



November 03, 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: 432964
SDG: GEL432964

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on September 15, 2017. This revised data report has been prepared and reviewed in accordance with GEL's standard operating procedures. Per P&D, revision 02 of this package is to correct the QC Summary for the Radiochemistry fraction.

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: F17-009-711, F17-009-712 and F17-009-713
Enclosures



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Problem and Discrepancy Report

PROBLEM AND DISCREPANCY (P&D) REPORT		P&D Number: PD18-0009 Rev. Number: 0 Laboratory: GEL SDG Number: GEL432964 Date Initiated: 10/16/2017
<u>SAMPLE EVENT INFORMATION</u>		
SAF NUM(S):	F17-009	
<u>SAMPLING INFORMATION</u>		
NUMBER OF SAMPLES:	1	
SAMPLE MATRIX:	SOIL	
<u>ISSUE BACKGROUND</u>		
CLASS:	Data Issues	
TYPE:	Missing sample data	
DESCRIPTION:	Sample B3D1F3 is missing the result for Bromide	
<u>RESOLUTION</u>		
PROPOSED RESOLUTION:	Please correct the issue and resubmit the hard copy and electronic copy data packages	
FINAL RESOLUTION:	Accept proposed resolution.	
SUBMITTED BY:		
FITZGERALD, SL _____		10/16/2017 _____

PROBLEM AND DISCREPANCY (P&D) REPORT		P&D Number: PD18-0029 Rev. Number: 0 Laboratory: GEL SDG Number: GEL432964 Date Initiated: 11/03/2017
<u>SAMPLE EVENT INFORMATION</u>		
SAF NUM(S):	F17-009	
<u>SAMPLING INFORMATION</u>		
NUMBER OF SAMPLES:	1	
SAMPLE MATRIX:	SOIL	
<u>ISSUE BACKGROUND</u>		
CLASS:	Data Issues	
TYPE:	Missing QC data	
DESCRIPTION:	While the lab was reviewing another SDG in the batch, they caught an error on the QC Summary. The SPC limits were incorrect and the RPD was missing for U235/236.	
<u>RESOLUTION</u>		
PROPOSED RESOLUTION:	Please correct the issue and resubmit the hard copy and electronic copy data packages	
FINAL RESOLUTION:	accept resolution	
SUBMITTED BY:		
MEDLEY, HA		11/03/2017
_____		_____

Case Narrative

Per P&D, revision 02 of this package is to correct the QC Summary for the Radiochemistry fraction.

**General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F17-009
SDG: GEL432964**

November 03, 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 September 15, 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>
432964001	B3D1F1
432964002	B3D1F2
432964003	B3D1F3

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
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL432964
Work Order #: 432964

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.

Quality Control (QC) Information

Method Blank (MB) Statement

The MB (See Below) analyzed with this SDG met the acceptance criteria. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data.

Sample	Analyte	Value
1203878814 (MB)	Sulfate	1.69 between (1.33 - 4)

Technical Information

Sample Dilutions

The following samples 1203878816 (B3D1M4DUP), 1203878817 (B3D1M4MS) and 432964003 (B3D1F3) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	432964
	003
Fluoride	4X
Nitrate	4X

Miscellaneous Information

Manual Integrations

Sample 432964003 (B3D1F3) 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	1203874465 (B3D1M3MS)	74.5* (75.0%-125.0%)

Radiochemistry**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

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 Re-prep/Re-analysis**

Samples were reprepared due to high blank activity. The re-analysis is being reported.

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

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

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.

Technical Information

Recounts

Sample 432964001 (B3D1F1) was recounted due to high MDC. The recount is reported.

Miscellaneous Information**Additional Comments**

The matrix spike, 1203880458 (B3D1F1MS), 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, 1203880474 (B3D1F1MS), aliquot was reduced to conserve sample volume.

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.

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.

