST NO. NA	FIELD LOGBOOK NO. UBAL-463	ACTUAL SAMPLE DEPTH 60.2 - 62.0 ft	PURCHASE ORDER/CHARGE CODE 302632	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO GEL Laboratories, LLC	OFFSITE PROPERTY NO. NA		BILL OF LADING/AIR BILL NO. NA		

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	HOLDING TIME	TYPE OF CONTAINER	NO. OF CONTAINER(S)	VOLUME	SAMPLE ANALYSIS	SAMPLE DATE	SAMPLE TIME	DATE/TIME
A=Air DL=Drum L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	*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.	Cool <=6C	28 Days/48 Hours	G/P	1	60mL	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	11/02/17	09:00	X
	SPECIAL HANDLING AND/OR STORAGE N/A									

CHAIN OF POSSESSION RELINQUISHED BY/REMOVED FROM Andie Dansie Cinda Dano 11/06/17 14:45	SIGN/ PRINT NAMES RECEIVED BY/STORED IN FedEx Z Rene Weisbaum 11/7/17 8:55	DATE/TIME
SPECIAL INSTRUCTIONS TRVL-17-242 (1) 9056_ANIONS_IC: COMMON; 9056_ANIONS_IC: COMMON (Add-on) {Bromide, Phosphorus in phosphate};		
FINAL SAMPLE DISPOSITION PRINTED ON 9/28/2017	DISPOSAL METHOD	DATE/TIME
FRS ID = FSR51844		TRVL NUM = TRVL-17-242
A-6003-618 (REV 3)		

CH2MHill Plateau Remediation Company
CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST **437167** **PAGE 1 OF 1**
COLLECTOR **A. Dansie** **COMPANY CONTACT** **FITZGERALD, SL** **TELEPHONE NO.** **373-7495** **PROJECT COORDINATOR** **FITZGERALD, SL** **REQUIRED TAT** **15 Days**
SAMPLING LOCATION **C9555, Core 7, B3BK55 DUP** **PROJECT DESIGNATION** **200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20** **SAF NO.** **F17-009** **ORIGINAL** **NO 11/01/17**
ICE CHEST NO. **NA** **FIELD LOGBOOK NO.** **CBAL-463** **ACTUAL SAMPLE DEPTH** **60.2 - 62.0 ft** **PURCHASE ORDER/CHARGE CODE** **302632** **METHOD OF SHIPMENT** **FEDERAL EXPRESS**
SHIPPED TO **GEL Laboratories, LLC** **OFFSITE PROPERTY NO.** **NA** **BILL OF LADING/AIR BILL NO.** **NA**

MATRIX*	PREPARATION	PRESERVATION	None
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.	HOLDING TIME 6 Months	
	TYPE OF CONTAINER G/P		
	NO. OF CONTAINER(S) 1		
	VOLUME 500ml		
	SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS		
SPECIAL HANDLING AND/OR STORAGE N/A			
SAMPLE NO. B3FCK4	FILTERED N/A	MATRIX* SOIL	SAMPLE DATE 11/02/17
			SAMPLE TIME 09:00
			X

CHAIN OF POSSESSION **RELINQUISHED BY/REMOVED FROM** **Andie Dansie** **DATE/TIME** **11/02/17 14:45** **SIGN/ PRINT NAMES** **RECEIVED BY/STORED IN** **FedEx** **DATE/TIME**
CHAIN OF POSSESSION **RELINQUISHED BY/REMOVED FROM** **FedEx** **DATE/TIME** **11/17/17 8:55** **SPECIAL INSTRUCTIONS**
TRVL-17-242
 (1) GAMMA_GS: COMMON; AMCMISO_IE_PRECIP_AEA: COMMON; PUISO_IE_PRECIP_AEA: COMMON; UIISO_IE_PRECIP_AEA: COMMON; C14_LSC: COMMON; I129_SEP_LEPS_GS: COMMON; NI63_LSC: COMMON; NP237_IE_PRECIP_AEA: COMMON; SRTOT_SEP_PRECIP_GPC: COMMON {Total beta radiostrontium}; TC99_EIE_LSC: COMMON; TRITIUM_DIST_LSC: COMMON;

FINAL SAMPLE DISPOSITION **DISPOSAL METHOD** **DATE/TIME**
PRINTED ON **9/28/2017** **FSR ID = FSR51845** **TRVL NUM = TRVL-17-242** **A-6003-618 (REV 3)**

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST **437167** **F17-009-871** **PAGE 1 OF 1**

COLLECTOR A. Dansie **COMPANY CONTACT** FITZGERALD, SL **TELEPHONE NO.** 373-7495 **PROJECT COORDINATOR** FITZGERALD, SL **REQUIRED TAT** 30 Days - 15 Days

SAMPLING LOCATION C9555, Core 7, B38KYS DUP **PROJECT DESIGNATION** 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20 **SAF NO.** F17-009 **ORIGINAL** **METHOD OF SHIPMENT** FEDERAL EXPRESS

ICE CHEST NO. NA **FIELD LOGBOOK NO.** CBAL-463 **ACTUAL SAMPLE DEPTH** 60.2 - 62.0 ft **PURCHASE ORDER/CHARGE CODE** 302632 **BILL OF LADING/AIR BILL NO.** NA

SHIPPED TO GEL Laboratories, LLC **OFFSITE PROPERTY NO.** NA

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION
A=Air DL=Drum L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	*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.	Cool <=6C
		30 Days
		G/P
		1
		60mL
		7196 CR6; COMMON;
SPECIAL HANDLING AND/OR STORAGE		
N/A		

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME
B3FCK5	N/A	SOIL	11/02/17	09:00

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM: Andrie Dansie Angelo **DATE/TIME** 11/02/17 14:45

RECEIVED BY/STORED IN: [Signature] **DATE/TIME** 11/17/17 8:55

SIGN/ PRINT NAMES FedEx

SPECIAL INSTRUCTIONS TRVL-17-242

DISPOSED BY

DISPOSAL METHOD

DATE/TIME

FRS ID = FSR51845 **TRVL NUM = TRVL-17-242** **A-6003-618 (REV 3)**

PRINTED ON 9/28/2017

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F17-009-872	PAGE 1 OF 1
COLLECTOR <i>A. Dansie</i>	COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL	REQUIRED TAT 30 Days <i>15 Days</i>	
SAMPLING LOCATION C9555, Core 7, B3BK5 DUP	PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20	FIELD LOGBOOK NO. <i>CBAL-463</i>	SAF NO. F17-009	METHOD OF SHIPMENT ORIGINAL	
ICE CHEST NO. <i>NA</i>	ACTUAL SAMPLE DEPTH <i>60.2-62.0 ft</i>	OFFSITE PROPERTY NO. <i>NA</i>	PURCHASE ORDER/CHARGE CODE 302632	FEDERAL EXPRESS	
SHIPPED TO GEL Laboratories, LLC	BILL OF LADING/AIR BILL NO. <i>NA</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.	COOL <=6C
	PRESERVATION	28 Days/48 Hours
	HOLDING TIME	G/P
	TYPE OF CONTAINER	1
	NO. OF CONTAINER(S)	60mL
	VOLUME	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
SPECIAL HANDLING AND/OR STORAGE N/A	SAMPLE ANALYSIS	
SAMPLE NO.	FILTERED	MATRIX*
B3FCK6	N/A	SOIL
	SAMPLE DATE	SAMPLE TIME
	<i>11/02/17</i>	<i>09:00</i>
		<i>X</i>

CHAIN OF POSSESSION RELINQUISHED BY/REMOVED FROM <i>Andie Dansie On 11/17/17 14:45</i>	SIGN/ PRINT NAMES RECEIVED BY/STORED IN <i>FedEx</i>	DATE/TIME
<i>FedEx</i>	<i>Zac Worsham</i>	<i>11/17/17 8:55</i>
FINAL SAMPLE DISPOSITION PRINTED ON 9/28/2017	DISPOSAL METHOD FSR ID = FSR51845	DATE/TIME TRVL NUM = TRVL-17-242
		A-6003-618 (REV 3)

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F17-009-884	PAGE 1 OF 1
COLLECTOR A. Dansie	COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL	REQUIRED TAT 30 Days 15 Days	
SAMPLING LOCATION C9555, Cores 17 & 18, B38L27 & B38L29	PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20	FIELD LOGBOOK NO. UBAL-4103	SAF NO. F17-009	ORIGINAL	
ICE CHEST NO. NA	ACTUAL SAMPLE DEPTH 110.4 - 111.2A	PURCHASE ORDER/CHARGE CODE 302632	METHOD OF SHIPMENT FEDERAL EXPRESS		
SHIPPED TO GEL Laboratories, LLC	OFFSITE PROPERTY NO. NA	BILL OF LADING/AIR BILL NO. NA			
MATRIX* A=Air DL=Drum 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 Cool <=6C	HOLDING TIME 30 Days	TYPE OF CONTAINER G/P	NO. OF CONTAINER(S) 1
SPECIAL HANDLING AND/ OR STORAGE N/A	VOLUME 60mL	SAMPLE ANALYSIS 7196, CR6; COMMON;			
SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3FCL8	N/A	SOIL	11/02/17	11:30	X

CHAIN OF POSSESSION		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM Andie Dansie	DATE/TIME 11/02/17	RECEIVED BY/STORED IN FedEx	TRVL-17-242
FedEx	14:45	Z. ZaeWosku	11/7/17 8:53
FINAL SAMPLE DISPOSITION		DISPOSAL METHOD	
PRINTED ON 9/28/2017		DATE/TIME	
FSR ID = FSR51847		TRVL NUM = TRVL-17-242	
A-6003-618 (REV 3)			

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F17-009-885	PAGE 1 OF 1
COLLECTOR	A. Dansie	COMPANY CONTACT	FITZGERALD, SL	PROJECT COORDINATOR	FITZGERALD, SL
SAMPLING LOCATION	C9555, Cores 17 & 18, B3BL27 & B3BL29	PROJECT DESIGNATION	200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20	SAF NO.	F17-009
ICE CHEST NO.	NA	FIELD LOGBOOK NO.	CBAL-403	PURCHASE ORDER/CHARGE CODE	302632
SHIPPED TO	GEL Laboratories, LLC	OFFSITE PROPERTY NO.	NA	BILL OF LADING/AIR BILL NO.	NA
MATRIX*	A=Air DL=Drum L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WF=Wipe X=Other	PRESCRIPTION	Cool <=6C	METHOD OF SHIPMENT	FEDERAL EXPRESS
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.	HOLDING TIME	28 Days/48 Hours	REQUIRED TAT	30-Days 15 Days
SPECIAL HANDLING AND/OR STORAGE	N/A	TYPE OF CONTAINER	G/P	ORIGINAL	OD 11/01/17
		NO. OF CONTAINER(S)	1		
		VOLUME	60mL		
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS		

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME
B3FCL9	N/A	SOIL	11/02/17	11:30
				X

CHAIN OF POSSESSION		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	TRVL-17-242	(1) 9056_ANTONS_IC: COMMON; 9056_ANTONS_IC: COMMON (Add-on) {Bromide, Phosphorus in phosphate};
Andie Dansie Amato	11/02/17 14:45		
3 Fed Ex			
3 Zee Woshan	11/17/17 8:55		
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
PRINTED ON 9/28/2017	FSR ID = FSR51847	TRVL NUM = TRVL-17-242	A-6003-618 (REV 3)

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F17-009-890	PAGE 1 OF 1
COLLECTOR A. Olson	COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL	REQUIRED TAT 30 Days 15 Days	
SAMPLING LOCATION C9555, Core 24, B3BL47	PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20	FIELD LOGBOOK NO. C9555-463	SAF NO. F17-009	ORIGINAL	
ICE CHEST NO. NA	ACTUAL SAMPLE DEPTH 135-136.4 ft	OFFSITE PROPERTY NO. NA	PURCHASE ORDER/CHARGE CODE 302632	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO GEL Laboratories, LLC	BILL OF LADING/AIR BILL NO. NA				

MATRIX*	PRESERVATION	COOL <=6C
A=Air		
DL=Drum		
Liquids		
DS=Drum		
Solids		
L=Liquid	HOLDING TIME	30 Days
O=Oil		
S=Soil	TYPE OF CONTAINER	G/P
SE=Sediment		
T=Tissue	NO. OF CONTAINER(S)	1
V=Vegetation	VOLUME	60mL
W=Water	SAMPLE ANALYSIS	7196 CR6; COMMON;
WI=Wipe		
X=Other		
SPECIAL HANDLING AND/OR STORAGE N/A	SAMPLE DATE	SAMPLE TIME
	11/02/17	14:45
SAMPLE NO.	FILTERED	MATRIX*
B3FCM4	N/A	SOIL

CHAIN OF POSSESSION RELINQUISHED BY/REMOVED FROM Andre Pungo Date/Time 11/06/17 14:45	SIGN/PRINT NAMES RECEIVED BY/STORED IN FedEx Zac Washburn 11/7/17 08:55	DATE/TIME
SPECIAL INSTRUCTIONS TRVL-17-242		
FINAL SAMPLE DISPOSITION PRINTED ON 9/28/2017	DISPOSAL METHOD	DATE/TIME

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F17-009-889	PAGE 1 OF 1
COLLECTOR A. Olsor	COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL	REQUIRED TAT 30-Days 15 Days	
SAMPLING LOCATION C9555, Core 24, B3BL47	PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20	ACTUAL SAMPLE DEPTH 135-136.4 ft	SAF NO. F17-009	ORIGINAL	
ICE CHEST NO. NA	FIELD LOGBOOK NO. UBAL-403	PURCHASE ORDER/CHARGE CODE 302632	METHOD OF SHIPMENT FEDERAL EXPRESS		
SHIPPED TO GEL Laboratories, LLC	OFFSITE PROPERTY NO. NA	BILL OF LADING/AIR BILL NO. NA			

MATRIX* A=Air DL=Drum L=Liquid 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	HOLDING TIME 6 Months	TYPE OF CONTAINER G/P	NO. OF CONTAINER(S) 1	VOLUME 500mL	SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS
SPECIAL HANDLING AND/OR STORAGE N/A							
SAMPLE NO. B3FCM3	FILTERED N/A	MATRIX* SOIL	SAMPLE DATE 11/02/17	SAMPLE TIME 14:45			

CHAIN OF POSSESSION RELINQUISHED BY/REMOVED FROM Andie Darsie Andie	DATE/TIME 11/02/17 14:45	SIGN/PRINT NAMES RECEIVED BY/STORED IN FedEx	DATE/TIME 11/17/17 8:58	SPECIAL INSTRUCTIONS TRVL-17-242 (1) GAMMA_GS: COMMON; AMCMISO_IE_PRECIP_AEA: COMMON; PUIISO_IE_PRECIP_AEA: COMMON; UIISO_IE_PRECIP_AEA: COMMON; C14_LSC: COMMON; I129_SEP_LEPS_GS: COMMON; NI63_LSC: COMMON; NP237_IE_PRECIP_AEA: COMMON; SRTOT_SEP_PRECIP_GPC: COMMON {Total beta radiostrontium}; TC99_EIE_LSC: COMMON; TRITIUM_DIST_LSC: COMMON;
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME	
PRINTED ON 9/28/2017	FSR ID = FSR51843	TRVL NUM = TRVL-17-242		A-6003-618 (REV 3)

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F17-009-896	PAGE 1 OF 1
COLLECTOR A. Olson	COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL	REQUIRED TAT 30 Days 15 Days	
SAMPLING LOCATION C9555, Core 28, B3BLB9	PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20	ACTUAL SAMPLE DEPTH 156.7 - 158.2 ft	SAF NO. F17-009	ORIGINAL	
ICE CHEST NO. NA	FIELD LOGBOOK NO. CBAL-4103	OFFSITE PROPERTY NO. NA	PURCHASE ORDER/CHARGE CODE 302632	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO GEL Laboratories, LLC	BILL OF LADING/AIR BILL NO. NA				

MATRIX*	None	PRESERVATION	None
A=Air			
DL=Drum			
Liquids			
DS=Drum		HOLDING TIME	6 Months
Solids		TYPE OF CONTAINER	G/P
L=Liquid		NO. OF CONTAINER(S)	1
O=Oil		VOLUME	500ml
S=Soil		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
SE=Sediment		SPECIAL HANDLING AND/OR STORAGE	N/A
T=Tissue			
V=Vegetation			
W=Water			
WI=Wipe			
X=Other			

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME
B3FCN0	N/A	SOIL	11/02/17	16:45
				X

CHAIN OF POSSESSION RELINQUISHED BY/REMOVED FROM	SIGN/ PRINT NAMES RECEIVED BY/STORED IN	DATE/TIME	DATE/TIME
<i>Andrew Parris</i>	<i>FedEx</i>	11/02/17 14:45	
<i>FedEx</i>	<i>Joe Winshaw</i>	11/7/17 8:55	

SPECIAL INSTRUCTIONS
 TRVL-17-242
 (1) GAMMA_GS: COMMON; AMCMISO_IE_PRECIP_AEA: COMMON;
 PUIISO_IE_PRECIP_AEA: COMMON; UIISO_IE_PRECIP_AEA: COMMON; C14_LSC:
 COMMON; I129_SEP_LEPS_GS: COMMON; NI63_LSC: COMMON;
 NP237_IE_PRECIP_AEA: COMMON; SRTOT_SEP_PRECIP_GPC: COMMON {Total
 beta radiostrontium}; TC99_EIE_LSC: COMMON; TRITIUM_DIST_LSC:
 COMMON;

FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DATE/TIME
PRINTED ON 9/28/2017	FSR ID = FSR51848	TRVL NUM = TRVL-17-242
		A-6003-618 (REV 3)

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F17-009-897	PAGE 1 OF 1
COLLECTOR A. Olson	COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL	REQUIRED TAT 30 Days 15 Days	
SAMPLING LOCATION C9555, Core 28, B3BLB9	PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20	FIELD LOGBOOK NO. CBAL-463	SAF NO. F17-009	ORIGINAL	
ICE CHEST NO. NA	ACTUAL SAMPLE DEPTH 156.7-158.2	PURCHASE ORDER/CHARGE CODE 302632		METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO GEL Laboratories, LLC	OFFSITE PROPERTY NO. NA	BILL OF LADING/AIR BILL NO. NA			

MATRIX*	PRESERVATION	Cool <=6C
A=Air		
DL=Drum		
Liquids		
DS=Drum	HOLDING TIME	30 Days
Solids	TYPE OF CONTAINER	G/P
L=Liquid	NO. OF CONTAINER(S)	1
O=Oil	VOLUME	60ml
S=Soil	SAMPLE ANALYSIS	7195 CB6: COMMON;
SE=Sediment		
T=Tissue		
V=Vegetation		
W=Water		
WI=Wipe		
X=Other		
SPECIAL HANDLING AND/OR STORAGE N/A	SAMPLE DATE	11/02/17
	SAMPLE TIME	16:45
		X

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	DATE/TIME	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN		TRVL-17-242
Andie Danise Am du Dame	FedEx	11/02/17 14:45	
FedEx	30 - ZeelWersheim	11/2/17 8:55	
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	
PRINTED ON 9/28/2017		DATE/TIME	
		TRVL NUM = TRVL-17-242	
		FSR ID = FSR51848	
		A-6003-618 (REV 3)	

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 437167		F17-009-898	PAGE 1 OF 1
COLLECTOR A. Olson	COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL	REQUIRED TAT 30 Days 15 Days	
SAMPLING LOCATION C9555, Core 28, B3BLB9	PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20		SAF NO. F17-009	ORIGINAL 00 11/01/17	
ICE CHEST NO. NA	FIELD LOGBOOK NO. CB41-463	ACTUAL SAMPLE DEPTH 156.7 - 158.2 ft	PURCHASE ORDER/CHARGE CODE 302632	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO GEL Laboratories, LLC	OFFSITE PROPERTY NO. NA	BILL OF LADING/AIR BILL NO. NA			