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			F17-009-711	PAGE 1 OF 1
COLLECTOR Danielle Saunders (PNUC)	COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL		PRICE CODE 8H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C9503, Core 1E, See comment (From B39W56)	PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20		SAF NO. F17-009		AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. 75 09/13/17 NA	FIELD LOGBOOK NO. NA	ACTUAL SAMPLE DEPTH 98-99 ft	COA 302632		METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO GEL Laboratories, LLC		OFFSITE PROPERTY NO. NA		BILL OF LADING/AIR BILL NO. BNUC# 7304		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION	None	
		HOLDING TIME	6 Months	
		TYPE OF CONTAINER	GP	
		SPECIAL HANDLING AND/OR STORAGE N/A	NO. OF CONTAINER(S)	1
			VOLUME	500mL
			SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

432904

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3D1F1	SOIL	09/13/2017	15:00	✓

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
Danielle Saunders (PNUC) 09/13/17 RELINQUISHED BY/REMOVED FROM	331/1734 Kellynator 09/13/17 15:00 RECEIVED BY/STORED IN	Comment: For one foot cores, please note which core and HEIS number were sampled (1) GAMMA_GS: COMMON; AMCMISO_IE_PRECIP_AEA: COMMON; UIISO_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;
331/1734 Danielle Saunders (PNUC) 09/14/2017 13:00 RELINQUISHED BY/REMOVED FROM	Danielle Saunders (PNUC) 09/14/17 10:00 RECEIVED BY/STORED IN	
Danielle Saunders (PNUC) 09/14/17 10:00 RELINQUISHED BY/REMOVED FROM	STACY BOGWT 15 Bun 09/15/17 8:50 RECEIVED BY/STORED IN	
FedEx RELINQUISHED BY/REMOVED FROM	RELINQUISHED BY/REMOVED FROM	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

11/03/2017

Revision #2 03-NOV-2017

REV.2

CH2Mhill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F17-009-712	PAGE 1 OF 1
COLLECTOR Danielle Saunders (PWWL)		COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL	PRICE CODE 8H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C9503, Core 26-E, See comment (From B39A05C) 41-B 14509113112		PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20		SAF NO. F17-009	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. NA		FIELD LOGBOOK NO. NA	ACTUAL SAMPLE DEPTH 98.99ft	COA 302632	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO GEL Laboratories, LLC		OFFSITE PROPERTY NO. NA		BILL OF LADING/AIR BILL NO. B1010# 7304		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION	Cool <=6C
		HOLDING TIME	30 Days
		TYPE OF CONTAINER	G/P
		NO. OF CONTAINER(S)	1
		VOLUME	60mL
SPECIAL HANDLING AND/OR STORAGE N/A		SAMPLE ANALYSIS	7196_CR6: COMMON;

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3D1F2	SOIL	09/13/2017	15:00	✓

432964

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM Danielle Saunders PWWL	DATE/TIME 09/13/17 1500	RECEIVED BY/STORED IN PWWL
RELINQUISHED BY/REMOVED FROM 331/173A PWWL	DATE/TIME 09/13/17 1500	RECEIVED BY/STORED IN PWWL
RELINQUISHED BY/REMOVED FROM Danielle Saunders PWWL	DATE/TIME 09/14/17 1300	RECEIVED BY/STORED IN Danielle Saunders PWWL
RELINQUISHED BY/REMOVED FROM Danielle Saunders PWWL	DATE/TIME 09/14/17 1305	RECEIVED BY/STORED IN STACY BOONE By B 9/16/17 855
RELINQUISHED BY/REMOVED FROM FedEx	DATE/TIME	RECEIVED BY/STORED IN STACY BOONE By B 9/15/17 855
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN

Comment: For one foot cores, please note which core and HEIS number were sampled

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

11/03/2017

Revision #2 03-NOV-2017

REV.2

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F17-009-713	PAGE 1 OF 1
COLLECTOR <i>Danielle Saunders (PWWL)</i>		COMPANY CONTACT FITZGERALD, SL	TELEPHONE NO. 373-7495	PROJECT COORDINATOR FITZGERALD, SL	PRICE CODE 8H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C9503, Core <i>41-B</i> <i>See comment (From B39W5LP)</i>		PROJECT DESIGNATION 200-DV-1 Operable Unit Characterization of Waste Sites Sampling - Soil 20		SAF NO. F17-009	AIR QUALITY <input type="checkbox"/>	
ICE CHEST NO. <i>NA</i>		FIELD LOGBOOK NO. <i>NA</i>	ACTUAL SAMPLE DEPTH <i>98-99 ft</i>	COA 302632	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO GEL Laboratories, LLC		OFFSITE PROPERTY NO. <i>NA</i>		BILL OF LADING/AIR BILL NO. <i>BIN# 7304</i>		

MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1.	PRESERVATION	Cool <=6C
		HOLDING TIME	28 Days/48 Hours
		TYPE OF CONTAINER	<i>G/P</i>
		NO. OF CONTAINER(S)	1
		VOLUME	60ml
	SPECIAL HANDLING AND/OR STORAGE N/A	SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

432964

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3D1F3	SOIL	<i>09/13/17</i>	<i>15:00</i>	<input checked="" type="checkbox"/>

11/03/2017

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM <i>Danielle Saunders PWWL</i>	RECEIVED BY/STORED IN <i>Danielle Saunders PWWL</i>	Comment: For one foot cores, please note which core and HEIS number were sampled (1) 9056_ANIONS_IC: COMMON; 9056_ANIONS_IC: COMMON (Add-on) (Bromide, Phosphorus in phosphate);
RELINQUISHED BY/REMOVED FROM <i>Danielle Saunders PWWL</i>	RECEIVED BY/STORED IN <i>Danielle Saunders PWWL</i>	
RELINQUISHED BY/REMOVED FROM <i>Danielle Saunders PWWL</i>	RECEIVED BY/STORED IN <i>Danielle Saunders PWWL</i>	
RELINQUISHED BY/REMOVED FROM <i>Danielle Saunders PWWL</i>	RECEIVED BY/STORED IN <i>STACY BOONE / Tracy B</i>	
RELINQUISHED BY/REMOVED FROM <i>FedEx</i>	RECEIVED BY/STORED IN <i>STACY BOONE / Tracy B</i>	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	

Revision #2 03-NOV-2017

LABORATORY SECTION	RECEIVED BY	TITLE	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME

REV.2



SAMPLE RECEIPT & REVIEW FORM

Client: CPRC		SDG/AR/COC/Work Order: 9329164		
Received By: STACY BOONE		Date Received: 15-SEPT-17		
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 6659 7786 5454		
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.		
Shipped as a DOT Hazardous?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____		
COC/Samples marked or classified as radioactive?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> CPM / mR/Hr Classified as: Rad 1 Rad 2 Rad 3		
Is package, COC, and/or Samples marked HAZ?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, select Hazards below, and contact the GEL Safety Group. <input checked="" type="checkbox"/> PCB's <input type="checkbox"/> Flammable <input type="checkbox"/> Foreign Soil <input type="checkbox"/> RCRA <input type="checkbox"/> Asbestos <input type="checkbox"/> Beryllium <input type="checkbox"/> 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"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Wet Ice <u>Ice Packs</u> Dry ice None Other: *all temperatures are recorded in Celsius TEMP: ic
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: IR3-17 Secondary Temperature Device Serial # (If Applicable): _____
5 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6 Samples requiring chemical preservation at proper pH?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: If Preservation added, Lot#: _____
7 Do any samples require Volatile Analysis?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input 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"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected: _____
9 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected: _____
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____
11 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____
12 Are sample containers identifiable as GEL provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Comments (Use Continuation Form if needed): * Client did not mark as received by Fed Exp				

PM (or PMA) review: Initials CS Date 9/16/17 Page 1 of 1

Data Review Qualifier Definitions

GEL LABORATORIES LLC

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

Report Date: 16-OCT-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 03 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 #: GEL432964
Work Order #: 432964**

Product: Ion Chromatography**Analytical Method:** 9056_ANIONS_IC**Analytical Procedure:** GL-GC-E-086 REV# 25**Analytical Batches:** 1702148 and 1702147

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
432964003	B3D1F3
1203878814	Method Blank (MB)
1203878815	Laboratory Control Sample (LCS)
1203878816	433007009(B3D1M4) Sample Duplicate (DUP)
1203878817	433007009(B3D1M4) 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**Method Blank (MB) Statement**

The MB (See Below) analyzed with this SDG met the acceptance criteria. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data.

Sample	Analyte	Value
1203878814 (MB)	Sulfate	1.69 between (1.33 - 4)

Technical Information**Sample Dilutions**

The following samples 1203878816 (B3D1M4DUP), 1203878817 (B3D1M4MS) and 432964003 (B3D1F3) were 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.

	432964
Analyte	003
Fluoride	4X
Nitrate	4X

Miscellaneous Information**Manual Integrations**

Sample 432964003 (B3D1F3) 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:** 1699716**Preparation Method:** SW846 3060A**Preparation Procedure:** GL-GC-E-044 REV# 22**Preparation Batch:** 1699712

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
432964002	B3D1F2
1203872571	Method Blank (MB)
1203872572	Laboratory Control Sample (LCS)
1203872576	Insoluble Lab Control Sample (ILCS)
1203874464	433007008(B3D1M3) Sample Duplicate (DUP)
1203874465	433007008(B3D1M3) 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	1203874465 (B3D1M3MS)	74.5* (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.

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL432964 GEL Work Order: 432964

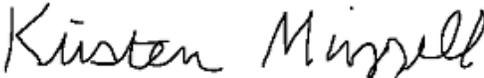
The Qualifiers in this report are defined as follows:

- 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).
- 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.

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:** 26 SEP 2017**Title:** Analyst I

Sample Data Summary

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: October 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: B3D1F2 Project: CPRC0F17009
 Sample ID: 432964002 Client ID: CPRC001
 Matrix: SOIL
 Collect Date: 13-SEP-17 15:00
 Receive Date: 15-SEP-17
 Collector: Client
 Moisture: 12.2%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Spectrometric Analysis												
7196_CR6: COMMON "Dry Weight Corrected"												
Hexavalent Chromium	U	109	109	272	ug/Kg	23.8	1	VH1	09/22/17	1122	1699716	1

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 3060A	SW846_7196A Hexavalent Chromium in Soil	RXB5	09/19/17	1303	1699712

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: October 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: B3D1F3 Project: CPRC0F17009
 Sample ID: 432964003 Client ID: CPRC001
 Matrix: SOIL
 Collect Date: 13-SEP-17 15:00
 Receive Date: 15-SEP-17
 Collector: Client
 Moisture: 8.26%

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	728	728	2170	ug/Kg	9.98	1	MAR1	09/20/17	1641	1702148	1
Chloride		6050	783	2170	ug/Kg	9.98	1					
Nitrite-N		2420	359	1090	ug/Kg	9.98	1					
Phosphorus in phosphate	U	728	728	2170	ug/Kg	9.98	1					
Sulfate	C	32800	1450	4350	ug/Kg	9.98	1					
Fluoride	D	132000	1480	4350	ug/Kg	9.98	4	MAR1	09/21/17	1354	1702148	2
Nitrate-N	D	70400	1440	4350	ug/Kg	9.98	4					

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9056A	SW846 9056A Total Anions in Soil	MAR1	09/20/17	0838	1702147

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

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: October 17, 2017

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CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 432964