MATRIX*	PRESERVATION	Cool <=6C
A=Air		
DL=Drum		
Liquids		
DS=Drum	HOLDING TIME	28 Days/48 Hours
Solids	TYPE OF CONTAINER	G/P
L=Liquid	NO. OF CONTAINER(S)	1
O=Oil	VOLUME	60ml
S=Soil	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
SF=Sediment		
T=Tissue		
V=Vegetation		
W=Water		
WI=Wipe		
X=Other		
SPECIAL HANDLING AND/OR STORAGE N/A	SAMPLE DATE	SAMPLE TIME
	11/02/17	16:45
SAMPLE NO.	FILTERED	MATRIX*
B3FCN2	N/A	SOIL

CHAIN OF POSSESSION RELINQUISHED BY/REMOVED FROM	SIGN/ PRINT NAMES RECEIVED BY/STORED IN	DATE/TIME	DATE/TIME
Andie Daisee Andie Daise	FedEx	11/01/17 14:45	
FedEx	Zyfaanbhosha		11/17/17 8:55
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

SPECIAL INSTRUCTIONS
 TRVL-17-242
 (1) 9056_ANIONS_IC: COMMON; 9056_ANIONS_IC: COMMON (Add-on)
 {Bromide, Phosphorus in phosphate};

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST **4371167** PAGE 1 OF 1

CH2M Hill Plateau Remediation Company

COLLECTOR **A. Danisic** F17-009-906

SAMPLING LOCATION C9555, Core 35, B3BL75 PROJECT COORDINATOR FITZGERALD, SL

ICE CHEST NO. **NA** SAF NO. F17-009

SHIPPED TO GEL Laboratories, LLC OFFSITE PROPERTY NO. **NA** BILL OF LADING/AIR BILL NO. **NA**

COMPANY CONTACT FITZGERALD, SL TELEPHONE NO. 373-7495

PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20

FIELD LOGBOOK NO. **CBAL-463** ACTUAL SAMPLE DEPTH **200.3-262.8 ft**

METHOD OF SHIPMENT **ORIGINAL** FEDERAL EXPRESS

REQUIRED TAT **-30 Days--** **JK 11/17**

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	HOLDING TIME	TYPE OF CONTAINER	NO. OF CONTAINER(S)	VOLUME	SAMPLE ANALYSIS
A=Air DL=Drum L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	*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.	Cool <=6C None	28 Days/48 Hours 6 Months	G/P G/P	1 1	60mL 500mL	SEE ITEM (1) IN SPECIAL INSTRUCTIONS SEE ITEM (2) IN SPECIAL INSTRUCTIONS
SPECIAL HANDLING AND/OR STORAGE							
N/A							
SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B3FLR5	N/A	SOIL	11/03/17	10:00	X	X	X

CHAIN OF POSSESSION RELINQUISHED BY/REMOVED FROM **Andri Danisic** DATE/TIME **11/06/17 11:45**

SIGN/ PRINT NAMES RECEIVED BY/STORED IN **FedEx** DATE/TIME **11/17/17 8:55**

SPECIAL INSTRUCTIONS
 TRVL-18-032
 (1) 9056_ANIONS_IC: COMMON; 9056_ANIONS_IC: COMMON (Add-on) {Bromide, Phosphorus in phosphate};
 (2) GAMMA_GS: COMMON; AMCMISO_IE_PRECIP_AEA: COMMON; PUIISO_IE_PRECIP_AEA: COMMON; UIISO_IE_PRECIP_AEA: COMMON; C14_LSC: COMMON; I129_SEP_LEPS_GS: COMMON; N163_LSC: COMMON; NP237_IE_PRECIP_AEA: COMMON; SRTOT_SEP_PRECIP_GPC: COMMON {Total beta radiostrontium}; TC99_EIE_LSC: COMMON; TRITIUM_DIST_LSC: COMMON;

DISPOSED BY DATE/TIME

FINAL SAMPLE DISPOSITION DISPOSAL METHOD

PRINTED ON 10/18/2017 FSR ID = FSR52373 TRVL NUM = TRVL-18-032 A-6003-618 (REV 3)

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F17-009-911	PAGE 1 OF 1
COLLECTOR A. Danie	COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL	REQUIRED TAT 30 Days JK 11/11/17	
SAMPLING LOCATION C9555, Core 37, B3BL79	PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20		SAF NO. F17-009	ORIGINAL	
ICE CHEST NO. NA	FIELD LOGBOOK NO. CBAL-403	ACTUAL SAMPLE DEPTH	PURCHASE ORDER/CHARGE CODE 302632	METHOD OF SHIPMENT FEDERAL EXPRESS	
SHIPPED TO GEL Laboratories, LLC	OFFSITE PROPERTY NO. NA		BILL OF LADING/AIR BILL NO. NA		
MATRIX* A=Air DL=Drum 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 Cool <=6C Cool <=6C	None		
		HOLDING TIME 30 Days G/P	28 Days/48 Hours G/P	6 Months G/P	
		TYPE OF CONTAINER NO. OF CONTAINER(S)	1 60mL	1 500mL	
		SAMPLE ANALYSIS	7196 CB6; COMMON;	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	
SPECIAL HANDLING AND/OR STORAGE N/A					
SAMPLE NO. B3FLR9	FILTERED N/A	MATRIX* SOIL	SAMPLE DATE 11/03/17	SAMPLE TIME 11:30	X

CHAIN OF POSSESSION RELINQUISHED BY/REMOVED FROM Andie Danie Waste 11/03/17 14:45	DATE/TIME 11/03/17 14:45	SIGN/ PRINT NAMES RECEIVED BY/STORED IN FedEx Zoe Washburn	DATE/TIME 11/03/17 08:55
SPECIAL INSTRUCTIONS TRVL-18-032 (1) 9056_ANIONS_IC: COMMON; 9056_ANIONS_IC: COMMON (Add-on) {Bromide, Phosphorus in phosphate}; (2) GAMMA_GS: COMMON; AMCMISO_IE_PRECIP_AEA: COMMON; PUISO_IE_PRECIP_AEA: COMMON; UIISO_IE_PRECIP_AEA: COMMON; C14_LSC: COMMON; I129_SEP_LEPS_GS: COMMON; NI63_LSC: COMMON; NP237_IE_PRECIP_AEA: COMMON; SRTOT_SEP_PRECIP_GPC: COMMON {Total beta radiostrontium}; TC99_EIE_LSC: COMMON; TRITIUM_DIST_LSC: COMMON;			
FINAL SAMPLE DISPOSITION PRINTED ON 10/18/2017	DISPOSAL METHOD	DISPOSED BY	DATE/TIME
FSR ID = FSR52375		TRVL NUM = TRVL-18-032	
A-6003-618 (REV 3)			

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST **437167** **F17-009-915** **PAGE 1 OF 1**

COLLECTOR *A. Olson* **COMPANY CONTACT** FITZGERALD, SL **TELEPHONE NO.** 373-7495 **PROJECT COORDINATOR** FITZGERALD, SL **REQUIRED TAT** *90 Days*
15 Days

SAMPLING LOCATION C9555, Core 41, B3BL87 **PROJECT DESIGNATION** 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20 **SAF NO.** F17-009 **ORIGINAL** *00 11/01/17*
ICE CHEST NO. *CBAL-403* **FIELD LOGBOOK NO.** *230.2-232.2 ft* **PURCHASE ORDER/CHARGE CODE** 302632 **METHOD OF SHIPMENT** FEDERAL EXPRESS

SHIPPED TO GEL Laboratories, LLC **OFFSITE PROPERTY NO.** *NA* **BILL OF LADING/AIR BILL NO.** *NA*

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	COOL <=6C	COOL <=6C	None
A=Air DL=Drum L=Liquid DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WF=Wipe X=Other	*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.	HOLDING TIME 30 Days G/P	28 Days/48 Hours G/P	6 Months G/P	
SPECIAL HANDLING AND/OR STORAGE N/A		TYPE OF CONTAINER 1 60mL	1 60mL	1 500mL	
NO. OF CONTAINER(S)					
SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS		
SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3FLT3	N/A	SOIL	11/03/17	15:00	X

CHAIN OF POSSESSION **RELINQUISHED BY/REMOVED FROM** *Andie Dansie* **DATE/TIME** *11/06/17 14:45*

SIGN/ PRINT NAMES **RECEIVED BY/STORED IN** *FedEx*

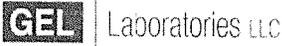
SPECIAL INSTRUCTIONS
 TRVL-18-032
 9056_ANTONS_IC: COMMON; 9056_ANTONS_IC: COMMON (Add-on)
 (2) GAMMA_GS: COMMON; AMCMISO_IE_PRECIP_AEA: COMMON; C14_LSC: COMMON; UIISO_IE_PRECIP_AEA: COMMON; UIISO_IE_PRECIP_AEA: COMMON; NI29_SEP_LEPS_GS: COMMON; NI63_LSC: COMMON; NP237_IE_PRECIP_AEA: COMMON; SRTOT_SEP_PRECIP_GPC: COMMON {Total beta radiostrontium}; TC99_EIE_LSC: COMMON; TRITIUM_DIST_LSC: COMMON;

DATE/TIME *11/17/17 8:55*

DISPOSED BY *Zoe Worsham*

FINAL SAMPLE DISPOSITION **DISPOSAL METHOD**

PRINTED ON 10/18/2017 **FSR ID = FSR52376** **TRVL NUM = TRVL-18-032** **A-6003-618 (REV 3)**



SAMPLE RECEIPT & REVIEW FORM

Client: <u>CPRC</u>			SDG/AR/COC/Work Order: <u>437167</u>		
Received By: <u>ZKW</u>			Date Received: <u>11/7/17</u>		
Carrier and Tracking Number			Circle Applicable: <input checked="" type="checkbox"/> FedEx Express <input type="checkbox"/> FedEx Ground <input type="checkbox"/> UPS <input type="checkbox"/> Field Services <input type="checkbox"/> Courier <input type="checkbox"/> Other <u>7883 5425 3689</u>		
Suspected Hazard Information		Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
Shipped as a DOT Hazardous?			<input checked="" type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____	
COC/Samples marked or classified as radioactive? <u>see 11/7/17</u>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> <input checked="" type="checkbox"/> CPM/ mR/Hr Classified as: <input checked="" type="checkbox"/> Rad 1 <input type="checkbox"/> Rad 2 <input type="checkbox"/> Rad 3	
Is package, COC, and/or Samples marked HAZ?			<input checked="" type="checkbox"/>	If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:	
Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>			
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>			Preservation Method: Wet Ice <input checked="" type="checkbox"/> Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP: <u>4°C</u>
4	Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>			Temperature Device Serial #: <u>IR3-16</u> Secondary Temperature Device Serial # (If Applicable): _____
5	Sample containers intact and sealed?	<input checked="" type="checkbox"/>			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?		<input checked="" type="checkbox"/>		Sample ID's and Containers Affected: If Preservation added, Lot#:
7	Do any samples require Volatile Analysis?			<input checked="" type="checkbox"/>	If Yes, Are Encores or Soil Kits present? Yes___ No___ (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes___ No___ N/A___ (If unknown, select No) VOA vials free of headspace? Yes___ No___ N/A___ Sample ID's and containers affected:
8	Samples received within holding time?	<input checked="" type="checkbox"/>			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>			Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>			Sample ID's affected:
11	Number of containers received match number indicated on COC?			<input checked="" type="checkbox"/>	Sample ID's affected: <u>We rec'd 2 Bags of filters not on CoC's</u>
12	Are sample containers identifiable as GEL provided?			<input checked="" type="checkbox"/>	
13	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>			
Comments (Use Continuation Form if needed):					

PM (or PMA) review: Initials MEH Date 11/8/17 Page 1 of 1

Data Review Qualifier Definitions

GEL LABORATORIES LLC
2040 Savage Road Charleston, SC 29407 (843) 556-8171

Report Date: 21-NOV-17

Project Specific Qualifier Definitions for GEL Client Code: CPRC

Qualifier	Qualifier Definition	Department	Fraction
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.		
J	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated	Organics	
P	Aroclor target analyte with greater than 25% difference between column analyses.	Organics	
C	Analyte has been confirmed by GC/MS analysis	Organics	Pesticide
B	The analyte was detected in both the associated QC blank and in the sample.	Organics	
E	Concentration exceeds the calibration range of the instrument	Organics	
A	The TIC is a suspected aldol-condensation product	Organics	Semi-Volatile
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
N	Spike Sample recovery is outside control limits.		
*	Duplicate analysis not within control limits	Inorganics	
>	Result greater than quantifiable range or greater than upper limit of the analysis range	General Chemistry	
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Inorganics	Metals
D	Results are reported from a diluted aliquot of sample.		
E	Reported value is estimated due to interferences. See comment in narrative.	Inorganics	Metals
M	Duplicate precision not met.	Inorganics	Metals
o	Analyte failed to recover within LCS limits (Organics only)	Organics	
S	Reported value determined by the Method of Standard Additions (MSA)	Inorganics	
T	Spike and/or spike duplicate sample recovery is outside control limits.	Organics	
W	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Inorganics	
B	The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample	Radiological	
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
+	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Inorganics	
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	General Chemistry	
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Inorganics	Metals
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is > 5% of the measured concentration and/or decision level for associated samples.	General Chemistry	
<	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	General Chemistry	
UX	Gamma Spectroscopy--Uncertain identification	Radiological	

Laboratory Certifications

List of current GEL Certifications as of 21 November 2017

State	Certification
Alaska	UST-0110
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA170010
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122018-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-17-12
Utah NELAP	SC000122017-24
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

General Chem Analysis

Case Narrative

**General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL437167
Work Order #: 437167**

Product: Ion Chromatography**Analytical Method:** 9056_ANIONS_IC**Analytical Procedure:** GL-GC-E-086 REV# 25**Analytical Batches:** 1718444 and 1718443

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
437167003	B3FCK2
437167006	B3FCK6
437167009	B3FCL9
437167012	B3FCM5
437167015	B3FCN2
437167016	B3FLR5
437167017	B3FLR9
437167018	B3FLT3
1203918653	Method Blank (MB)
1203918654	Laboratory Control Sample (LCS)
1203918655	437167018(B3FLT3) Sample Duplicate (DUP)
1203918656	437167018(B3FLT3) Matrix Spike (MS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information**Sample Dilutions**

The following sample 437167015 (B3FCN2) was diluted because target analyte concentrations exceeded the calibration range. Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range.

Analyte	437167
	015
Fluoride	2X

Miscellaneous Information**Manual Integrations**

Samples 1203918655 (B3FLT3DUP), 437167003 (B3FCK2), 437167006 (B3FCK6), 437167009 (B3FCL9), 437167012 (B3FCM5), 437167015 (B3FCN2), 437167016 (B3FLR5), 437167017 (B3FLR9) and 437167018 (B3FLT3) were manually integrated to correctly position the baseline as set in the calibration standards.

Product: Hexavalent Chromium**Analytical Method:** 7196_CR6**Analytical Procedure:** GL-GC-E-044 REV# 22**Analytical Batch:** 1716788**Preparation Method:** SW846 3060A**Preparation Procedure:** GL-GC-E-044 REV# 22**Preparation Batch:** 1716787

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
437167002	B3FCK1
437167005	B3FCK5
437167008	B3FCL8
437167011	B3FCM4
437167014	B3FCN1
437167016	B3FLR5
437167017	B3FLR9
437167018	B3FLT3
1203914411	Method Blank (MB)
1203914412	Laboratory Control Sample (LCS)
1203914413	Insoluble Lab Control Sample (ILCS)
1203914414	437167002(B3FCK1) Sample Duplicate (DUP)
1203914415	437167002(B3FCK1) Matrix Spike (MS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information**Matrix Spike (MS)/Post Spike (PS) Recovery Statement**

The percent recoveries (%R) obtained from the spike analyses are evaluated when the sample concentration is less than four times (4X) the spike concentration added. The matrix spike recovered outside of the established acceptance limits due to matrix interference and/or non-homogeneity.

Analyte	Sample	Value
Hexavalent Chromium	1203914415 (B3FCK1MS)	31.3* (75.0%-125.0%)

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL437167 GEL Work Order: 437167

The Qualifiers in this report are defined as follows:

B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).

D Results are reported from a diluted aliquot of sample.

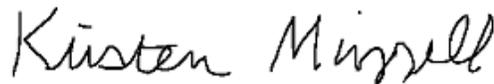
N Spike Sample recovery is outside control limits.

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:**Name: Kristen Mizzell****Date: 17 NOV 2017****Title: Team Leader**

Sample Data Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: November 17, 2017

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F17-009

Client Sample ID: B3FCK1 Project: CPRC0F17009
 Sample ID: 437167002 Client ID: CPRC001
 Matrix: SOIL
 Collect Date: 02-NOV-17 09:00
 Receive Date: 07-NOV-17
 Collector: Client
 Moisture: 2.36%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Spectrometric Analysis												
7196_CR6: COMMON "Dry Weight Corrected"												
Hexavalent Chromium	N	606	164	409	ug/Kg	39.9	1	VH1	11/17/17	1346	1716788	1

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3060A	SW846_7196A Hexavalent Chromium in Soil	RXB5	11/16/17	1246	1716787

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	7196_CR6	

Notes:

Column headers are defined as follows:

- DF: Dilution Factor
- DL: Detection Limit
- MDA: Minimum Detectable Activity
- MDC: Minimum Detectable Concentration
- Lc/LC: Critical Level
- PF: Prep Factor
- RL: Reporting Limit
- SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: November 17, 2017

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F17-009

Client Sample ID: B3FCK2 Project: CPRC0F17009
 Sample ID: 437167003 Client ID: CPRC001
 Matrix: SOIL
 Collect Date: 02-NOV-17 09:00
 Receive Date: 07-NOV-17
 Collector: Client
 Moisture: 2.23%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC:COMMON + (Add-on) "Dry Weight Corrected"												
Bromide	U	627	627	1870	ug/Kg	9.15	1	JXH5	11/13/17	1928	1718444	1
Chloride		4520	674	1870	ug/Kg	9.15	1					
Fluoride		983	318	936	ug/Kg	9.15	1					
Nitrate-N		8390	309	936	ug/Kg	9.15	1					
Nitrite-N	U	309	309	936	ug/Kg	9.15	1					
Phosphorus in phosphate	U	627	627	1870	ug/Kg	9.15	1					
Sulfate		7180	1250	3750	ug/Kg	9.15	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9056A	SW846 9056A Total Anions in Soil	JXH5	11/13/17	1402	1718443

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	

Notes:

Column headers are defined as follows:

- DF: Dilution Factor
- DL: Detection Limit
- MDA: Minimum Detectable Activity
- MDC: Minimum Detectable Concentration
- Lc/LC: Critical Level
- PF: Prep Factor
- RL: Reporting Limit
- SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: November 17, 2017

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F17-009

Client Sample ID: B3FCK5 Project: CPRC0F17009
 Sample ID: 437167005 Client ID: CPRC001
 Matrix: SOIL
 Collect Date: 02-NOV-17 09:00
 Receive Date: 07-NOV-17
 Collector: Client
 Moisture: 2.57%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Spectrometric Analysis												
7196_CR6: COMMON "Dry Weight Corrected"												
Hexavalent Chromium	BN	165	156	389	ug/Kg	37.9	1	VH1	11/17/17	1347	1716788	1

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3060A	SW846_7196A Hexavalent Chromium in Soil	RXB5	11/16/17	1246	1716787

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	7196_CR6	

Notes:

Column headers are defined as follows:

- DF: Dilution Factor
- DL: Detection Limit
- MDA: Minimum Detectable Activity
- MDC: Minimum Detectable Concentration
- Lc/LC: Critical Level
- PF: Prep Factor
- RL: Reporting Limit
- SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: November 17, 2017

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F17-009

Client Sample ID: B3FCK6 Project: CPRC0F17009
 Sample ID: 437167006 Client ID: CPRC001
 Matrix: SOIL
 Collect Date: 02-NOV-17 09:00
 Receive Date: 07-NOV-17
 Collector: Client
 Moisture: 2.05%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC:COMMON + (Add-on) "Dry Weight Corrected"												
Bromide	U	635	635	1900	ug/Kg	9.28	1	JXH5	11/13/17	1957	1718444	1
Chloride		4700	682	1900	ug/Kg	9.28	1					
Fluoride	B	810	322	948	ug/Kg	9.28	1					
Nitrate-N		8670	313	948	ug/Kg	9.28	1					
Nitrite-N	U	313	313	948	ug/Kg	9.28	1					
Phosphorus in phosphate	U	635	635	1900	ug/Kg	9.28	1					
Sulfate		7820	1260	3790	ug/Kg	9.28	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9056A	SW846 9056A Total Anions in Soil	JXH5	11/13/17	1402	1718443

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	

Notes:

Column headers are defined as follows:

- DF: Dilution Factor
- DL: Detection Limit
- MDA: Minimum Detectable Activity
- MDC: Minimum Detectable Concentration
- Lc/LC: Critical Level
- PF: Prep Factor
- RL: Reporting Limit
- SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: November 17, 2017

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F17-009

Client Sample ID: B3FCL8 Project: CPRC0F17009
 Sample ID: 437167008 Client ID: CPRC001
 Matrix: SOIL
 Collect Date: 02-NOV-17 11:30
 Receive Date: 07-NOV-17
 Collector: Client
 Moisture: 14.8%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Spectrometric Analysis												
7196_CR6: COMMON "Dry Weight Corrected"												
Hexavalent Chromium	NU	160	160	400	ug/Kg	34.0	1	VH1	11/17/17	1347	1716788	1

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3060A	SW846_7196A Hexavalent Chromium in Soil	RXB5	11/16/17	1246	1716787

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	7196_CR6	

Notes:

Column headers are defined as follows:

- DF: Dilution Factor
- DL: Detection Limit
- MDA: Minimum Detectable Activity
- MDC: Minimum Detectable Concentration
- Lc/LC: Critical Level
- PF: Prep Factor
- RL: Reporting Limit
- SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: November 17, 2017

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F17-009

Client Sample ID: B3FCL9 Project: CPRC0F17009
 Sample ID: 437167009 Client ID: CPRC001
 Matrix: SOIL
 Collect Date: 02-NOV-17 11:30
 Receive Date: 07-NOV-17
 Collector: Client
 Moisture: 14.7%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC:COMMON + (Add-on) "Dry Weight Corrected"												
Bromide	U	762	762	2280	ug/Kg	9.71	1	JXH5	11/13/17	2025	1718444	1
Chloride		9840	819	2280	ug/Kg	9.71	1					
Fluoride		36300	387	1140	ug/Kg	9.71	1					
Nitrate-N		3080	375	1140	ug/Kg	9.71	1					
Nitrite-N	U	375	375	1140	ug/Kg	9.71	1					
Phosphorus in phosphate	B	1170	762	2280	ug/Kg	9.71	1					
Sulfate	B	4080	1510	4550	ug/Kg	9.71	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9056A	SW846 9056A Total Anions in Soil	JXH5	11/13/17	1402	1718443

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	

Notes:

Column headers are defined as follows:

- DF: Dilution Factor
- DL: Detection Limit
- MDA: Minimum Detectable Activity
- MDC: Minimum Detectable Concentration
- Lc/LC: Critical Level
- PF: Prep Factor
- RL: Reporting Limit
- SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: November 17, 2017

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F17-009

Client Sample ID: B3FCM4 Project: CPRC0F17009
 Sample ID: 437167011 Client ID: CPRC001
 Matrix: SOIL
 Collect Date: 02-NOV-17 14:45
 Receive Date: 07-NOV-17
 Collector: Client
 Moisture: 18.1%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Spectrometric Analysis												
7196_CR6: COMMON "Dry Weight Corrected"												
Hexavalent Chromium	NU	150	150	376	ug/Kg	30.8	1	VH1	11/17/17	1347	1716788	1

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3060A	SW846_7196A Hexavalent Chromium in Soil	RXB5	11/16/17	1246	1716787

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	7196_CR6	

Notes:

Column headers are defined as follows:

- DF: Dilution Factor
- DL: Detection Limit
- MDA: Minimum Detectable Activity
- MDC: Minimum Detectable Concentration
- Lc/LC: Critical Level
- PF: Prep Factor
- RL: Reporting Limit
- SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: November 17, 2017

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F17-009

Client Sample ID: B3FCM5 Project: CPRC0F17009
 Sample ID: 437167012 Client ID: CPRC001
 Matrix: SOIL
 Collect Date: 02-NOV-17 14:45
 Receive Date: 07-NOV-17
 Collector: Client
 Moisture: 19.4%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC:COMMON + (Add-on) "Dry Weight Corrected"												
Bromide	U	757	757	2260	ug/Kg	9.11	1	JXH5	11/13/17	2054	1718444	1
Chloride		5840	814	2260	ug/Kg	9.11	1					
Fluoride		21400	384	1130	ug/Kg	9.11	1					
Nitrate-N		2330	373	1130	ug/Kg	9.11	1					
Nitrite-N	U	373	373	1130	ug/Kg	9.11	1					
Phosphorus in phosphate	U	757	757	2260	ug/Kg	9.11	1					
Sulfate		7810	1500	4520	ug/Kg	9.11	1					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9056A	SW846 9056A Total Anions in Soil	JXH5	11/13/17	1402	1718443

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	

Notes:

Column headers are defined as follows:

- DF: Dilution Factor
- DL: Detection Limit
- MDA: Minimum Detectable Activity
- MDC: Minimum Detectable Concentration
- Lc/LC: Critical Level
- PF: Prep Factor
- RL: Reporting Limit
- SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: November 17, 2017

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F17-009

Client Sample ID: B3FCN1 Project: CPRC0F17009
 Sample ID: 437167014 Client ID: CPRC001
 Matrix: SOIL
 Collect Date: 02-NOV-17 16:45
 Receive Date: 07-NOV-17
 Collector: Client
 Moisture: 20.2%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Spectrometric Analysis												
7196_CR6: COMMON "Dry Weight Corrected"												
Hexavalent Chromium	NU	161	161	403	ug/Kg	32.1	1	VH1	11/17/17	1349	1716788	1

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3060A	SW846_7196A Hexavalent Chromium in Soil	RXB5	11/16/17	1246	1716787

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	7196_CR6	

Notes:

Column headers are defined as follows:

- DF: Dilution Factor
- DL: Detection Limit
- MDA: Minimum Detectable Activity
- MDC: Minimum Detectable Concentration
- Lc/LC: Critical Level
- PF: Prep Factor
- RL: Reporting Limit
- SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: November 17, 2017

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F17-009

Client Sample ID: B3FCN2 Project: CPRC0F17009
 Sample ID: 437167015 Client ID: CPRC001
 Matrix: SOIL
 Collect Date: 02-NOV-17 16:45
 Receive Date: 07-NOV-17
 Collector: Client
 Moisture: 20.5%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC:COMMON + (Add-on) "Dry Weight Corrected"												
Bromide	U	795	795	2370	ug/Kg	9.43	1	JXH5	11/13/17	2123	1718444	1
Chloride		3900	854	2370	ug/Kg	9.43	1					
Nitrate-N		3650	391	1190	ug/Kg	9.43	1					
Nitrite-N	U	391	391	1190	ug/Kg	9.43	1					
Phosphorus in phosphate	B	1010	795	2370	ug/Kg	9.43	1					
Sulfate		6100	1580	4740	ug/Kg	9.43	1					
Fluoride	D	118000	807	2370	ug/Kg	9.43	2	JXH5	11/14/17	1515	1718444	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9056A	SW846 9056A Total Anions in Soil	JXH5	11/13/17	1402	1718443

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	

Notes:

Column headers are defined as follows:

- DF: Dilution Factor
- DL: Detection Limit
- MDA: Minimum Detectable Activity
- MDC: Minimum Detectable Concentration
- Lc/LC: Critical Level
- PF: Prep Factor
- RL: Reporting Limit
- SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: November 17, 2017

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F17-009

Client Sample ID: B3FLR5 Project: CPRC0F17009
 Sample ID: 437167016 Client ID: CPRC001
 Matrix: SOIL
 Collect Date: 02-NOV-17 10:00
 Receive Date: 07-NOV-17
 Collector: Client
 Moisture: 1.89%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC:COMMON + (Add-on) "Dry Weight Corrected"												
Bromide	U	681	681	2030	ug/Kg	9.98	1	JXH5	11/13/17	2152	1718444	1
Chloride		2350	732	2030	ug/Kg	9.98	1					
Fluoride		10200	346	1020	ug/Kg	9.98	1					
Nitrate-N	B	689	336	1020	ug/Kg	9.98	1					
Nitrite-N	U	336	336	1020	ug/Kg	9.98	1					
Phosphorus in phosphate	B	1280	681	2030	ug/Kg	9.98	1					
Sulfate		6220	1350	4070	ug/Kg	9.98	1					

Spectrometric Analysis

7196_CR6: COMMON "Dry Weight Corrected"

Hexavalent Chromium	NU	112	112	280	ug/Kg	27.5	1	VH1	11/17/17	1349	1716788	2
---------------------	----	-----	-----	-----	-------	------	---	-----	----------	------	---------	---

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3060A	SW846_7196A Hexavalent Chromium in Soil	RXB5	11/16/17	1246	1716787
SW846 9056A	SW846 9056A Total Anions in Soil	JXH5	11/13/17	1402	1718443

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	7196_CR6	

Notes:

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
 DL: Detection Limit PF: Prep Factor
 MDA: Minimum Detectable Activity RL: Reporting Limit
 MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: November 17, 2017

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F17-009

Client Sample ID: B3FLR9 Project: CPRC0F17009
 Sample ID: 437167017 Client ID: CPRC001
 Matrix: SOIL
 Collect Date: 02-NOV-17 11:30
 Receive Date: 07-NOV-17
 Collector: Client
 Moisture: 2.43%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC:COMMON + (Add-on) "Dry Weight Corrected"												
Bromide	U	652	652	1950	ug/Kg	9.50	1	JXH5	11/13/17	2221	1718444	1
Chloride		2460	701	1950	ug/Kg	9.50	1					
Fluoride		23300	331	974	ug/Kg	9.50	1					
Nitrate-N	B	629	321	974	ug/Kg	9.50	1					
Nitrite-N	U	321	321	974	ug/Kg	9.50	1					
Phosphorus in phosphate		2390	652	1950	ug/Kg	9.50	1					
Sulfate		5810	1300	3890	ug/Kg	9.50	1					

Spectrometric Analysis

7196_CR6: COMMON "Dry Weight Corrected"

Hexavalent Chromium	BN	157	148	371	ug/Kg	36.2	1	VH1	11/17/17	1349	1716788	2
---------------------	----	-----	-----	-----	-------	------	---	-----	----------	------	---------	---

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3060A	SW846_7196A Hexavalent Chromium in Soil	RXB5	11/16/17	1246	1716787
SW846 9056A	SW846 9056A Total Anions in Soil	JXH5	11/13/17	1402	1718443

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	7196_CR6	

Notes:

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
 DL: Detection Limit PF: Prep Factor
 MDA: Minimum Detectable Activity RL: Reporting Limit
 MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: November 17, 2017

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F17-009

Client Sample ID: B3FLT3 Project: CPRC0F17009
 Sample ID: 437167018 Client ID: CPRC001
 Matrix: SOIL
 Collect Date: 03-NOV-17 15:00
 Receive Date: 07-NOV-17
 Collector: Client
 Moisture: 4.22%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC:COMMON + (Add-on) "Dry Weight Corrected"												
Bromide	U	643	643	1920	ug/Kg	9.20	1	JXH5	11/13/17	2250	1718444	1
Chloride		2500	691	1920	ug/Kg	9.20	1					
Fluoride		24100	326	960	ug/Kg	9.20	1					
Nitrate-N	B	708	317	960	ug/Kg	9.20	1					
Nitrite-N	U	317	317	960	ug/Kg	9.20	1					
Phosphorus in phosphate		2060	643	1920	ug/Kg	9.20	1					
Sulfate		4300	1280	3840	ug/Kg	9.20	1					

Spectrometric Analysis

7196_CR6: COMMON "Dry Weight Corrected"

Hexavalent Chromium	NU	136	136	340	ug/Kg	32.5	1	VH1	11/17/17	1350	1716788	2
---------------------	----	-----	-----	-----	-------	------	---	-----	----------	------	---------	---

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3060A	SW846_7196A Hexavalent Chromium in Soil	RXB5	11/16/17	1246	1716787
SW846 9056A	SW846 9056A Total Anions in Soil	JXH5	11/13/17	1402	1718443

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	7196_CR6	

Notes:

Column headers are defined as follows:

DF: Dilution Factor Lc/LC: Critical Level
 DL: Detection Limit PF: Prep Factor
 MDA: Minimum Detectable Activity RL: Reporting Limit
 MDC: Minimum Detectable Concentration SQL: Sample Quantitation Limit

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: November 17, 2017

Page 1 of 4

CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 437167

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1718444										
QC1203918655	437167018	DUP									
Bromide	U	643	U	645	ug/Kg	N/A			JXH5	11/14/17	00:16
Chloride		2500		2520	ug/Kg	0.997	^	(+/-1920)			
Fluoride		24100		25100	ug/Kg	4.2		(0%-35%)			
Nitrate-N	B	708	B	715	ug/Kg	1.04	^	(+/-962)			
Nitrite-N	U	317	U	318	ug/Kg	N/A					
Phosphorus in phosphate		2060		2100	ug/Kg	2.03	^	(+/-1920)			
Sulfate		4300		4180	ug/Kg	2.74	^	(+/-3850)			
QC1203918654	LCS										
Bromide	12500			12100	ug/Kg			97.1 (80%-120%)		11/13/17	18:59
Chloride	49900			49800	ug/Kg			99.8 (80%-120%)			
Fluoride	24900			25900	ug/Kg			104 (80%-120%)			
Nitrate-N	24900			25100	ug/Kg			101 (80%-120%)			
Nitrite-N	24900			25600	ug/Kg			103 (80%-120%)			
Phosphorus in phosphate	12500			12300	ug/Kg			98.7 (80%-120%)			

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 437167

Page 2 of 4

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1718444										
Sulfate	99800			102000	ug/Kg		102	(80%-120%)	JXH5	11/13/17	18:59
QC1203918653	MB										
Bromide			U	670	ug/Kg					11/13/17	18:30
Chloride			U	720	ug/Kg						
Fluoride			U	340	ug/Kg						
Nitrate-N			U	330	ug/Kg						
Nitrite-N			U	330	ug/Kg						
Phosphorus in phosphate			U	670	ug/Kg						
Sulfate			U	1330	ug/Kg						
QC1203918656	437167018 MS										
Bromide	12900	U	643	12400	ug/Kg		96.5	(75%-125%)		11/14/17	00:45
Chloride	51600		2500	52200	ug/Kg		96.4	(75%-125%)			
Fluoride	25800		24100	46300	ug/Kg		86.2	(75%-125%)			
Nitrate-N	25800	B	708	25600	ug/Kg		96.4	(75%-125%)			
Nitrite-N	25800	U	317	25400	ug/Kg		97.4	(75%-125%)			
Phosphorus in phosphate	12900		2060	13400	ug/Kg		87.7	(75%-125%)			

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 437167

Page 3 of 4

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1718444										
Sulfate	103000	4300		106000	ug/Kg		98.9	(75%-125%)	JXH5	11/14/17	00:45
Spectrometric Analysis											
Batch	1716788										
QC1203914414	437167002	DUP									
Hexavalent Chromium		N	606	558	ug/Kg	8.27 ^		(+/-409)	VH1	11/17/17	13:46
QC1203914413	ILCS										
Hexavalent Chromium	7370			7080	ug/Kg		96	(80%-120%)		11/17/17	13:46
QC1203914412	LCS										
Hexavalent Chromium	3690			3970	ug/Kg		108	(80%-120%)		11/17/17	13:46
QC1203914411	MB										
Hexavalent Chromium			U	154	ug/Kg					11/17/17	13:44
QC1203914415	437167002	MS									
Hexavalent Chromium	3980	N	606 N	1850	ug/Kg		31.3 *	(75%-125%)		11/17/17	13:47

Notes:

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 437167

Page 4 of 4

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
----------	-----	--------	------	----	-------	------	------	-------	-------	------	------

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Radiological Analysis

Case Narrative

Radiochemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL437167
Work Order #: 437167

Product: AMCMISO_EIE_PRECIP_AEA: COMMON
Analytical Method: AMCMISO_EIE_PREC_AEA
Analytical Procedure: GL-RAD-A-011 REV# 26
Analytical Batch: 1716798

Preparation Method: Dry Soil Prep
Preparation Procedure: GL-RAD-A-021 REV# 22
Preparation Batch: 1716475

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
437167001	B3FCK0
437167004	B3FCK4
437167007	B3FCL7
437167010	B3FCM3
437167013	B3FCN0
437167016	B3FLR5
437167017	B3FLR9
1203914439	Method Blank (MB)
1203914440	437167001(B3FCK0) Sample Duplicate (DUP)
1203914441	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts

Sample 1203914439 (MB) was recounted due to a peak shift. The recount is reported.

Product: NP237_IE_PRECIP_AEA: COMMON
Analytical Method: ASTM C 1475-00 Modified
Analytical Procedure: GL-RAD-A-032 REV# 21
Analytical Batch: 1716799

Preparation Method: Dry Soil Prep

Preparation Procedure: GL-RAD-A-021 REV# 22

Preparation Batch: 1716475

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
437167001	B3FCK0
437167004	B3FCK4
437167007	B3FCL7
437167010	B3FCM3
437167013	B3FCN0
437167016	B3FLR5
437167017	B3FLR9
1203914442	Method Blank (MB)
1203914443	437167001(B3FCK0) Sample Duplicate (DUP)
1203914444	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: PUIISO_PRECIP_AEA:COMMON

Analytical Method: PUIISO_PRECIP_AEA

Analytical Procedure: GL-RAD-A-011 REV# 26

Analytical Batch: 1716800

Preparation Method: Dry Soil Prep

Preparation Procedure: GL-RAD-A-021 REV# 22

Preparation Batch: 1716475

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
437167001	B3FCK0
437167004	B3FCK4
437167007	B3FCL7
437167010	B3FCM3
437167013	B3FCN0
437167016	B3FLR5
437167017	B3FLR9
1203914445	Method Blank (MB)
1203914446	437167001(B3FCK0) Sample Duplicate (DUP)
1203914447	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts

Sample 437167001 (B3FCK0) was recounted due to a peak shift. The recount is reported.

Miscellaneous Information

Additional Comments

Sample 437167010 (B3FCM3) did not meet the resolution requirement of having a full width half maximum of 100 keV or less for the tracer; however, the tracer yield requirement was met and the tracer peak is within the tracer region of interest.