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1702148										
QC1203878816	433007009	DUP									
Bromide	U	688	U	691	ug/Kg	N/A			MAR1	09/20/17	19:06
Chloride		13700		13700	ug/Kg	0.31		(0%-35%)			
Fluoride		1290		1260	ug/Kg	2.56	^	(+/-1030)			
Nitrate-N	D	284000	D	286000	ug/Kg	0.617		(0%-35%)		09/21/17	15:50
Nitrite-N	U	339	U	340	ug/Kg	N/A				09/20/17	19:06
Phosphorus in phosphate	U	688	U	691	ug/Kg	N/A					
Sulfate	C	9690		9120	ug/Kg	6.14	^	(+/-4130)			
QC1203878815	LCS										
Bromide	12500			12600	ug/Kg		101	(80%-120%)		09/20/17	16:12
Chloride	50000			47900	ug/Kg		95.8	(80%-120%)			
Fluoride	25000			24600	ug/Kg		98.6	(80%-120%)			
Nitrate-N	25000			23900	ug/Kg		95.7	(80%-120%)			
Nitrite-N	25000			24600	ug/Kg		98.2	(80%-120%)			
Phosphorus in phosphate	12500			12500	ug/Kg		100	(80%-120%)			

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QC Summary

Workorder: 432964

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1702148										
Sulfate	100000			97800	ug/Kg		97.8	(80%-120%)	MAR1	09/20/17	16:12
QC1203878814	MB										
Bromide			U	670	ug/Kg					09/20/17	15:43
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			B	1690	ug/Kg						
QC1203878817	433007009 MS										
Bromide	12900	U	688	12600	ug/Kg		97.6	(75%-125%)		09/20/17	19:35
Chloride	51400		13700	63100	ug/Kg		96	(75%-125%)			
Fluoride	25700		1290	24900	ug/Kg		91.7	(75%-125%)			
Nitrate-N	25700	D	284000	D	310000	ug/Kg	N/A	(75%-125%)		09/21/17	16:18
Nitrite-N	25700	U	339	24800	ug/Kg		95.1	(75%-125%)		09/20/17	19:35
Phosphorus in phosphate	12900	U	688	11700	ug/Kg		90.9	(75%-125%)			

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QC Summary

Workorder: 432964

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1702148										
Sulfate	103000	C	9690	109000	ug/Kg		96.2	(75%-125%)	MAR1	09/20/17	19:35
Spectrometric Analysis											
Batch	1699716										
QC1203874464	433007008	DUP									
Hexavalent Chromium		NU	90.3	U	90.3	ug/Kg	N/A		VH1	09/22/17	11:24
QC1203872576	ILCS										
Hexavalent Chromium	6350				5160	ug/Kg	81.3	(80%-120%)		09/22/17	11:00
QC1203872572	LCS										
Hexavalent Chromium	3530				3360	ug/Kg	95.1	(80%-120%)		09/22/17	10:59
QC1203872571	MB										
Hexavalent Chromium			U		138	ug/Kg				09/22/17	10:59
QC1203874465	433007008	MS									
Hexavalent Chromium	2260	NU	90.3	N	1730	ug/Kg	74.5*	(75%-125%)		09/22/17	11:25

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

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QC Summary

Workorder: 432964

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
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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 #: GEL432964
Work Order #: 432964

Product: AMCMISO_EIE_PRECIP_AEA: COMMON
Analytical Method: AMCMISO_EIE_PREC_AEA
Analytical Procedure: GL-RAD-A-011 REV# 26
Analytical Batch: 1703577

Preparation Method: Dry Soil Prep
Preparation Procedure: GL-RAD-A-021 REV# 21
Preparation Batch: 1701196

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
432964001	B3D1F1
1203882283	Method Blank (MB)
1203882284	432964001(B3D1F1) Sample Duplicate (DUP)
1203882285	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: 1703578

Preparation Method: Dry Soil Prep
Preparation Procedure: GL-RAD-A-021 REV# 21
Preparation Batch: 1701196

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
432964001	B3D1F1
1203882286	Method Blank (MB)
1203882287	432964001(B3D1F1) Sample Duplicate (DUP)