Product: UIISO_IE_PRECIP_AEA:COMMON

Analytical Method: UIISO_IE_PRECIP_AEA

Analytical Procedure: GL-RAD-A-011 REV# 26

Analytical Batch: 1716801

Preparation Method: Dry Soil Prep

Preparation Procedure: GL-RAD-A-021 REV# 22

Preparation Batch: 1716475

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
437167001	B3FCK0
437167004	B3FCK4
437167007	B3FCL7
437167010	B3FCM3
437167013	B3FCN0
437167016	B3FLR5
437167017	B3FLR9
1203914448	Method Blank (MB)
1203914449	437167001(B3FCK0) Sample Duplicate (DUP)
1203914450	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information**Recounts**

Sample 437167001 (B3FCK0) was recounted due to a peak shift. The recount is reported.

Product: AMCMISO_EIE_PRECIP_AEA: COMMON

Analytical Method: AMCMISO_EIE_PREC_AEA

Analytical Procedure: GL-RAD-A-011 REV# 26

Analytical Batch: 1717701

Preparation Method: Dry Soil Prep

Preparation Procedure: GL-RAD-A-021 REV# 22

Preparation Batch: 1716820

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
437167018	B3FLT3
1203916647	Method Blank (MB)
1203916648	437167018(B3FLT3) Sample Duplicate (DUP)
1203916649	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: NP237_IE_PRECIP_AEA: COMMON

Analytical Method: ASTM C 1475-00 Modified

Analytical Procedure: GL-RAD-A-032 REV# 21

Analytical Batch: 1717703

Preparation Method: Dry Soil Prep

Preparation Procedure: GL-RAD-A-021 REV# 22

Preparation Batch: 1716820

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
437167018	B3FLT3

1203916650	Method Blank (MB)
1203916651	437167018(B3FLT3) Sample Duplicate (DUP)
1203916652	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: PUIISO_PRECIP_AEA:COMMON
Analytical Method: PUIISO_PRECIP_AEA
Analytical Procedure: GL-RAD-A-011 REV# 26
Analytical Batch: 1717704

Preparation Method: Dry Soil Prep
Preparation Procedure: GL-RAD-A-021 REV# 22
Preparation Batch: 1716820

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
437167018	B3FLT3
1203916665	Method Blank (MB)
1203916666	437167018(B3FLT3) Sample Duplicate (DUP)
1203916667	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: UIISO_IE_PRECIP_AEA:COMMON
Analytical Method: UIISO_IE_PRECIP_AEA
Analytical Procedure: GL-RAD-A-011 REV# 26
Analytical Batch: 1717708

Preparation Method: Dry Soil Prep
Preparation Procedure: GL-RAD-A-021 REV# 22

Preparation Batch: 1716820

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
437167018	B3FLT3
1203916668	Method Blank (MB)
1203916669	437167018(B3FLT3) Sample Duplicate (DUP)
1203916670	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: Dry Weight

Analytical Method: Dry Soil Prep

Analytical Procedure: GL-OA-E-020 REV# 12

Analytical Batch: 1716475

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
437167001	B3FCK0
437167004	B3FCK4
437167007	B3FCL7
437167010	B3FCM3
437167013	B3FCN0
437167016	B3FLR5
437167017	B3FLR9
1203913737	437167001(B3FCK0) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: Dry Weight

Analytical Method: ASTM D 2216 (Modified)

Analytical Procedure: GL-OA-E-020 REV# 12

Analytical Batch: 1716479

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
437167002	B3FCK1
437167003	B3FCK2
437167005	B3FCK5
437167006	B3FCK6
437167008	B3FCL8
437167009	B3FCL9
437167011	B3FCM4
437167012	B3FCM5
437167014	B3FCN1
437167015	B3FCN2
1203913747	437167002(B3FCK1) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: Dry Weight

Analytical Method: Dry Soil Prep

Analytical Procedure: GL-OA-E-020 REV# 12

Analytical Batch: 1716820

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
437167018	B3FLT3
1203914501	437167018(B3FLT3) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: I129_SEP_LEPS_GS

Analytical Method: I129_SEP_LEPS_GS

Analytical Procedure: GL-RAD-A-006 REV# 21

Analytical Batch: 1716594

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
437167001	B3FCK0
437167004	B3FCK4
437167007	B3FCL7
437167010	B3FCM3
437167013	B3FCN0
437167016	B3FLR5
437167017	B3FLR9
1203913996	Method Blank (MB)
1203913997	437167001(B3FCK0) Sample Duplicate (DUP)
1203913998	437167001(B3FCK0) Matrix Spike (MS)
1203913999	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: GAMMA_GS:COMMON

Analytical Method: GAMMA_GS

Analytical Procedure: GL-RAD-A-013 REV# 27

Analytical Batch: 1716703

Preparation Method: Dry Soil Prep

Preparation Procedure: GL-RAD-A-021 REV# 22

Preparation Batches: 1716475 and 1716820

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
437167001	B3FCK0
437167004	B3FCK4
437167007	B3FCL7
437167010	B3FCM3
437167013	B3FCN0
437167016	B3FLR5
437167017	B3FLR9
437167018	B3FLT3
1203914217	Method Blank (MB)
1203914218	437167001(B3FCK0) Sample Duplicate (DUP)
1203914219	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts

Sample 1203914219 (LCS) was recounted due to high recovery. The recount is reported.

Product: I129_SEP_LEPS_GS

Analytical Method: I129_SEP_LEPS_GS

Analytical Procedure: GL-RAD-A-006 REV# 21

Analytical Batch: 1717958

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
437167018	B3FLT3
1203917424	Method Blank (MB)
1203917425	437167018(B3FLT3) Sample Duplicate (DUP)
1203917426	437167018(B3FLT3) Matrix Spike (MS)
1203917427	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: SRTOT_SEP_PRECIP_GPC: COMMON

Analytical Method: SRTOT_SEP_PRECIP_GPC

Analytical Procedure: GL-RAD-A-004 REV# 19

Analytical Batch: 1716489

Preparation Method: Dry Soil Prep

Preparation Procedure: GL-RAD-A-021 REV# 22

Preparation Batches: 1716475 and 1716820

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
437167001	B3FCK0
437167004	B3FCK4
437167007	B3FCL7
437167010	B3FCM3
437167013	B3FCN0
437167016	B3FLR5
437167017	B3FLR9
437167018	B3FLT3
1203913772	Method Blank (MB)
1203913773	437167010(B3FCM3) Sample Duplicate (DUP)
1203913774	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts

Samples 437167001 (B3FCK0) and 437167013 (B3FCN0) were recounted due to results more negative than the three sigma TPU. The second counts are reported. Sample 437167010 (B3FCM3) was recounted due to a suspected false positive. The recount is reported.

Product: TC99_SEP_GPC

Analytical Method: TC99_EIE_LSC

Analytical Procedure: GL-RAD-A-059 REV# 5

Analytical Batch: 1717016

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
437167001	B3FCK0
437167004	B3FCK4
437167007	B3FCL7
437167010	B3FCM3
437167013	B3FCN0
437167016	B3FLR5
437167017	B3FLR9
437167018	B3FLT3
1203914993	Method Blank (MB)
1203914994	437167001(B3FCK0) Sample Duplicate (DUP)
1203914995	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: NI63_LSC

Analytical Method: NI63_LSC

Analytical Procedure: GL-RAD-A-022 REV# 18

Analytical Batch: 1717018

Preparation Method: Dry Soil Prep

Preparation Procedure: GL-RAD-A-021 REV# 22

Preparation Batches: 1716475 and 1716820

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
437167001	B3FCK0
437167004	B3FCK4
437167007	B3FCL7
437167010	B3FCM3
437167013	B3FCN0
437167016	B3FLR5
437167017	B3FLR9
437167018	B3FLT3
1203914996	Method Blank (MB)
1203914997	437167001(B3FCK0) Sample Duplicate (DUP)
1203914998	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on a "dry weight" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: TRITIUM_DIST_LSC: COMMON

Analytical Method: TRITIUM_DIST_LSC

Analytical Procedure: GL-RAD-A-002 REV# 22

Analytical Batch: 1717032

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
437167001	B3FCK0
437167004	B3FCK4
437167007	B3FCL7
437167010	B3FCM3
437167013	B3FCN0
437167016	B3FLR5
437167017	B3FLR9
437167018	B3FLT3
1203915035	Method Blank (MB)
1203915036	437167001(B3FCK0) Sample Duplicate (DUP)
1203915037	437167001(B3FCK0) Matrix Spike (MS)
1203915038	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Miscellaneous Information

Additional Comments

The matrix spike, 1203915037 (B3FCK0MS), aliquot was reduced to conserve sample volume.

Product: C14_LSC: COMMON

Analytical Method: C14_LSC

Analytical Procedure: GL-RAD-A-003 REV# 15

Analytical Batch: 1717047

The following samples were analyzed using the above methods and analytical procedure(s).

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
437167001	B3FCK0
437167004	B3FCK4
437167007	B3FCL7
437167010	B3FCM3
437167013	B3FCN0
437167016	B3FLR5
437167017	B3FLR9
437167018	B3FLT3
1203915056	Method Blank (MB)
1203915057	437167001(B3FCK0) Sample Duplicate (DUP)
1203915058	437167001(B3FCK0) Matrix Spike (MS)
1203915059	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Miscellaneous Information**Additional Comments**

The matrix spike, 1203915058 (B3FCK0MS), aliquot was reduced to conserve sample volume.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL437167 GEL Work Order: 437167

The Qualifiers in this report are defined as follows:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:**Name: Theresa Austin****Date: 21 NOV 2017****Title: Group Leader**

Sample Data Summary

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167001	Date Collected: 11/02/2017 09:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.7
Client ID: B3FCK0		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716798	Method: AMCMISO_EIE_PREC_AEA	SOP Ref: GL-RAD-A-011
Run Date: 11/16/2017 12:11	Analyst: BXA4	Instrument: 1106
Data File: S0437167001_AM.1A.gcnf	Aliquot: 0.102 g	Count Time: 240 min
Prep Batch: 1716798	Prep Method: DOE EML HASL-300, Am-05	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14596-10-2	Americium-241	U	0.125	pCi/g	+/-0.284	0.284	0.487	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	17.1	20.6	pCi/g	83.4	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167001	Date Collected: 11/02/2017 09:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.7
Client ID: B3FCK0		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716799	Method: ASTM C 1475-00 Modified	SOP Ref: GL-RAD-A-032
Run Date: 11/15/2017 17:24	Analyst: BXA4	Instrument: 1179
Data File: S0437167001_NP.1A.gcnf	Aliquot: 0.102 g	Count Time: 240 min
Prep Batch: 1716799	Prep Method: ASTM C 1475-00 Modified	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
13994-20-2	Neptunium-237	U	-0.168	pCi/g	+/-0.175	0.176	0.607	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	2110	2100	pCi/g	101	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167
Lab Sample ID: 437167001

Client: CPRC001
Date Collected: 11/02/2017 09:00
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 2.7

Client ID: B3FCK0
Batch ID: 1716800
Run Date: 11/18/2017 10:39
Data File: S0437167001_PU.2A.gcnf
Prep Batch: 1716800
Prep Date: 11/13/2017 00:00

Method: PUIISO_PRECIP_AEA
Analyst: BXA4
Aliquot: 0.102 g
Prep Method: DOE EML HASL-300, Pu-11-

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-011
Instrument: 1070
Count Time: 239.9998 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
I3981-16-3	Plutonium-238	U	0.243	pCi/g	+/-0.350	0.352	0.422	1.00
OER-100-70	Plutonium-239/240	U	0.176	pCi/g	+/-0.302	0.303	0.264	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Plutonium-242 Tracer	13.0	19.3	pCi/g	67.1	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167
Lab Sample ID: 437167001

Client: CPRC001
Date Collected: 11/02/2017 09:00
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 2.7

Client ID: B3FCK0
Batch ID: 1716801
Run Date: 11/15/2017 18:14
Data File: S0437167001_UU.2A.gcnf
Prep Batch: 1716801
Prep Date: 11/13/2017 00:00

Method: UIISO_IE_PRECIP_AEA
Analyst: BXA4
Aliquot: 0.102 g
Prep Method: DOE EML HASL-300, U-02-R

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-011
Instrument: 1155
Count Time: 240 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
U-233/234 <small>13968-55-3/13966-29-5</small>	Uranium-233/234	U	0.700	pCi/g	+/-0.595	0.605	0.748	1.00
15117-96-1/13982-7	Uranium-235/236	U	0.525	pCi/g	+/-0.535	0.541	0.529	1.00
7440-61-1	Uranium-238		1.05	pCi/g	+/-0.634	0.653	0.428	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Uranium-232 Tracer	16.1	20.5	pCi/g	78.4	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error. TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167001	Date Collected: 11/02/2017 09:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.7
Client ID: B3FCK0		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716489	Method: SRTOT_SEP_PRECIP_GPC	SOP Ref: GL-RAD-A-004
Run Date: 11/14/2017 14:36	Analyst: BXF1	Instrument: PIC10A
Data File: S1716489r1.xls	Aliquot: 0.31 g	Count Time: 60 min
Prep Batch: 1716489	Prep Method: EPA 905.0 Modified/DOE RP5	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 10:45		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
SR-RAD	Total Strontium	U	-0.203	pCi/g	+/-0.674	0.674	1.41	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	6.80	7.85	mg	86.6	(40%-110%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167001	Date Collected: 11/02/2017 09:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.7
Client ID: B3FCK0		Prep Basis: "As Received"
Batch ID: 1716594	Method: I129_SEP_LEPS_GS	SOP Ref: GL-RAD-A-006
Run Date: 11/08/2017 17:27	Analyst: MJH1	Instrument: XRAY1
Data File: I437167001.CNF;1	Aliquot: 1.215 g	Count Time: 120 min
Prep Batch: 1716594	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 11/08/2017 12:47		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	0.043	pCi/g	+/-0.396	0.396	0.717	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167001	Date Collected: 11/02/2017 09:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.7
Client ID: B3FCK0		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716703	Method: GAMMA_GS	SOP Ref: GL-RAD-A-013
Run Date: 11/15/2017 11:29	Analyst: MXR1	Instrument: GAM16
Data File: G437167001.CNF;1	Aliquot: 158.06 g	Count Time: 120 min
Prep Batch: 1716703	Prep Method: DOE HASL 300, 4.5.2.3/Ga-01	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/09/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10045-97-3	Cesium-137	U	0.00635	pCi/g	+/-0.0202	0.0204	0.0386	0.100
10198-40-0	Cobalt-60	U	0.0179	pCi/g	+/-0.0237	0.0251	0.0494	0.100
14683-23-9	Europium-152	U	-0.0055	pCi/g	+/-0.0473	0.0474	0.0908	0.100
15585-10-1	Europium-154	U	-0.00409	pCi/g	+/-0.0756	0.0756	0.141	0.100
14391-16-3	Europium-155	U	0.00383	pCi/g	+/-0.0526	0.0526	0.0999	0.100

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167001	Date Collected: 11/02/2017 09:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.7
Client ID: B3FCK0		Prep Basis: "As Received"
Batch ID: 1717016	Method: TC99_EIE_LSC	SOP Ref: GL-RAD-A-059
Run Date: 11/14/2017 11:19	Analyst: CXS7	Instrument: LSCSILVER
Data File: E1717016.xls	Aliquot: 1.704 g	Count Time: 20 min
Prep Batch: 1717016	Prep Method: DOE EML HASL-300, Tc-02-	
Prep Date: 11/09/2017 08:56		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	-1.12	pCi/g	+/-1.45	1.45	2.60	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	59800	76600	CPM	78.1	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167
 Lab Sample ID: 437167001

 Client ID: B3FCK0
 Batch ID: 1717018
 Run Date: 11/14/2017 23:28
 Data File: N1717018.xls
 Prep Batch: 1717018
 Prep Date: 11/09/2017 15:36

Client: CPRC001
 Date Collected: 11/02/2017 09:00
 Date Received: 11/07/2017 08:55

 Method: NI63_LSC
 Analyst: TXJ1
 Aliquot: 0.506 g
 Prep Method: DOE RESL Ni-1, Modified

Project: CPRC0F17009
 Matrix: SOIL
 %Moisture: 2.7

 Prep Basis: "Dry Weight Corrected"
 SOP Ref: GL-RAD-A-022
 Instrument: LSCRED
 Count Time: 30 min
 Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
NI-63	Nickel-63	U	-0.642	pCi/g	+/-4.15	4.15	7.19	10.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Nickel Carrier	20.2	25.2	mg	80.2	(40%-110%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167001	Date Collected: 11/02/2017 09:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.7
Client ID: B3FCK0		Prep Basis: "As Received"
Batch ID: 1717032	Method: TRITIUM_DIST_LSC	SOP Ref: GL-RAD-A-002
Run Date: 11/11/2017 00:16	Analyst: BXM4	Instrument: LSCSILVER
Data File: T1717032.xls	Aliquot: 1.269 g	Count Time: 15 min
Prep Batch: 1717032	Prep Method: EPA 906.0 Modified	
Prep Date: 11/09/2017 10:38		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium	U	-8.88	pCi/g	+/-12.3	12.3	23.7	30.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167001	Date Collected: 11/02/2017 09:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.7
Client ID: B3FCK0		Prep Basis: "As Received"
Batch ID: 1717047	Method: C14_LSC	SOP Ref: GL-RAD-A-003
Run Date: 11/13/2017 11:14	Analyst: BXM4	Instrument: LSCSILVER
Data File: C1717047.xls	Aliquot: 0.509 g	Count Time: 40 min
Prep Batch: 1717047	Prep Method: EPA EERF C-01 Modified	
Prep Date: 11/10/2017 12:17		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14762-75-5	Carbon-14	U	0.332	pCi/g	+/-2.32	2.32	3.96	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167
Lab Sample ID: 437167002

Client: CPRC001
Date Collected: 11/02/2017 09:00
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 2.4

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167
Lab Sample ID: 437167003

Client: CPRC001
Date Collected: 11/02/2017 09:00
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 2.2

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167004	Date Collected: 11/02/2017 09:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.8
Client ID: B3FCK4		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716798	Method: AMCMISO_EIE_PREC_AEA	SOP Ref: GL-RAD-A-011
Run Date: 11/16/2017 12:11	Analyst: BXA4	Instrument: 1107
Data File: S0437167004_AM.1A.gcnf	Aliquot: 0.105 g	Count Time: 240 min
Prep Batch: 1716798	Prep Method: DOE EML HASL-300, Am-05	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14596-10-2	Americium-241	U	-0.0179	pCi/g	+/-0.154	0.155	0.357	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	15.5	20.0	pCi/g	77.7	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167
Lab Sample ID: 437167004

Client: CPRC001
Date Collected: 11/02/2017 09:00
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 2.8

Client ID: B3FCK4
Batch ID: 1716799
Run Date: 11/15/2017 17:24
Data File: S0437167004_NP.1A.gcnf
Prep Batch: 1716799
Prep Date: 11/13/2017 00:00

Method: ASTM C 1475-00 Modified
Analyst: BXA4
Aliquot: 0.101 g
Prep Method: ASTM C 1475-00 Modified