1203882288 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: PUISO_PRECIP_AEA:COMMON

Analytical Method: PUISO_PRECIP_AEA

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

Analytical Batch: 1703579

Preparation Method: Dry Soil Prep

Preparation Procedure: GL-RAD-A-021 REV# 21

Preparation Batch: 1701196

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
432964001	B3D1F1
1203882289	Method Blank (MB)
1203882290	432964001(B3D1F1) Sample Duplicate (DUP)
1203882291	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: UISO_IE_PRECIP_AEA:COMMON

Analytical Method: UISO_IE_PRECIP_AEA

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

Analytical Batch: 1707966

Preparation Method: Dry Soil Prep

Preparation Procedure: GL-RAD-A-021 REV# 21

Preparation Batch: 1701196

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
432964001	B3D1F1
1203892476	Method Blank (MB)
1203892477	432964001(B3D1F1) Sample Duplicate (DUP)
1203892478	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

Sample Re-prep/Re-analysis

Samples were re-prepped due to high blank activity. The re-analysis is being reported.

Product: Dry Weight

Analytical Method: ASTM D 2216 (Modified)

Analytical Procedure: GL-OA-E-020 REV# 11

Analytical Batch: 1701301

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
432964002	B3D1F2
432964003	B3D1F3
1203876722	432940001(NonSDG) 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

Preparation Method: Dry Soil Prep

Preparation Procedure: GL-RAD-A-021 REV# 21

Preparation Batch: 1701196

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
432964001	B3D1F1

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: 1701074

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
432964001	B3D1F1
1203876164	Method Blank (MB)
1203876165	432119001(B3D1F7) Sample Duplicate (DUP)
1203876166	432119001(B3D1F7) Matrix Spike (MS)
1203876167	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: 1701394

Preparation Method: Dry Soil Prep

Preparation Procedure: GL-RAD-A-021 REV# 21

Preparation Batch: 1701196

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
432964001	B3D1F1
1203876948	Method Blank (MB)
1203876949	433007007(B3D1M2) Sample Duplicate (DUP)
1203876950	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.

Qualifier Information

Qualifier	Reason	Analyte	Sample	Client Sample
X	Results are considered a false positive due to interference.	Europium-155	1203876949	B3D1M2(433007007DUP)

Product: SRTOT_SEP_PRECIP_GPC: COMMON

Analytical Method: SRTOT_SEP_PRECIP_GPC

Analytical Procedure: GL-RAD-A-004 REV# 18

Analytical Batch: 1703319

Preparation Method: Dry Soil Prep

Preparation Procedure: GL-RAD-A-021 REV# 21

Preparation Batch: 1701196

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
432964001	B3D1F1
1203881612	Method Blank (MB)
1203881613	433007004(B3D1L6) Sample Duplicate (DUP)
1203881614	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: 1702868

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
432964001	B3D1F1
1203880456	Method Blank (MB)
1203880457	432964001(B3D1F1) Sample Duplicate (DUP)
1203880458	432964001(B3D1F1) Matrix Spike (MS)
1203880459	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.

Technical Information

Recounts

Sample 432964001 (B3D1F1) was recounted due to high MDC. The recount is reported.

Miscellaneous Information

Additional Comments

The matrix spike, 1203880458 (B3D1F1MS), 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: 1702873

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
432964001	B3D1F1
1203880472	Method Blank (MB)
1203880473	432964001(B3D1F1) Sample Duplicate (DUP)
1203880474	432964001(B3D1F1) Matrix Spike (MS)
1203880475	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, 1203880474 (B3D1F1MS), aliquot was reduced to conserve sample volume.