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-032
Instrument: 1180
Count Time: 240 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
13994-20-2	Neptunium-237	U	-0.121	pCi/g	+/-0.171	0.171	0.558	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	2080	2120	pCi/g	98.3	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167004	Date Collected: 11/02/2017 09:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.8
Client ID: B3FCK4		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716800	Method: PUIISO_PRECIP_AEA	SOP Ref: GL-RAD-A-011
Run Date: 11/17/2017 09:37	Analyst: BXA4	Instrument: 1065
Data File: S0437167004_PU.1A.gcnf	Aliquot: 0.105 g	Count Time: 239.9998 min
Prep Batch: 1716800	Prep Method: DOE EML HASL-300, Pu-11-	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
I3981-16-3	Plutonium-238	U	-0.009	pCi/g	+/-0.515	0.515	1.06	1.00
OER-100-70	Plutonium-239/240	U	0.102	pCi/g	+/-0.351	0.351	0.672	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Plutonium-242 Tracer	15.9	18.8	pCi/g	84.4	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167004	Date Collected: 11/02/2017 09:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.8
Client ID: B3FCK4		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716801	Method: UIISO_IE_PRECIP_AEA	SOP Ref: GL-RAD-A-011
Run Date: 11/15/2017 08:49	Analyst: BXA4	Instrument: 1139
Data File: S0437167004_UU.1A.gcnf	Aliquot: 0.105 g	Count Time: 240 min
Prep Batch: 1716801	Prep Method: DOE EML HASL-300, U-02-R	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
U-233/234 <small>13968-55-3/13966-29-5</small>	Uranium-233/234		0.725	pCi/g	+/-0.567	0.577	0.594	1.00
15117-96-1/13982-7	Uranium-235/236	U	-0.0535	pCi/g	+/-0.237	0.237	0.617	1.00
7440-61-1	Uranium-238		0.905	pCi/g	+/-0.619	0.634	0.594	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Uranium-232 Tracer	16.0	20.0	pCi/g	80.2	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error. TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma). The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167004	Date Collected: 11/02/2017 09:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.8
Client ID: B3FCK4		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716489	Method: SRTOT_SEP_PRECIP_GPC	SOP Ref: GL-RAD-A-004
Run Date: 11/14/2017 12:40	Analyst: BXF1	Instrument: PIC1C
Data File: S1716489r1.xls	Aliquot: 0.338 g	Count Time: 60 min
Prep Batch: 1716489	Prep Method: EPA 905.0 Modified/DOE RP5	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 10:45		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
SR-RAD	Total Strontium	U	0.0108	pCi/g	+/-0.599	0.599	1.19	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	6.30	7.85	mg	80.3	(40%-110%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167004	Date Collected: 11/02/2017 09:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.8
Client ID: B3FCK4		Prep Basis: "As Received"
Batch ID: 1716594	Method: I129_SEP_LEPS_GS	SOP Ref: GL-RAD-A-006
Run Date: 11/08/2017 17:28	Analyst: MJH1	Instrument: XRAY2
Data File: I437167004.CNF;1	Aliquot: 1.204 g	Count Time: 120 min
Prep Batch: 1716594	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 11/08/2017 12:47		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	0.0985	pCi/g	+/-0.381	0.383	0.758	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167004	Date Collected: 11/02/2017 09:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.8
Client ID: B3FCK4		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716703	Method: GAMMA_GS	SOP Ref: GL-RAD-A-013
Run Date: 11/15/2017 11:30	Analyst: MXR1	Instrument: GAM17
Data File: G437167004.CNF;3	Aliquot: 157.834 g	Count Time: 180 min
Prep Batch: 1716703	Prep Method: DOE HASL 300, 4.5.2.3/Ga-01	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/09/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10045-97-3	Cesium-137	U	-0.0186	pCi/g	+/-0.0263	0.0277	0.045	0.100
10198-40-0	Cobalt-60	U	-0.0285	pCi/g	+/-0.0252	0.0284	0.0424	0.100
14683-23-9	Europium-152	U	0.0404	pCi/g	+/-0.0832	0.0853	0.105	0.100
15585-10-1	Europium-154	U	-0.00611	pCi/g	+/-0.0717	0.0717	0.136	0.100
14391-16-3	Europium-155	U	0.0462	pCi/g	+/-0.0528	0.0569	0.103	0.100

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167004	Date Collected: 11/02/2017 09:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.8
Client ID: B3FCK4		Prep Basis: "As Received"
Batch ID: 1717016	Method: TC99_EIE_LSC	SOP Ref: GL-RAD-A-059
Run Date: 11/14/2017 11:41	Analyst: CXS7	Instrument: LSCSILVER
Data File: E1717016.xls	Aliquot: 1.37 g	Count Time: 20 min
Prep Batch: 1717016	Prep Method: DOE EML HASL-300, Tc-02-	
Prep Date: 11/09/2017 08:56		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	-1.12	pCi/g	+/-1.68	1.68	3.00	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	65900	76600	CPM	86	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167
 Lab Sample ID: 437167004

 Client ID: B3FCK4
 Batch ID: 1717018
 Run Date: 11/14/2017 23:59
 Data File: N1717018.xls
 Prep Batch: 1717018
 Prep Date: 11/09/2017 15:36

Client: CPRC001
 Date Collected: 11/02/2017 09:00
 Date Received: 11/07/2017 08:55

 Method: NI63_LSC
 Analyst: TXJ1
 Aliquot: 0.513 g
 Prep Method: DOE RESL Ni-1, Modified

Project: CPRC0F17009
 Matrix: SOIL
 %Moisture: 2.8

 Prep Basis: "Dry Weight Corrected"
 SOP Ref: GL-RAD-A-022
 Instrument: LSCRED
 Count Time: 30 min
 Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
NI-63	Nickel-63	U	-2.95	pCi/g	+/-3.81	3.81	6.72	10.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Nickel Carrier	21.3	25.2	mg	84.5	(40%-110%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167004	Date Collected: 11/02/2017 09:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.8
Client ID: B3FCK4		Prep Basis: "As Received"
Batch ID: 1717032	Method: TRITIUM_DIST_LSC	SOP Ref: GL-RAD-A-002
Run Date: 11/11/2017 00:32	Analyst: BXM4	Instrument: LSCSILVER
Data File: T1717032.xls	Aliquot: 1.27 g	Count Time: 15 min
Prep Batch: 1717032	Prep Method: EPA 906.0 Modified	
Prep Date: 11/09/2017 10:38		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium	U	-6.54	pCi/g	+/-12.1	12.1	23.0	30.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167004	Date Collected: 11/02/2017 09:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.8
Client ID: B3FCK4		Prep Basis: "As Received"
Batch ID: 1717047	Method: C14_LSC	SOP Ref: GL-RAD-A-003
Run Date: 11/13/2017 11:56	Analyst: BXM4	Instrument: LSCSILVER
Data File: C1717047.xls	Aliquot: 0.508 g	Count Time: 40 min
Prep Batch: 1717047	Prep Method: EPA EERF C-01 Modified	
Prep Date: 11/10/2017 12:17		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14762-75-5	Carbon-14	U	-0.808	pCi/g	+/-2.29	2.29	3.96	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167
Lab Sample ID: 437167005

Client: CPRC001
Date Collected: 11/02/2017 09:00
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 2.6

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167
Lab Sample ID: 437167006

Client: CPRC001
Date Collected: 11/02/2017 09:00
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 2.1

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167007	Date Collected: 11/02/2017 11:30	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 14.6
Client ID: B3FCL7		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716798	Method: AMCMISO_EIE_PREC_AEA	SOP Ref: GL-RAD-A-011
Run Date: 11/16/2017 12:08	Analyst: BXA4	Instrument: 1248
Data File: S0437167007_AM.1A.gcnf	Aliquot: 0.101 g	Count Time: 240 min
Prep Batch: 1716798	Prep Method: DOE EML HASL-300, Am-05	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14596-10-2	Americium-241	U	0.0285	pCi/g	+/-0.298	0.298	0.621	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	15.0	20.8	pCi/g	72.3	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167007	Date Collected: 11/02/2017 11:30	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 14.6
Client ID: B3FCL7		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716799	Method: ASTM C 1475-00 Modified	SOP Ref: GL-RAD-A-032
Run Date: 11/15/2017 17:25	Analyst: BXA4	Instrument: 1185
Data File: S0437167007_NP.1A.gcnf	Aliquot: 0.103 g	Count Time: 240 min
Prep Batch: 1716799	Prep Method: ASTM C 1475-00 Modified	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
13994-20-2	Neptunium-237	U	-0.0753	pCi/g	+/-0.325	0.325	0.788	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	1720	2080	pCi/g	82.8	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167
Lab Sample ID: 437167007

Client: CPRC001
Date Collected: 11/02/2017 11:30
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 14.6

Client ID: B3FCL7
Batch ID: 1716800
Run Date: 11/17/2017 09:37
Data File: S0437167007_PU.1A.gcnf
Prep Batch: 1716800
Prep Date: 11/13/2017 00:00

Method: PUIISO_PRECIP_AEA
Analyst: BXA4
Aliquot: 0.101 g
Prep Method: DOE EML HASL-300, Pu-11-

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-011
Instrument: 1066
Count Time: 239.9998 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
I3981-16-3	Plutonium-238	U	0.0491	pCi/g	+/-0.317	0.318	0.649	1.00
OER-100-70	Plutonium-239/240	U	-0.0807	pCi/g	+/-0.273	0.273	0.708	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Plutonium-242 Tracer	16.1	19.5	pCi/g	82.5	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167007	Date Collected: 11/02/2017 11:30	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 14.6
Client ID: B3FCL7		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716801	Method: UIISO_IE_PRECIP_AEA	SOP Ref: GL-RAD-A-011
Run Date: 11/15/2017 08:49	Analyst: BXA4	Instrument: 1140
Data File: S0437167007_UU.1A.gcnf	Aliquot: 0.101 g	Count Time: 240 min
Prep Batch: 1716801	Prep Method: DOE EML HASL-300, U-02-R	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
U-233/234 <small>13968-55-3/13966-29-5</small>	Uranium-233/234		1.02	pCi/g	+/-0.690	0.706	0.813	1.00
15117-96-1/13982-7	Uranium-235/236	U	-0.0509	pCi/g	+/-0.225	0.226	0.588	1.00
7440-61-1	Uranium-238		1.10	pCi/g	+/-0.659	0.679	0.602	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Uranium-232 Tracer	17.6	20.7	pCi/g	84.7	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error. TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma). The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167007	Date Collected: 11/02/2017 11:30	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 14.6
Client ID: B3FCL7		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716489	Method: SRTOT_SEP_PRECIP_GPC	SOP Ref: GL-RAD-A-004
Run Date: 11/14/2017 12:40	Analyst: BXF1	Instrument: PIC2B
Data File: S1716489r1.xls	Aliquot: 0.312 g	Count Time: 60 min
Prep Batch: 1716489	Prep Method: EPA 905.0 Modified/DOE RP5	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 10:45		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
SR-RAD	Total Strontium	U	-0.241	pCi/g	+/-0.671	0.671	1.41	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	6.60	7.85	mg	84.1	(40%-110%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167007	Date Collected: 11/02/2017 11:30	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 14.6
Client ID: B3FCL7		Prep Basis: "As Received"
Batch ID: 1716594	Method: I129_SEP_LEPS_GS	SOP Ref: GL-RAD-A-006
Run Date: 11/08/2017 17:28	Analyst: MJH1	Instrument: XRAY3
Data File: I437167007.CNF;1	Aliquot: 1.213 g	Count Time: 120 min
Prep Batch: 1716594	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 11/08/2017 12:47		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	-0.0962	pCi/g	+/-0.231	0.236	0.387	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167007	Date Collected: 11/02/2017 11:30	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 14.6
Client ID: B3FCL7		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716703	Method: GAMMA_GS	SOP Ref: GL-RAD-A-013
Run Date: 11/15/2017 11:31	Analyst: MXR1	Instrument: GAM19
Data File: G437167007.CNF;2	Aliquot: 144.703 g	Count Time: 180 min
Prep Batch: 1716703	Prep Method: DOE HASL 300, 4.5.2.3/Ga-01	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/09/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10045-97-3	Cesium-137		0.246	pCi/g	+/-0.0569	0.0604	0.0411	0.100
10198-40-0	Cobalt-60	U	-0.0137	pCi/g	+/-0.0239	0.0248	0.0408	0.100
14683-23-9	Europium-152	U	-0.00907	pCi/g	+/-0.0601	0.0602	0.103	0.100
15585-10-1	Europium-154	U	-0.0106	pCi/g	+/-0.0868	0.0869	0.135	0.100
14391-16-3	Europium-155	U	0.0866	pCi/g	+/-0.103	0.103	0.113	0.100

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167007	Date Collected: 11/02/2017 11:30	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 14.6
Client ID: B3FCL7		Prep Basis: "As Received"
Batch ID: 1717016	Method: TC99_EIE_LSC	SOP Ref: GL-RAD-A-059
Run Date: 11/14/2017 12:02	Analyst: CXS7	Instrument: LSCSILVER
Data File: E1717016.xls	Aliquot: 1.214 g	Count Time: 20 min
Prep Batch: 1717016	Prep Method: DOE EML HASL-300, Tc-02-	
Prep Date: 11/09/2017 08:56		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	0.328	pCi/g	+/-2.03	2.03	3.51	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	63400	76600	CPM	82.8	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167007	Date Collected: 11/02/2017 11:30	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 14.6
Client ID: B3FCL7		Prep Basis: "Dry Weight Corrected"
Batch ID: 1717018	Method: NI63_LSC	SOP Ref: GL-RAD-A-022
Run Date: 11/15/2017 00:31	Analyst: TXJ1	Instrument: LSCRED
Data File: N1717018.xls	Aliquot: 0.508 g	Count Time: 30 min
Prep Batch: 1717018	Prep Method: DOE RESL Ni-1, Modified	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/09/2017 15:36		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
NI-63	Nickel-63	U	-0.402	pCi/g	+/-3.89	3.89	6.74	10.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Nickel Carrier	21.5	25.2	mg	85.3	(40%-110%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167007	Date Collected: 11/02/2017 11:30	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 14.6
Client ID: B3FCL7		Prep Basis: "As Received"
Batch ID: 1717032	Method: TRITIUM_DIST_LSC	SOP Ref: GL-RAD-A-002
Run Date: 11/11/2017 00:49	Analyst: BXM4	Instrument: LSCSILVER
Data File: T1717032.xls	Aliquot: 1.258 g	Count Time: 15 min
Prep Batch: 1717032	Prep Method: EPA 906.0 Modified	
Prep Date: 11/09/2017 10:38		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium	U	0.471	pCi/g	+/-13.2	13.2	23.8	30.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167007	Date Collected: 11/02/2017 11:30	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 14.6
Client ID: B3FCL7		Prep Basis: "As Received"
Batch ID: 1717047	Method: C14_LSC	SOP Ref: GL-RAD-A-003
Run Date: 11/13/2017 12:38	Analyst: BXM4	Instrument: LSCSILVER
Data File: C1717047.xls	Aliquot: 0.52 g	Count Time: 40 min
Prep Batch: 1717047	Prep Method: EPA EERF C-01 Modified	
Prep Date: 11/10/2017 12:17		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14762-75-5	Carbon-14	U	-0.522	pCi/g	+/-2.24	2.24	3.86	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167
Lab Sample ID: 437167008

Client: CPRC001
Date Collected: 11/02/2017 11:30
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 14.8

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167
Lab Sample ID: 437167009

Client: CPRC001
Date Collected: 11/02/2017 11:30
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 14.7

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167010	Date Collected: 11/02/2017 14:45	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 18.2
Client ID: B3FCM3		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716798	Method: AMCMISO_EIE_PREC_AEA	SOP Ref: GL-RAD-A-011
Run Date: 11/16/2017 12:11	Analyst: BXA4	Instrument: 1112
Data File: S0437167010_AM.1A.gcnf	Aliquot: 0.103 g	Count Time: 240 min
Prep Batch: 1716798	Prep Method: DOE EML HASL-300, Am-05	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14596-10-2	Americium-241	U	0.0377	pCi/g	+/-0.244	0.244	0.498	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	16.2	20.4	pCi/g	79.6	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167010	Date Collected: 11/02/2017 14:45	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 18.2
Client ID: B3FCM3		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716799	Method: ASTM C 1475-00 Modified	SOP Ref: GL-RAD-A-032
Run Date: 11/15/2017 17:25	Analyst: BXA4	Instrument: 1186
Data File: S0437167010_NP.1A.gcnf	Aliquot: 0.103 g	Count Time: 240 min
Prep Batch: 1716799	Prep Method: ASTM C 1475-00 Modified	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
13994-20-2	Neptunium-237	U	-0.242	pCi/g	+/-0.288	0.289	0.868	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	2000	2080	pCi/g	96.4	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167010	Date Collected: 11/02/2017 14:45	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 18.2
Client ID: B3FCM3		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716800	Method: PUIISO_PRECIP_AEA	SOP Ref: GL-RAD-A-011
Run Date: 11/17/2017 09:37	Analyst: BXA4	Instrument: 1067
Data File: S0437167010_PU.1A.gcnf	Aliquot: 0.103 g	Count Time: 239.9998 min
Prep Batch: 1716800	Prep Method: DOE EML HASL-300, Pu-11-	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
I3981-16-3	Plutonium-238	U	0.209	pCi/g	+/-0.502	0.503	0.909	1.00
OER-100-70	Plutonium-239/240	U	-0.181	pCi/g	+/-0.385	0.386	1.00	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Plutonium-242 Tracer	12.4	19.2	pCi/g	64.7	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167010	Date Collected: 11/02/2017 14:45	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 18.2
Client ID: B3FCM3		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716801	Method: UIISO_IE_PRECIP_AEA	SOP Ref: GL-RAD-A-011
Run Date: 11/15/2017 09:23	Analyst: BXA4	Instrument: 1141
Data File: S0437167010_UU.1A.gcnf	Aliquot: 0.103 g	Count Time: 240 min
Prep Batch: 1716801	Prep Method: DOE EML HASL-300, U-02-R	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
U-233/234 <small>13968-55-3/13966-29-5</small>	Uranium-233/234		5.20	pCi/g	+/-1.38	1.59	0.642	1.00
15117-96-1/13982-7	Uranium-235/236	U	0.0317	pCi/g	+/-0.331	0.331	0.691	1.00
7440-61-1	Uranium-238		3.62	pCi/g	+/-1.15	1.27	0.507	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Uranium-232 Tracer	16.2	20.3	pCi/g	79.5	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error. TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma). The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167010	Date Collected: 11/02/2017 14:45	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 18.2
Client ID: B3FCM3	Method: SRTOT_SEP_PRECIP_GPC	Prep Basis: "Dry Weight Corrected"
Batch ID: 1716489	Analyst: BXF1	SOP Ref: GL-RAD-A-004
Run Date: 11/14/2017 14:36	Aliquot: 0.308 g	Instrument: PIC8A
Data File: S1716489r1.xls	Prep Method: EPA 905.0 Modified/DOE RP5	Count Time: 60 min
Prep Batch: 1716489		Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 10:45		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
SR-RAD	Total Strontium	U	0.0708	pCi/g	+/-0.644	0.644	1.25	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	6.90	7.85	mg	87.9	(40%-110%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167010	Date Collected: 11/02/2017 14:45	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 18.2
Client ID: B3FCM3		Prep Basis: "As Received"
Batch ID: 1716594	Method: I129_SEP_LEPS_GS	SOP Ref: GL-RAD-A-006
Run Date: 11/08/2017 17:28	Analyst: MJH1	Instrument: XRAY4
Data File: I437167010.CNF;1	Aliquot: 1.355 g	Count Time: 120 min
Prep Batch: 1716594	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 11/08/2017 12:47		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	0.124	pCi/g	+/-0.323	0.328	0.667	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167010	Date Collected: 11/02/2017 14:45	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 18.2
Client ID: B3FCM3	Method: GAMMA_GS	Prep Basis: "Dry Weight Corrected"
Batch ID: 1716703	Analyst: MXR1	SOP Ref: GL-RAD-A-013
Run Date: 11/15/2017 11:32	Aliquot: 139.168 g	Instrument: GAM30
Data File: G437167010.CNF;1	Prep Method: DOE HASL 300, 4.5.2.3/Ga-01	Count Time: 120 min
Prep Batch: 1716703		Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/09/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10045-97-3	Cesium-137		0.169	pCi/g	+/-0.048	0.0501	0.0414	0.100
10198-40-0	Cobalt-60	U	0.00842	pCi/g	+/-0.0225	0.0229	0.0428	0.100
14683-23-9	Europium-152	U	-0.0215	pCi/g	+/-0.0564	0.0573	0.106	0.100
15585-10-1	Europium-154	U	0.0182	pCi/g	+/-0.0727	0.0731	0.132	0.100
14391-16-3	Europium-155	U	0.0546	pCi/g	+/-0.0597	0.0647	0.116	0.100

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167010	Date Collected: 11/02/2017 14:45	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 18.2
Client ID: B3FCM3		Prep Basis: "As Received"
Batch ID: 1717016	Method: TC99_EIE_LSC	SOP Ref: GL-RAD-A-059
Run Date: 11/14/2017 12:25	Analyst: CXS7	Instrument: LSCSILVER
Data File: E1717016.xls	Aliquot: 1.559 g	Count Time: 20 min
Prep Batch: 1717016	Prep Method: DOE EML HASL-300, Tc-02-	
Prep Date: 11/09/2017 08:56		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	-1.35	pCi/g	+/-1.65	1.65	2.96	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	61200	76600	CPM	79.9	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167
 Lab Sample ID: 437167010

 Client ID: B3FCM3
 Batch ID: 1717018
 Run Date: 11/15/2017 02:17
 Data File: N1717018.xls
 Prep Batch: 1717018
 Prep Date: 11/09/2017 15:36

Client: CPRC001
 Date Collected: 11/02/2017 14:45
 Date Received: 11/07/2017 08:55

 Method: NI63_LSC
 Analyst: TXJ1
 Aliquot: 0.505 g
 Prep Method: DOE RESL Ni-1, Modified

Project: CPRC0F17009
 Matrix: SOIL
 %Moisture: 18.2

 Prep Basis: "Dry Weight Corrected"
 SOP Ref: GL-RAD-A-022
 Instrument: LSCRED
 Count Time: 30 min
 Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
NI-63	Nickel-63	U	-1.04	pCi/g	+/-4.28	4.28	7.43	10.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Nickel Carrier	19.5	25.2	mg	77.4	(40%-110%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167010	Date Collected: 11/02/2017 14:45	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 18.2
Client ID: B3FCM3		Prep Basis: "As Received"
Batch ID: 1717032	Method: TRITIUM_DIST_LSC	SOP Ref: GL-RAD-A-002
Run Date: 11/11/2017 01:05	Analyst: BXM4	Instrument: LSCSILVER
Data File: T1717032.xls	Aliquot: 1.264 g	Count Time: 15 min
Prep Batch: 1717032	Prep Method: EPA 906.0 Modified	
Prep Date: 11/09/2017 10:38		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium	U	-10.1	pCi/g	+/-12.4	12.4	24.1	30.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167010	Date Collected: 11/02/2017 14:45	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 18.2
Client ID: B3FCM3		Prep Basis: "As Received"
Batch ID: 1717047	Method: C14_LSC	SOP Ref: GL-RAD-A-003
Run Date: 11/13/2017 13:21	Analyst: BXM4	Instrument: LSCSILVER
Data File: C1717047.xls	Aliquot: 0.504 g	Count Time: 40 min
Prep Batch: 1717047	Prep Method: EPA EERF C-01 Modified	
Prep Date: 11/10/2017 12:17		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14762-75-5	Carbon-14	U	-0.518	pCi/g	+/-2.33	2.33	4.02	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167
Lab Sample ID: 437167011

Client: CPRC001
Date Collected: 11/02/2017 14:45
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 18.1

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167
Lab Sample ID: 437167012

Client: CPRC001
Date Collected: 11/02/2017 14:45
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 19.4

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167013	Date Collected: 11/02/2017 16:45	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 21.4
Client ID: B3FCN0		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716798	Method: AMCMISO_EIE_PREC_AEA	SOP Ref: GL-RAD-A-011
Run Date: 11/16/2017 12:08	Analyst: BXA4	Instrument: 1221
Data File: S0437167013_AM.1A.gcnf	Aliquot: 0.103 g	Count Time: 240 min
Prep Batch: 1716798	Prep Method: DOE EML HASL-300, Am-05	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14596-10-2	Americium-241	U	0.107	pCi/g	+/-0.294	0.294	0.509	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	17.9	20.4	pCi/g	87.8	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167013	Date Collected: 11/02/2017 16:45	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 21.4
Client ID: B3FCN0		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716799	Method: ASTM C 1475-00 Modified	SOP Ref: GL-RAD-A-032
Run Date: 11/15/2017 17:25	Analyst: BXA4	Instrument: 1188
Data File: S0437167013_NP.1A.gcnf	Aliquot: 0.1 g	Count Time: 240 min
Prep Batch: 1716799	Prep Method: ASTM C 1475-00 Modified	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
13994-20-2	Neptunium-237	U	-0.105	pCi/g	+/-0.238	0.239	0.650	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	2060	2140	pCi/g	96.3	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167
Lab Sample ID: 437167013

Client: CPRC001
Date Collected: 11/02/2017 16:45
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 21.4

Client ID: B3FCN0
Batch ID: 1716800
Run Date: 11/17/2017 09:37
Data File: S0437167013_PU.1A.gcnf
Prep Batch: 1716800
Prep Date: 11/13/2017 00:00

Method: PUIISO_PRECIP_AEA
Analyst: BXA4
Aliquot: 0.103 g
Prep Method: DOE EML HASL-300, Pu-11-

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-011
Instrument: 1069
Count Time: 239.9998 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
I3981-16-3	Plutonium-238	U	-0.0582	pCi/g	+/-0.176	0.176	0.493	1.00
OER-100-70	Plutonium-239/240	U	0.0226	pCi/g	+/-0.236	0.237	0.493	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Plutonium-242 Tracer	13.2	19.2	pCi/g	68.9	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167013	Date Collected: 11/02/2017 16:45	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 21.4
Client ID: B3FCN0		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716801	Method: UIISO_IE_PRECIP_AEA	SOP Ref: GL-RAD-A-011
Run Date: 11/15/2017 09:23	Analyst: BXA4	Instrument: 1142
Data File: S0437167013_UU.1A.gcnf	Aliquot: 0.103 g	Count Time: 240 min
Prep Batch: 1716801	Prep Method: DOE EML HASL-300, U-02-R	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
U-233/234 <small>13968-55-3/13966-29-5</small>	Uranium-233/234		0.928	pCi/g	+/-0.587	0.602	0.503	1.00
15117-96-1/13982-7	Uranium-235/236	U	0.203	pCi/g	+/-0.349	0.350	0.305	1.00
7440-61-1	Uranium-238		1.11	pCi/g	+/-0.628	0.649	0.456	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Uranium-232 Tracer	17.4	20.3	pCi/g	85.6	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error. TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167
Lab Sample ID: 437167013

Client: CPRC001
Date Collected: 11/02/2017 16:45
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 21.4

Client ID: B3FCN0
Batch ID: 1716489
Run Date: 11/14/2017 14:36
Data File: S1716489r1.xls
Prep Batch: 1716489
Prep Date: 11/13/2017 10:45

Method: SRTOT_SEP_PRECIP_GPC
Analyst: BXF1
Aliquot: 0.321 g
Prep Method: EPA 905.0 Modified/DOE RP5

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-004
Instrument: PIC10B
Count Time: 60 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
SR-RAD	Total Strontium	U	1.12	pCi/g	+/-0.959	1.00	1.54	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	6.40	7.85	mg	81.5	(40%-110%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167013	Date Collected: 11/02/2017 16:45	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 21.4
Client ID: B3FCN0		Prep Basis: "As Received"
Batch ID: 1716594	Method: I129_SEP_LEPS_GS	SOP Ref: GL-RAD-A-006
Run Date: 11/08/2017 17:29	Analyst: MJH1	Instrument: XRAY5
Data File: I437167013.CNF;1	Aliquot: 1.552 g	Count Time: 120 min
Prep Batch: 1716594	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 11/08/2017 12:47		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	-0.00118	pCi/g	+/-0.333	0.333	0.624	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167
Lab Sample ID: 437167013

Client ID: B3FCN0
Batch ID: 1716703
Run Date: 11/15/2017 11:32
Data File: G437167013.CNF;2
Prep Batch: 1716703
Prep Date: 11/09/2017 00:00

Client: CPRC001
Date Collected: 11/02/2017 16:45
Date Received: 11/07/2017 08:55

Method: GAMMA_GS
Analyst: MXR1
Aliquot: 148.217 g
Prep Method: DOE HASL 300, 4.5.2.3/Ga-01

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 21.4

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-013
Instrument: GAM32
Count Time: 150 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10045-97-3	Cesium-137	U	-0.022	pCi/g	+/-0.0249	0.0269	0.0363	0.100
10198-40-0	Cobalt-60	U	-0.0096	pCi/g	+/-0.0218	0.0222	0.0398	0.100
14683-23-9	Europium-152	U	0.0402	pCi/g	+/-0.0565	0.0594	0.103	0.100
15585-10-1	Europium-154	U	0.0093	pCi/g	+/-0.0677	0.0679	0.132	0.100
14391-16-3	Europium-155	U	0.0165	pCi/g	+/-0.0649	0.0654	0.120	0.100

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167013	Date Collected: 11/02/2017 16:45	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 21.4
Client ID: B3FCN0		Prep Basis: "As Received"
Batch ID: 1717016	Method: TC99_EIE_LSC	SOP Ref: GL-RAD-A-059
Run Date: 11/14/2017 12:47	Analyst: CXS7	Instrument: LSCSILVER
Data File: E1717016.xls	Aliquot: 1.415 g	Count Time: 20 min
Prep Batch: 1717016	Prep Method: DOE EML HASL-300, Tc-02-	
Prep Date: 11/09/2017 08:56		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	-0.392	pCi/g	+/-1.62	1.62	2.84	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	67000	76600	CPM	87.5	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167
Lab Sample ID: 437167013

Client: CPRC001
Date Collected: 11/02/2017 16:45
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 21.4

Client ID: B3FCN0
Batch ID: 1717018
Run Date: 11/15/2017 02:49
Data File: N1717018.xls
Prep Batch: 1717018
Prep Date: 11/09/2017 15:36

Method: NI63_LSC
Analyst: TXJ1
Aliquot: 0.527 g
Prep Method: DOE RESL Ni-1, Modified

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-022
Instrument: LSCRED
Count Time: 30 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
NI-63	Nickel-63	U	0.411	pCi/g	+/-4.09	4.09	7.04	10.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Nickel Carrier	19.7	25.2	mg	78.2	(40%-110%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167013	Date Collected: 11/02/2017 16:45	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 21.4
Client ID: B3FCN0		Prep Basis: "As Received"
Batch ID: 1717032	Method: TRITIUM_DIST_LSC	SOP Ref: GL-RAD-A-002
Run Date: 11/11/2017 01:21	Analyst: BXM4	Instrument: LSCSILVER
Data File: T1717032.xls	Aliquot: 1.251 g	Count Time: 15 min
Prep Batch: 1717032	Prep Method: EPA 906.0 Modified	
Prep Date: 11/09/2017 10:38		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium	U	-7.22	pCi/g	+/-12.8	12.8	24.4	30.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167013	Date Collected: 11/02/2017 16:45	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 21.4
Client ID: B3FCN0		Prep Basis: "As Received"
Batch ID: 1717047	Method: C14_LSC	SOP Ref: GL-RAD-A-003
Run Date: 11/13/2017 14:03	Analyst: BXM4	Instrument: LSCSILVER
Data File: C1717047.xls	Aliquot: 0.505 g	Count Time: 40 min
Prep Batch: 1717047	Prep Method: EPA EERF C-01 Modified	
Prep Date: 11/10/2017 12:17		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14762-75-5	Carbon-14	U	-0.805	pCi/g	+/-2.30	2.30	3.98	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167
Lab Sample ID: 437167014

Client: CPRC001
Date Collected: 11/02/2017 16:45
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 20.2

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167
Lab Sample ID: 437167015

Client: CPRC001
Date Collected: 11/02/2017 16:45
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 20.5

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167016	Date Collected: 11/03/2017 10:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 1.9
Client ID: B3FLR5		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716798	Method: AMCMISO_EIE_PREC_AEA	SOP Ref: GL-RAD-A-011
Run Date: 11/16/2017 12:08	Analyst: BXA4	Instrument: 1226
Data File: S0437167016_AM.1A.gcnf	Aliquot: 0.104 g	Count Time: 240 min
Prep Batch: 1716798	Prep Method: DOE EML HASL-300, Am-05	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14596-10-2	Americium-241	U	0.0596	pCi/g	+/-0.223	0.224	0.376	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	18.1	20.2	pCi/g	89.8	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167016	Date Collected: 11/03/2017 10:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 1.9
Client ID: B3FLR5		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716799	Method: ASTM C 1475-00 Modified	SOP Ref: GL-RAD-A-032
Run Date: 11/15/2017 17:25	Analyst: BXA4	Instrument: 1189
Data File: S0437167016_NP.1A.gcnf	Aliquot: 0.103 g	Count Time: 240 min
Prep Batch: 1716799	Prep Method: ASTM C 1475-00 Modified	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
13994-20-2	Neptunium-237	U	0.198	pCi/g	+/-0.351	0.351	0.531	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	1980	2080	pCi/g	95.4	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167016	Date Collected: 11/03/2017 10:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 1.9
Client ID: B3FLR5		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716800	Method: PUIISO_PRECIP_AEA	SOP Ref: GL-RAD-A-011
Run Date: 11/17/2017 09:37	Analyst: BXA4	Instrument: 1070
Data File: S0437167016_PU.1A.gcnf	Aliquot: 0.104 g	Count Time: 239.9998 min
Prep Batch: 1716800	Prep Method: DOE EML HASL-300, Pu-11-	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
I3981-16-3	Plutonium-238	U	-0.224	pCi/g	+/-0.216	0.217	0.760	1.00
OER-100-70	Plutonium-239/240	U	-0.224	pCi/g	+/-0.216	0.217	0.760	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Plutonium-242 Tracer	13.0	19.0	pCi/g	68.2	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167016	Date Collected: 11/03/2017 10:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 1.9
Client ID: B3FLR5		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716801	Method: UIISO_IE_PRECIP_AEA	SOP Ref: GL-RAD-A-011
Run Date: 11/15/2017 09:23	Analyst: BXA4	Instrument: 1143
Data File: S0437167016_UU.1A.gcnf	Aliquot: 0.104 g	Count Time: 240 min
Prep Batch: 1716801	Prep Method: DOE EML HASL-300, U-02-R	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
U-233/234 <small>13968-55-3/13966-29-5</small>	Uranium-233/234		0.571	pCi/g	+/-0.477	0.484	0.558	1.00
15117-96-1/13982-7	Uranium-235/236	U	0.187	pCi/g	+/-0.320	0.321	0.280	1.00
7440-61-1	Uranium-238	U	0.266	pCi/g	+/-0.336	0.339	0.418	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Uranium-232 Tracer	21.0	20.1	pCi/g	104	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error. TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma). The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167016	Date Collected: 11/03/2017 10:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 1.9
Client ID: B3FLR5	Method: SRTOT_SEP_PRECIP_GPC	Prep Basis: "Dry Weight Corrected"
Batch ID: 1716489	Analyst: BXF1	SOP Ref: GL-RAD-A-004
Run Date: 11/14/2017 12:40	Aliquot: 0.371 g	Instrument: PIC3D
Data File: S1716489r1.xls	Prep Method: EPA 905.0 Modified/DOE RP5	Count Time: 60 min
Prep Batch: 1716489		Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 10:45		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
SR-RAD	Total Strontium	U	-0.271	pCi/g	+/-0.593	0.593	1.24	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	6.90	7.85	mg	87.9	(40%-110%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167016	Date Collected: 11/03/2017 10:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 1.9
Client ID: B3FLR5		Prep Basis: "As Received"
Batch ID: 1716594	Method: I129_SEP_LEPS_GS	SOP Ref: GL-RAD-A-006
Run Date: 11/08/2017 17:29	Analyst: MJH1	Instrument: XRAY6
Data File: I437167016.CNF;1	Aliquot: 1.285 g	Count Time: 120 min
Prep Batch: 1716594	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 11/08/2017 12:47		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	-0.0263	pCi/g	+/-0.199	0.200	0.476	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167016	Date Collected: 11/03/2017 10:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 1.9
Client ID: B3FLR5		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716703	Method: GAMMA_GS	SOP Ref: GL-RAD-A-013
Run Date: 11/15/2017 11:33	Analyst: MXR1	Instrument: GAM36
Data File: G437167016.CNF;1	Aliquot: 174.379 g	Count Time: 120 min
Prep Batch: 1716703	Prep Method: DOE HASL 300, 4.5.2.3/Ga-01	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/09/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10045-97-3	Cesium-137	U	-0.0162	pCi/g	+/-0.0246	0.0258	0.0439	0.100
10198-40-0	Cobalt-60	U	0.00103	pCi/g	+/-0.0263	0.0263	0.054	0.100
14683-23-9	Europium-152	U	0.00566	pCi/g	+/-0.0585	0.0586	0.109	0.100
15585-10-1	Europium-154	U	-0.0401	pCi/g	+/-0.0785	0.0806	0.145	0.100
14391-16-3	Europium-155	U	0.0171	pCi/g	+/-0.0545	0.0551	0.112	0.100

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167016	Date Collected: 11/03/2017 10:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 1.9
Client ID: B3FLR5		Prep Basis: "As Received"
Batch ID: 1717016	Method: TC99_EIE_LSC	SOP Ref: GL-RAD-A-059
Run Date: 11/14/2017 13:08	Analyst: CXS7	Instrument: LSCSILVER
Data File: E1717016.xls	Aliquot: 1.618 g	Count Time: 20 min
Prep Batch: 1717016	Prep Method: DOE EML HASL-300, Tc-02-	
Prep Date: 11/09/2017 08:56		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	-0.421	pCi/g	+/-1.47	1.47	2.59	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	63600	76600	CPM	83	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167
Lab Sample ID: 437167016

Client: CPRC001
Date Collected: 11/03/2017 10:00
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 1.9

Client ID: B3FLR5
Batch ID: 1717018
Run Date: 11/15/2017 03:20
Data File: N1717018.xls
Prep Batch: 1717018
Prep Date: 11/09/2017 15:36

Method: NI63_LSC
Analyst: TXJ1
Aliquot: 0.503 g
Prep Method: DOE RESL Ni-1, Modified

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-022
Instrument: LSCRED
Count Time: 30 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
NI-63	Nickel-63	U	-0.60	pCi/g	+/-4.73	4.73	8.20	10.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Nickel Carrier	17.8	25.2	mg	70.6	(40%-110%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167016	Date Collected: 11/03/2017 10:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 1.9
Client ID: B3FLR5		Prep Basis: "As Received"
Batch ID: 1717032	Method: TRITIUM_DIST_LSC	SOP Ref: GL-RAD-A-002
Run Date: 11/11/2017 01:37	Analyst: BXM4	Instrument: LSCSILVER
Data File: T1717032.xls	Aliquot: 1.267 g	Count Time: 15 min
Prep Batch: 1717032	Prep Method: EPA 906.0 Modified	
Prep Date: 11/09/2017 10:38		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium	U	-11.6	pCi/g	+/-11.6	11.6	22.9	30.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167016	Date Collected: 11/03/2017 10:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 1.9
Client ID: B3FLR5		Prep Basis: "As Received"
Batch ID: 1717047	Method: C14_LSC	SOP Ref: GL-RAD-A-003
Run Date: 11/13/2017 14:45	Analyst: BXM4	Instrument: LSCSILVER
Data File: C1717047.xls	Aliquot: 0.51 g	Count Time: 40 min
Prep Batch: 1717047	Prep Method: EPA EERF C-01 Modified	
Prep Date: 11/10/2017 12:17		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14762-75-5	Carbon-14	U	0.0122	pCi/g	+/-2.29	2.29	3.94	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167
Lab Sample ID: 437167016

Client: CPRC001
Date Collected: 11/03/2017 10:00
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 1.9

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167017	Date Collected: 11/03/2017 11:30	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.4
Client ID: B3FLR9		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716798	Method: AMCMISO_EIE_PREC_AEA	SOP Ref: GL-RAD-A-011
Run Date: 11/16/2017 12:08	Analyst: BXA4	Instrument: 1231
Data File: S0437167017_AM.1A.gcnf	Aliquot: 0.107 g	Count Time: 240 min
Prep Batch: 1716798	Prep Method: DOE EML HASL-300, Am-05	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14596-10-2	Americium-241	U	-0.0522	pCi/g	+/-0.231	0.232	0.603	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	14.2	19.6	pCi/g	72.6	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167017	Date Collected: 11/03/2017 11:30	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.4
Client ID: B3FLR9		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716799	Method: ASTM C 1475-00 Modified	SOP Ref: GL-RAD-A-032
Run Date: 11/15/2017 17:25	Analyst: BXA4	Instrument: 1191
Data File: S0437167017_NP.1A.gcnf	Aliquot: 0.102 g	Count Time: 240 min
Prep Batch: 1716799	Prep Method: ASTM C 1475-00 Modified	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
13994-20-2	Neptunium-237	U	-0.105	pCi/g	+/-0.200	0.200	0.616	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	2100	2100	pCi/g	100	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167017	Date Collected: 11/03/2017 11:30	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.4
Client ID: B3FLR9		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716800	Method: PUIISO_PRECIP_AEA	SOP Ref: GL-RAD-A-011
Run Date: 11/17/2017 09:37	Analyst: BXA4	Instrument: 1071
Data File: S0437167017_PU.1A.gcnf	Aliquot: 0.107 g	Count Time: 240 min
Prep Batch: 1716800	Prep Method: DOE EML HASL-300, Pu-11-	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
I3981-16-3	Plutonium-238	U	0.0308	pCi/g	+/-0.322	0.323	0.672	1.00
OER-100-70	Plutonium-239/240	U	-0.211	pCi/g	+/-0.266	0.266	0.889	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Plutonium-242 Tracer	9.04	18.4	pCi/g	49	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167
Lab Sample ID: 437167017

Client: CPRC001
Date Collected: 11/03/2017 11:30
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 2.4

Client ID: B3FLR9
Batch ID: 1716801
Run Date: 11/15/2017 09:23
Data File: S0437167017_UU.1A.gcnf
Prep Batch: 1716801
Prep Date: 11/13/2017 00:00

Method: UIISO_IE_PRECIP_AEA
Analyst: BXA4
Aliquot: 0.107 g
Prep Method: DOE EML HASL-300, U-02-R

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-011
Instrument: 1144
Count Time: 240 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
U-233/234 <small>13968-55-3/13966-29-5</small>	Uranium-233/234		1.11	pCi/g	+/-0.569	0.589	0.415	1.00
15117-96-1/13982-7	Uranium-235/236	U	0.232	pCi/g	+/-0.334	0.336	0.403	1.00
7440-61-1	Uranium-238		1.00	pCi/g	+/-0.535	0.553	0.326	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Uranium-232 Tracer	19.3	19.6	pCi/g	98.6	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error. TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167017	Date Collected: 11/03/2017 11:30	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.4
Client ID: B3FLR9	Method: SRTOT_SEP_PRECIP_GPC	Prep Basis: "Dry Weight Corrected"
Batch ID: 1716489	Analyst: BXF1	SOP Ref: GL-RAD-A-004
Run Date: 11/14/2017 12:40	Aliquot: 0.391 g	Instrument: PIC4A
Data File: S1716489r1.xls	Prep Method: EPA 905.0 Modified/DOE RP5	Count Time: 60 min
Prep Batch: 1716489		Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 10:45		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
SR-RAD	Total Strontium	U	0.346	pCi/g	+/-0.756	0.761	1.35	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	6.40	7.85	mg	81.5	(40%-110%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167017	Date Collected: 11/03/2017 11:30	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.4
Client ID: B3FLR9		Prep Basis: "As Received"
Batch ID: 1716594	Method: I129_SEP_LEPS_GS	SOP Ref: GL-RAD-A-006
Run Date: 11/08/2017 19:49	Analyst: MJH1	Instrument: XRAY1
Data File: I437167017.CNF;1	Aliquot: 1.138 g	Count Time: 120 min
Prep Batch: 1716594	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 11/08/2017 12:47		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	-0.294	pCi/g	+/-0.258	0.292	0.361	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167
 Lab Sample ID: 437167017

 Client ID: B3FLR9
 Batch ID: 1716703
 Run Date: 11/15/2017 11:33
 Data File: G437167017.CNF;2
 Prep Batch: 1716703
 Prep Date: 11/09/2017 00:00

Client: CPRC001
 Date Collected: 11/03/2017 11:30
 Date Received: 11/07/2017 08:55

 Method: GAMMA_GS
 Analyst: MXR1
 Aliquot: 172.746 g
 Prep Method: DOE HASL 300, 4.5.2.3/Ga-01

Project: CPRC0F17009
 Matrix: SOIL
 %Moisture: 2.4

 Prep Basis: "Dry Weight Corrected"
 SOP Ref: GL-RAD-A-013
 Instrument: GAM41
 Count Time: 180 min
 Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10045-97-3	Cesium-137	U	0.00157	pCi/g	+/-0.019	0.019	0.0351	0.100
10198-40-0	Cobalt-60	U	0.00234	pCi/g	+/-0.0208	0.0208	0.0398	0.100
14683-23-9	Europium-152	U	0.0348	pCi/g	+/-0.0701	0.0719	0.0825	0.100
15585-10-1	Europium-154	U	0.0572	pCi/g	+/-0.0623	0.0676	0.130	0.100
14391-16-3	Europium-155	U	0.016	pCi/g	+/-0.0422	0.0428	0.081	0.100

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167017	Date Collected: 11/03/2017 11:30	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.4
Client ID: B3FLR9		Prep Basis: "As Received"
Batch ID: 1717016	Method: TC99_EIE_LSC	SOP Ref: GL-RAD-A-059
Run Date: 11/14/2017 13:30	Analyst: CXS7	Instrument: LSCSILVER
Data File: E1717016.xls	Aliquot: 1.482 g	Count Time: 20 min
Prep Batch: 1717016	Prep Method: DOE EML HASL-300, Tc-02-	
Prep Date: 11/09/2017 08:56		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	-0.756	pCi/g	+/-1.47	1.47	2.62	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	68400	76600	CPM	89.2	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167
Lab Sample ID: 437167017

Client: CPRC001
Date Collected: 11/03/2017 11:30
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 2.4

Client ID: B3FLR9
Batch ID: 1717018
Run Date: 11/15/2017 03:52
Data File: N1717018.xls
Prep Batch: 1717018
Prep Date: 11/09/2017 15:36

Method: NI63_LSC
Analyst: TXJ1
Aliquot: 0.52 g
Prep Method: DOE RESL Ni-1, Modified

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-022
Instrument: LSCRED
Count Time: 30 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
NI-63	Nickel-63	U	-4.63	pCi/g	+/-3.93	3.93	7.02	10.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Nickel Carrier	20.2	25.2	mg	80.2	(40%-110%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167017	Date Collected: 11/03/2017 11:30	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.4
Client ID: B3FLR9		Prep Basis: "As Received"
Batch ID: 1717032	Method: TRITIUM_DIST_LSC	SOP Ref: GL-RAD-A-002
Run Date: 11/11/2017 01:54	Analyst: BXM4	Instrument: LSCSILVER
Data File: T1717032.xls	Aliquot: 1.264 g	Count Time: 15 min
Prep Batch: 1717032	Prep Method: EPA 906.0 Modified	
Prep Date: 11/09/2017 10:38		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium	U	-8.94	pCi/g	+/-12.6	12.6	24.2	30.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167017	Date Collected: 11/03/2017 11:30	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 2.4
Client ID: B3FLR9		Prep Basis: "As Received"
Batch ID: 1717047	Method: C14_LSC	SOP Ref: GL-RAD-A-003
Run Date: 11/13/2017 15:27	Analyst: BXM4	Instrument: LSCSILVER
Data File: C1717047.xls	Aliquot: 0.519 g	Count Time: 40 min
Prep Batch: 1717047	Prep Method: EPA EERF C-01 Modified	
Prep Date: 11/10/2017 12:17		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14762-75-5	Carbon-14	U	0.271	pCi/g	+/-2.27	2.27	3.88	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167
Lab Sample ID: 437167017

Client: CPRC001
Date Collected: 11/03/2017 11:30
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 2.4

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167
Lab Sample ID: 437167018

Client: CPRC001
Date Collected: 11/03/2017 15:00
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 4.2

Client ID: B3FLT3
Batch ID: 1717701
Run Date: 11/16/2017 12:13
Data File: S0437167018_AM.1A
Prep Batch: 1717701
Prep Date: 11/14/2017 00:00

Method: AMCMISO_EIE_PREC_AEA
Analyst: JXR5
Aliquot: 0.111 g
Prep Method: DOE EML HASL-300, Am-05

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-011
Instrument: 1086
Count Time: 240 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14596-10-2	Americium-241	U	0.235	pCi/g	+/-0.456	0.458	0.784	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	12.1	18.9	pCi/g	64.1	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167018	Date Collected: 11/03/2017 15:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 4.2
Client ID: B3FLT3		Prep Basis: "Dry Weight Corrected"
Batch ID: 1717703	Method: ASTM C 1475-00 Modified	SOP Ref: GL-RAD-A-032
Run Date: 11/16/2017 08:28	Analyst: JXR5	Instrument: 1175
Data File: S0437167018_NP.1A.gcnf	Aliquot: 0.112 g	Count Time: 240 min
Prep Batch: 1717703	Prep Method: ASTM C 1475-00 Modified	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/14/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
13994-20-2	Neptunium-237	U	-0.0664	pCi/g	+/-0.200	0.201	0.563	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	1310	1910	pCi/g	68.4	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167
Lab Sample ID: 437167018

Client: CPRC001
Date Collected: 11/03/2017 15:00
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 4.2

Client ID: B3FLT3
Batch ID: 1717704
Run Date: 11/16/2017 12:13
Data File: S0437167018_PU.1A.gcnf
Prep Batch: 1717704
Prep Date: 11/14/2017 00:00

Method: PUIISO_PRECIP_AEA
Analyst: JXR5
Aliquot: 0.111 g
Prep Method: DOE EML HASL-300, Pu-11-

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-011
Instrument: 1092
Count Time: 240 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
I3981-16-3	Plutonium-238	U	0.0713	pCi/g	+/-0.356	0.356	0.712	1.00
OER-100-70	Plutonium-239/240	U	0.0543	pCi/g	+/-0.403	0.403	0.825	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Plutonium-242 Tracer	11.7	17.8	pCi/g	65.6	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167018	Date Collected: 11/03/2017 15:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 4.2
Client ID: B3FLT3		Prep Basis: "Dry Weight Corrected"
Batch ID: 1717708	Method: UIISO_IE_PRECIP_AEA	SOP Ref: GL-RAD-A-011
Run Date: 11/16/2017 12:11	Analyst: JXR5	Instrument: 1002
Data File: S0437167018_UU.1A.gcnf	Aliquot: 0.111 g	Count Time: 239.9998 min
Prep Batch: 1717708	Prep Method: DOE EML HASL-300, U-02-R	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/14/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
U-233/234 <small>13968-55-3/13966-29-5</small>	Uranium-233/234		0.623	pCi/g	+/-0.503	0.512	0.560	1.00
15117-96-1/13982-7	Uranium-235/236	U	0.470	pCi/g	+/-0.478	0.483	0.473	1.00
7440-61-1	Uranium-238	U	0.364	pCi/g	+/-0.426	0.429	0.590	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Uranium-232 Tracer	15.2	18.9	pCi/g	80.3	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error. TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma). The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167018	Date Collected: 11/03/2017 15:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 4.2
Client ID: B3FLT3		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716489	Method: SRTOT_SEP_PRECIP_GPC	SOP Ref: GL-RAD-A-004
Run Date: 11/14/2017 12:40	Analyst: BXF1	Instrument: PIC4B
Data File: S1716489r1.xls	Aliquot: 0.332 g	Count Time: 60 min
Prep Batch: 1716489	Prep Method: EPA 905.0 Modified/DOE RP5	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/13/2017 10:45		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
SR-RAD	Total Strontium	U	0.346	pCi/g	+/-0.879	0.883	1.58	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	6.40	7.85	mg	81.5	(40%-110%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167018	Date Collected: 11/03/2017 15:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 4.2
Client ID: B3FLT3		Prep Basis: "Dry Weight Corrected"
Batch ID: 1716703	Method: GAMMA_GS	SOP Ref: GL-RAD-A-013
Run Date: 11/15/2017 11:33	Analyst: MXR1	Instrument: GAM43
Data File: G437167018.CNF;1	Aliquot: 143.697 g	Count Time: 120 min
Prep Batch: 1716703	Prep Method: DOE HASL 300, 4.5.2.3/Ga-01	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/09/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10045-97-3	Cesium-137	U	0.00517	pCi/g	+/-0.0238	0.0239	0.0413	0.100
10198-40-0	Cobalt-60	U	0.00863	pCi/g	+/-0.0202	0.0205	0.0437	0.100
14683-23-9	Europium-152	U	-0.0238	pCi/g	+/-0.0538	0.0549	0.0957	0.100
15585-10-1	Europium-154	U	-0.0439	pCi/g	+/-0.0825	0.085	0.145	0.100
14391-16-3	Europium-155	U	0.0224	pCi/g	+/-0.0605	0.0614	0.114	0.100

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167018	Date Collected: 11/03/2017 15:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 4.2
Client ID: B3FLT3		Prep Basis: "As Received"
Batch ID: 1717958	Method: I129_SEP_LEPS_GS	SOP Ref: GL-RAD-A-006
Run Date: 11/13/2017 09:40	Analyst: MJH1	Instrument: XRAY1
Data File: I437167018.CNF;1	Aliquot: 1.2 g	Count Time: 120 min
Prep Batch: 1717958	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 11/10/2017 18:40		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	0.0943	pCi/g	+/-0.268	0.271	0.533	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167018	Date Collected: 11/03/2017 15:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 4.2
Client ID: B3FLT3		Prep Basis: "As Received"
Batch ID: 1717016	Method: TC99_EIE_LSC	SOP Ref: GL-RAD-A-059
Run Date: 11/14/2017 13:52	Analyst: CXS7	Instrument: LSCSILVER
Data File: E1717016.xls	Aliquot: 1.212 g	Count Time: 20 min
Prep Batch: 1717016	Prep Method: DOE EML HASL-300, Tc-02-	
Prep Date: 11/09/2017 08:56		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	-1.31	pCi/g	+/-1.91	1.91	3.41	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	64200	76600	CPM	83.9	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167018	Date Collected: 11/03/2017 15:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 4.2
Client ID: B3FLT3		Prep Basis: "Dry Weight Corrected"
Batch ID: 1717018	Method: NI63_LSC	SOP Ref: GL-RAD-A-022
Run Date: 11/15/2017 04:24	Analyst: TXJ1	Instrument: LSCRED
Data File: N1717018.xls	Aliquot: 0.503 g	Count Time: 30 min
Prep Batch: 1717018	Prep Method: DOE RESL Ni-1, Modified	Prep SOP Ref: GL-RAD-A-021
Prep Date: 11/09/2017 15:36		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
NI-63	Nickel-63	U	-1.68	pCi/g	+/-3.67	3.67	6.42	10.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Nickel Carrier	22.7	25.2	mg	90.1	(40%-110%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167018	Date Collected: 11/03/2017 15:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 4.2
Client ID: B3FLT3		Prep Basis: "As Received"
Batch ID: 1717032	Method: TRITIUM_DIST_LSC	SOP Ref: GL-RAD-A-002
Run Date: 11/11/2017 02:10	Analyst: BXM4	Instrument: LSCSILVER
Data File: T1717032.xls	Aliquot: 1.255 g	Count Time: 15 min
Prep Batch: 1717032	Prep Method: EPA 906.0 Modified	
Prep Date: 11/09/2017 10:38		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium	U	-12.3	pCi/g	+/-11.7	11.7	23.1	30.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

**Rad
Certificate of Analysis
Sample Summary**

SDG Number: GEL437167	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 437167018	Date Collected: 11/03/2017 15:00	Matrix: SOIL
	Date Received: 11/07/2017 08:55	%Moisture: 4.2
Client ID: B3FLT3		Prep Basis: "As Received"
Batch ID: 1717047	Method: C14_LSC	SOP Ref: GL-RAD-A-003
Run Date: 11/13/2017 16:09	Analyst: BXM4	Instrument: LSCSILVER
Data File: C1717047.xls	Aliquot: 0.501 g	Count Time: 40 min
Prep Batch: 1717047	Prep Method: EPA EERF C-01 Modified	
Prep Date: 11/10/2017 12:17		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14762-75-5	Carbon-14	U	0.193	pCi/g	+/-2.36	2.36	4.04	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
---------------------------	--------	---------	-------	-----------	-------------------

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
 TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
 The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL437167
Lab Sample ID: 437167018

Client: CPRC001
Date Collected: 11/03/2017 15:00
Date Received: 11/07/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 4.2

Quality Control Summary

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: November 21, 2017
Page 1 of 9

Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Workorder: 437167

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch	1716798								
QC1203914439 MB									
Americium-241			U	0.157	pCi/g			BXA4	11/19/1710:57
				Uncert: +/-0.308					
				TPU: +/-0.309					
**Americium-243 Tracer	19.6			17.8	pCi/g	REC: 91	(30%-105%)		
				Uncert: +/-2.59					
				TPU: +/-3.90					
QC1203914440 437167001 DUP									
Americium-241		U	0.125	U	0.0654	pCi/g			11/17/1709:14
				Uncert: +/-0.284		RPD: 0	N/A		
				TPU: +/-0.284		RER: 0.311	(0-2)		
**Americium-243 Tracer	20.2		17.1	16.4	pCi/g	REC: 81	(30%-105%)		
				Uncert: +/-2.35					
				TPU: +/-3.60					
QC1203914441 LCS									
Americium-241					15.0	pCi/g	REC: 81	(80%-120%)	11/17/1709:14
				Uncert: +/-2.09					
				TPU: +/-2.94					
**Americium-243 Tracer	19.6			18.5	pCi/g	REC: 95	(30%-105%)		
				Uncert: +/-2.37					
				TPU: +/-3.60					
Batch	1716799								
QC1203914442 MB									
Neptunium-237			U	-0.318	pCi/g			BXA4	11/15/1717:25
				Uncert: +/-0.269					
				TPU: +/-0.269					
**Americium-243 Tracer	2080			1680	pCi/g	REC: 81	(30%-105%)		
QC1203914443 437167001 DUP									
Neptunium-237		U	-0.168	U	-0.188	pCi/g			11/15/1717:25
				Uncert: +/-0.175		RPD: 0	N/A		
				TPU: +/-0.176		RER: 0.124	(0-2)		
**Americium-243 Tracer	2140		2110	1390	pCi/g	REC: 65	(30%-105%)		
QC1203914444 LCS									
Neptunium-237					47.0	pCi/g	REC: 109	(80%-120%)	11/15/1717:25
				Uncert: +/-4.63					
				TPU: +/-7.02					
**Americium-243 Tracer	2080			1480	pCi/g	REC: 71	(30%-105%)		
Batch	1716800								
QC1203914445 MB									
Plutonium-238			U	-0.029	pCi/g			BXA4	11/17/1709:37
				Uncert: +/-0.250					
				TPU: +/-0.251					
Plutonium-239/240			U	-0.145	pCi/g				
				Uncert: +/-0.274					

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 437167

Page 2 of 9

Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch	1716800								
**Plutonium-242 Tracer	18.4	TPU:		+/-0.275					
		Uncert:		9.61	pCi/g	REC:	52 (30%-105%)		
		TPU:		+/-2.94					
				+/-4.47					
QC1203914446 437167001 DUP									
Plutonium-238		U	0.243	U	-0.0955				
		Uncert:	+/-0.350		+/-0.181	RPD:	0 N/A		
		TPU:	+/-0.352		+/-0.181	RER:	1.67 (0-2)		
Plutonium-239/240		U	0.176	U	-0.13				
		Uncert:	+/-0.302		+/-0.256	RPD:	0 N/A		
		TPU:	+/-0.303		+/-0.256	RER:	1.51 (0-2)		
**Plutonium-242 Tracer	19.0		13.0		14.1	pCi/g	REC:	74 (30%-105%)	
		Uncert:	+/-2.57		+/-2.43				
		TPU:	+/-4.01		+/-3.81				
QC1203914447 LCS									
Plutonium-238				U	-0.14				
		Uncert:			+/-0.160				
		TPU:			+/-0.160				
Plutonium-239/240	18.5				15.9	pCi/g	REC:	86 (80%-120%)	
		Uncert:			+/-2.01				
		TPU:			+/-3.08				
**Plutonium-242 Tracer	18.4				15.5	pCi/g	REC:	84 (30%-105%)	
		Uncert:			+/-2.17				
		TPU:			+/-3.46				
Batch	1716801								
QC1203914448 MB									
Uranium-233/234				U	0.215	pCi/g		BXA4	11/15/1709:23
		Uncert:			+/-0.381				
		TPU:			+/-0.383				
Uranium-235/236				U	0.259	pCi/g			
		Uncert:			+/-0.373				
		TPU:			+/-0.375				
Uranium-238				U	0.0577	pCi/g			
		Uncert:			+/-0.216				
		TPU:			+/-0.217				
**Uranium-232 Tracer	19.6				17.2	pCi/g	REC:	88 (30%-105%)	
		Uncert:			+/-2.40				
		TPU:			+/-3.69				
QC1203914449 437167001 DUP									
Uranium-233/234		U	0.700		0.865	pCi/g			11/15/1709:23
		Uncert:	+/-0.595		+/-0.565		RPD:	14 (0% - 100%)	
		TPU:	+/-0.605		+/-0.578		RER:	0.386 (0-2)	
Uranium-235/236		U	0.525	U	0.116	pCi/g			
		Uncert:	+/-0.535		+/-0.318		RPD:	0 N/A	
		TPU:	+/-0.541		+/-0.318		RER:	1.28 (0-2)	
Uranium-238			1.05		0.590	pCi/g			
		Uncert:	+/-0.634		+/-0.486		RPD:	56 (0% - 100%)	
		TPU:	+/-0.653		+/-0.493		RER:	1.1 (0-2)	
**Uranium-232 Tracer	20.1		16.1		19.1	pCi/g	REC:	95 (30%-105%)	
		Uncert:	+/-2.67		+/-2.39				

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 437167

Page 3 of 9

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch	1716801								
QC1203914450	LCS	TPU:	+/-4.07	+/-3.70					
Uranium-233/234				26.3	pCi/g				11/15/1709:23
		Uncert:		+/-2.94					
		TPU:		+/-4.91					
Uranium-235/236				2.06	pCi/g				
		Uncert:		+/-0.941					
		TPU:		+/-0.991					
Uranium-238	25.2			28.0	pCi/g	REC: 111	(80%-120%)		
		Uncert:		+/-3.02					
		TPU:		+/-5.16					
**Uranium-232 Tracer	19.6			15.9	pCi/g	REC: 81	(30%-105%)		
		Uncert:		+/-2.54					
		TPU:		+/-3.88					
Batch	1717701								
QC1203916647	MB								
Americium-241			U	-0.029	pCi/g			JXR5	11/16/1712:13
		Uncert:		+/-0.250					
		TPU:		+/-0.251					
**Americium-243 Tracer	18.9			8.55	pCi/g	REC: 45	(30%-105%)		
		Uncert:		+/-2.96					
		TPU:		+/-4.37					
QC1203916648	437167018	DUP							
Americium-241		U	0.235	U	0.0676	pCi/g			11/16/1712:13
		Uncert:	+/-0.456	+/-0.303		RPD: 0	N/A		
		TPU:	+/-0.458	+/-0.303		RER: 0.597	(0-2)		
**Americium-243 Tracer	20.4		12.1	15.1	pCi/g	REC: 74	(30%-105%)		
		Uncert:	+/-2.57	+/-2.58					
		TPU:	+/-3.85	+/-3.90					
QC1203916649	LCS								
Americium-241				15.3	pCi/g	REC: 86	(80%-120%)		
		Uncert:		+/-2.22					
		TPU:		+/-3.15					
**Americium-243 Tracer	18.9			12.1	pCi/g	REC: 64	(30%-105%)		
		Uncert:		+/-2.45					
		TPU:		+/-3.69					
Batch	1717703								
QC1203916650	MB								
Neptunium-237			U	0.105	pCi/g			JXR5	11/16/1708:28
		Uncert:		+/-0.240					
		TPU:		+/-0.240					
**Americium-243 Tracer	1910			1790	pCi/g	REC: 94	(30%-105%)		
QC1203916651	437167018	DUP							
Neptunium-237		U	-0.0664	U	-0.175	pCi/g			11/16/1708:28
		Uncert:	+/-0.200	+/-0.200		RPD: 0	N/A		
		TPU:	+/-0.201	+/-0.200		RER: 0.753	(0-2)		
**Americium-243 Tracer	1930		1310	1510	pCi/g	REC: 78	(30%-105%)		
QC1203916652	LCS								
Neptunium-237				38.4	pCi/g	REC: 96	(80%-120%)		11/16/1708:28
		Uncert:		+/-3.14					

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 437167

Page 4 of 9

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch		1717703							
	TPU:			+/-5.31					
**Americium-243 Tracer	1910			1820	pCi/g	REC:	95 (30%-105%)		
Batch		1717704							
QC1203916665	MB								
Plutonium-238			U	-0.0319	pCi/g			JXR5	11/16/1712:13
	Uncert:			+/-0.220					
	TPU:			+/-0.220					
Plutonium-239/240			U	-0.0319	pCi/g				
	Uncert:			+/-0.220					
	TPU:			+/-0.220					
**Plutonium-242 Tracer	17.8			12.3	pCi/g	REC:	69 (30%-105%)		
	Uncert:			+/-2.24					
	TPU:			+/-3.53					
QC1203916666	437167018	DUP							
Plutonium-238		U	0.0713	U	-0.0499	pCi/g			11/16/1712:11
	Uncert:		+/-0.356		+/-0.226		RPD: 0 N/A		
	TPU:		+/-0.356		+/-0.226		RER: 0.563 (0-2)		
Plutonium-239/240		U	0.0543	U	0.00294	pCi/g			
	Uncert:		+/-0.403		+/-0.218		RPD: 0 N/A		
	TPU:		+/-0.403		+/-0.218		RER: 0.22 (0-2)		
**Plutonium-242 Tracer	19.2		11.7		15.3	pCi/g	REC:	80 (30%-105%)	
	Uncert:		+/-2.44		+/-2.34				
	TPU:		+/-3.78		+/-3.71				
QC1203916667	LCS								
Plutonium-238			U	0.453	pCi/g				
	Uncert:			+/-0.600					
	TPU:			+/-0.605					
Plutonium-239/240	17.8			19.7	pCi/g	REC:	111 (80%-120%)		
	Uncert:			+/-2.82					
	TPU:			+/-4.46					
**Plutonium-242 Tracer	17.8			8.99	pCi/g	REC:	51 (30%-105%)		
	Uncert:			+/-2.69					
	TPU:			+/-4.11					
Batch		1717708							
QC1203916668	MB								
Uranium-233/234			U	0.205	pCi/g			JXR5	11/16/1712:11
	Uncert:			+/-0.331					
	TPU:			+/-0.333					
Uranium-235/236			U	0.137	pCi/g				
	Uncert:			+/-0.316					
	TPU:			+/-0.316					
Uranium-238			U	-0.0497	pCi/g				
	Uncert:			+/-0.225					
	TPU:			+/-0.225					
**Uranium-232 Tracer	18.9			16.2	pCi/g	REC:	86 (30%-105%)		
	Uncert:			+/-2.32					
	TPU:			+/-3.57					
QC1203916669	437167018	DUP							
Uranium-233/234			0.623		0.612	pCi/g			
	Uncert:		+/-0.503		+/-0.442		RPD: 2 (0% - 100%)		

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 437167

Page 5 of 9

Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
Rad Alpha Spec										
Batch	1717708									
		TPU:	+/-0.512							
				+/-0.450						
Uranium-235/236		U	0.470	U	0.0602	pCi/g				
		Uncert:	+/-0.478		+/-0.226					
		TPU:	+/-0.483		+/-0.226					
Uranium-238		U	0.364		0.610	pCi/g				
		Uncert:	+/-0.426		+/-0.420					
		TPU:	+/-0.429		+/-0.428					
**Uranium-232 Tracer	20.3		15.2		19.0	pCi/g	REC: 93	(30%-105%)		
		Uncert:	+/-2.47		+/-2.26					
		TPU:	+/-3.77		+/-3.54					
QC1203916670	LCS									
Uranium-233/234					24.0	pCi/g				
		Uncert:			+/-2.74					
		TPU:			+/-4.51					
Uranium-235/236					2.59	pCi/g				
		Uncert:			+/-1.01					
		TPU:			+/-1.09					
Uranium-238	24.3				28.1	pCi/g	REC: 116	(80%-120%)		
		Uncert:			+/-2.96					
		TPU:			+/-5.13					
**Uranium-232 Tracer	18.9				15.2	pCi/g	REC: 81	(30%-105%)		
		Uncert:			+/-2.43					
		TPU:			+/-3.72					
Rad Gamma Spec										
Batch	1716594									
QC1203913996	MB									
Iodine-129				U	0.0908	pCi/g			MJH1	11/08/1719:50
		Uncert:			+/-0.272					
		TPU:			+/-0.275					
QC1203913997	437167001	DUP								
Iodine-129		U	0.043	U	-0.0453	pCi/g				11/08/1719:50
		Uncert:	+/-0.396		+/-0.237		RPD: 0	N/A		
		TPU:	+/-0.396		+/-0.238		RER: 0.375	(0-2)		
QC1203913998	437167001	MS								
Iodine-129		U	0.043		31.8	pCi/g	REC: 102	(75%-125%)		11/08/1719:51
		Uncert:	+/-0.396		+/-2.55					
		TPU:	+/-0.396		+/-4.08					
QC1203913999	LCS									
Iodine-129			26.8		29.9	pCi/g	REC: 112	(80%-120%)		11/08/1719:51
		Uncert:			+/-2.89					
		TPU:			+/-4.16					
Batch	1716703									
QC1203914217	MB									
Cesium-137				U	0.00145	pCi/g			MXR1	11/15/1711:34
		Uncert:			+/-0.0131					
		TPU:			+/-0.0131					
Cobalt-60				U	-0.00158	pCi/g				
		Uncert:			+/-0.0142					

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 437167

Page 6 of 9

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch	1716703								
Europium-152	TPU:			+/-0.0142					
			U	0.0432	pCi/g				
	Uncert:			+/-0.0343					
Europium-154	TPU:			+/-0.0396					
			U	0.0332	pCi/g				
	Uncert:			+/-0.0416					
Europium-155	TPU:			+/-0.0444					
			U	-0.0211	pCi/g				
	Uncert:			+/-0.0334					
	TPU:			+/-0.0348					
QC1203914218	437167001	DUP							
Cesium-137		U	0.00635	U	-0.00819	pCi/g			11/15/1714:05
	Uncert:		+/-0.0202		+/-0.0181		RPD: 0	N/A	
	TPU:		+/-0.0204		+/-0.0184		RER: 1.04	(0-2)	
Cobalt-60		U	0.0179	U	-0.0035	pCi/g			
	Uncert:		+/-0.0237		+/-0.0223		RPD: 0	N/A	
	TPU:		+/-0.0251		+/-0.0223		RER: 1.25	(0-2)	
Europium-152		U	-0.0055	U	0.0175	pCi/g			
	Uncert:		+/-0.0473		+/-0.046		RPD: 0	N/A	
	TPU:		+/-0.0474		+/-0.0467		RER: 0.677	(0-2)	
Europium-154		U	-0.00409	U	0.0501	pCi/g			
	Uncert:		+/-0.0756		+/-0.0667		RPD: 0	N/A	
	TPU:		+/-0.0756		+/-0.0706		RER: 1.03	(0-2)	
Europium-155		U	0.00383	U	0.0685	pCi/g			
	Uncert:		+/-0.0526		+/-0.0853		RPD: 0	N/A	
	TPU:		+/-0.0526		+/-0.0855		RER: 1.26	(0-2)	
QC1203914219	LCS								
Americium-241	488			553	pCi/g	REC:	113 (80%-120%)		11/16/1710:18
	Uncert:			+/-11.4					
	TPU:			+/-45.8					
Cesium-137	175			176	pCi/g	REC:	100 (80%-120%)		
	Uncert:			+/-3.19					
	TPU:			+/-14.8					
Cobalt-60	139			139	pCi/g	REC:	100 (80%-120%)		
	Uncert:			+/-3.32					
	TPU:			+/-15.0					
Europium-152			U	0.220	pCi/g				
	Uncert:			+/-1.32					
	TPU:			+/-1.32					
Europium-154			U	0.00387	pCi/g				
	Uncert:			+/-0.868					
	TPU:			+/-0.868					
Europium-155			U	-0.19	pCi/g				
	Uncert:			+/-1.13					
	TPU:			+/-1.14					
Batch	1717958								
QC1203917424	MB								
Iodine-129			U	-0.182	pCi/g			MJH1	11/13/1709:41
	Uncert:			+/-0.191					
	TPU:			+/-0.209					

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 437167

Page 7 of 9

Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch	1717958								
QC1203917425	437167018	DUP							
Iodine-129		U	0.0943	U	-0.0943	pCi/g			11/13/1709:42
		Uncert:	+/-0.268		+/-0.319		RPD: 0	N/A	
		TPU:	+/-0.271		+/-0.322		RER: 0.878	(0-2)	
QC1203917426	437167018	MS							
Iodine-129		U	0.0943		27.9	pCi/g	REC: 88	(75%-125%)	11/13/1709:42
		Uncert:	+/-0.268		+/-3.96				
		TPU:	+/-0.271		+/-4.85				
QC1203917427	LCS								
Iodine-129			29.9		30.8	pCi/g	REC: 103	(80%-120%)	11/13/1709:43
		Uncert:			+/-4.07				
		TPU:			+/-5.11				
Rad Gas Flow									
Batch	1716489								
QC1203913772	MB								
Total Strontium				U	-0.493	pCi/g		BXF1	11/14/1712:40
		Uncert:			+/-0.421				
		TPU:			+/-0.422				
**Strontium Carrier		7.85			6.60	mg	REC: 84	(40%-110%)	
QC1203913773	437167010	DUP							
Total Strontium		U	0.0708	U	-0.00578	pCi/g			11/14/1712:41
		Uncert:	+/-0.644		+/-0.884		RPD: 0	N/A	
		TPU:	+/-0.644		+/-0.884		RER: 0.137	(0-2)	
**Strontium Carrier		7.85	6.90		7.30	mg	REC: 93	(40%-110%)	
QC1203913774	LCS								
Total Strontium			60.6		54.6	pCi/g	REC: 90	(80%-120%)	11/14/1712:41
		Uncert:			+/-3.26				
		TPU:			+/-14.2				
**Strontium Carrier		7.85			6.80	mg	REC: 87	(40%-110%)	
Rad Liquid Scintillation									
Batch	1717016								
QC1203914993	MB								
Technetium-99				U	-0.109	pCi/g		CXS7	11/14/1714:14
		Uncert:			+/-1.35				
		TPU:			+/-1.35				
**Technetium-99m Tracer		76600			66100	CPM	REC: 86	(30%-105%)	
QC1203914994	437167001	DUP							
Technetium-99		U	-1.12	U	-1.28	pCi/g			11/14/1714:36
		Uncert:	+/-1.45		+/-1.88		RPD: 0	N/A	
		TPU:	+/-1.45		+/-1.88		RER: 0.133	(0-2)	
**Technetium-99m Tracer		76600	59800		61700	CPM	REC: 81	(30%-105%)	
QC1203914995	LCS								
Technetium-99			52.1		44.7	pCi/g	REC: 86	(80%-120%)	11/14/1714:58
		Uncert:			+/-2.43				
		TPU:			+/-5.68				
**Technetium-99m Tracer		76600			71600	CPM	REC: 93	(30%-105%)	
Batch	1717018								
QC1203914996	MB								
Nickel-63				U	-3.85	pCi/g		TXJ1	11/15/1704:55

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 437167

Page 8 of 9

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Liquid Scintillation									
Batch	1717018								
				Uncert:					
				TPU:					
**Nickel Carrier	25.2			18.7	mg	REC: 74	(40%-110%)		
QC1203914997	437167001	DUP							
Nickel-63		U	-0.642	U	-1.41				11/15/1705:27
			Uncert:			RPD:	0	N/A	
			TPU:			RER:	0.266	(0-2)	
**Nickel Carrier	25.2		20.2	21.4	mg	REC: 85	(40%-110%)		
QC1203914998	LCS								
Nickel-63	254			262	pCi/g	REC: 103	(80%-120%)		11/15/1705:59
			Uncert:						
			TPU:						
**Nickel Carrier	25.2			20.9	mg	REC: 83	(40%-110%)		
Batch	1717032								
QC1203915035	MB								
Tritium			U	-7.12	pCi/g			BXM4	11/11/1702:26
			Uncert:						
			TPU:						
QC1203915036	437167001	DUP							
Tritium		U	-8.88	U	-10.1				11/11/1702:43
			Uncert:			RPD:	0	N/A	
			TPU:			RER:	0.14	(0-2)	
QC1203915037	437167001	MS							
Tritium	192	U	-8.88	151	pCi/g	REC: 79	(75%-125%)		11/11/1702:59
			Uncert:						
			TPU:						
QC1203915038	LCS								
Tritium	86.2			76.7	pCi/g	REC: 89	(80%-120%)		11/11/1703:15
			Uncert:						
			TPU:						
Batch	1717047								
QC1203915056	MB								
Carbon-14			U	0.754	pCi/g			BXM4	11/13/1716:51
			Uncert:						
			TPU:						
QC1203915057	437167001	DUP							
Carbon-14		U	0.332	U	-0.873				11/13/1717:33
			Uncert:			RPD:	0	N/A	
			TPU:			RER:	0.719	(0-2)	
QC1203915058	437167001	MS							
Carbon-14	288	U	0.332	248	pCi/g	REC: 86	(75%-125%)		11/13/1718:15
			Uncert:						
			TPU:						
QC1203915059	LCS								
Carbon-14	144			126	pCi/g	REC: 87	(80%-120%)		11/13/1718:57
			Uncert:						
			TPU:						

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Workorder: 437167

Page 9 of 9

Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
---------	-----	--------	------	----	-------	-------------	-------	---------	------	------

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- B The associated QC sample blank has a result $\geq 2X$ the MDA and, after corrections, result is \geq MDA for this sample
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is \geq EQL or is $> 5\%$ of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- N Spike Sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- UX Gamma Spectroscopy--Uncertain identification
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

** Indicates analyte is a surrogate compound.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.