Product: NI63_LSC

Analytical Method: NI63_LSC

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

Analytical Batch: 1703156

Preparation Method: Dry Soil Prep

Preparation Procedure: GL-RAD-A-021 REV# 21

Preparation Batch: 1701196

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
432964001	B3D1F1
1203881197	Method Blank (MB)
1203881198	432964001(B3D1F1) Sample Duplicate (DUP)
1203881199	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: TC99_SEP_GPC

Analytical Method: TC99_EIE_LSC

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

Analytical Batch: 1703178

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
432964001	B3D1F1
1203881258	Method Blank (MB)
1203881259	432964001(B3D1F1) Sample Duplicate (DUP)
1203881260	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.

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.

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL432964 GEL Work Order: 432964

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.

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

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: Heather McCarty****Date: 13 OCT 2017****Title: Analyst II**

Sample Data Summary

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL432964	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 432964001	Date Collected: 09/13/2017 15:00	Matrix: SOIL
	Date Received: 09/15/2017 08:55	%Moisture: 13.4
Client ID: B3D1F1		Prep Basis: "Dry Weight Corrected"
Batch ID: 1703577	Method: AMCMISO_EIE_PREC_AEA	SOP Ref: GL-RAD-A-011
Run Date: 10/04/2017 09:20	Analyst: MXS2	Instrument: 1221
Data File: S0432964001_AM.1A.gcnf	Aliquot: 0.106 g	Count Time: 240 min
Prep Batch: 1703577	Prep Method: DOE EML HASL-300, Am-05	Prep SOP Ref: GL-RAD-A-021
Prep Date: 10/02/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14596-10-2	Americium-241	U	0.129	pCi/g	+/-0.296	0.297	0.470	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	16.5	19.8	pCi/g	83.6	(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: GEL432964	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 432964001	Date Collected: 09/13/2017 15:00	Matrix: SOIL
	Date Received: 09/15/2017 08:55	%Moisture: 13.4
Client ID: B3D1F1		Prep Basis: "Dry Weight Corrected"
Batch ID: 1703578	Method: ASTM C 1475-00 Modified	SOP Ref: GL-RAD-A-032
Run Date: 10/03/2017 13:35	Analyst: MXS2	Instrument: 1028
Data File: S0432964001_NP.1A.gcnf	Aliquot: 0.108 g	Count Time: 240 min
Prep Batch: 1703578	Prep Method: ASTM C 1475-00 Modified	Prep SOP Ref: GL-RAD-A-021
Prep Date: 10/02/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
13994-20-2	Neptunium-237	U	-0.305	pCi/g	+/-0.243	0.243	0.784	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	1780	1980	pCi/g	89.9	(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: GEL432964	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 432964001	Date Collected: 09/13/2017 15:00	Matrix: SOIL
	Date Received: 09/15/2017 08:55	%Moisture: 13.4
Client ID: B3D1F1		Prep Basis: "Dry Weight Corrected"
Batch ID: 1703579	Method: PUIISO_PRECIP_AEA	SOP Ref: GL-RAD-A-011
Run Date: 10/04/2017 09:19	Analyst: MXS2	Instrument: 1237
Data File: S0432964001_PU.1A.gcnf	Aliquot: 0.106 g	Count Time: 240 min
Prep Batch: 1703579	Prep Method: DOE EML HASL-300, Pu-11-	Prep SOP Ref: GL-RAD-A-021
Prep Date: 10/02/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
I3981-16-3	Plutonium-238	U	0.0862	pCi/g	+/-0.242	0.243	0.259	1.00
OER-100-70	Plutonium-239/240	U	0.0862	pCi/g	+/-0.242	0.243	0.259	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Plutonium-242 Tracer	15.4	18.6	pCi/g	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: GEL432964	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 432964001	Date Collected: 09/13/2017 15:00	Matrix: SOIL
	Date Received: 09/15/2017 08:55	%Moisture: 13.4
Client ID: B3D1F1		Prep Basis: "Dry Weight Corrected"
Batch ID: 1707966	Method: UIISO_IE_PRECIP_AEA	SOP Ref: GL-RAD-A-011
Run Date: 10/11/2017 08:42	Analyst: MXS2	Instrument: 1113
Data File: S0432964001_UU.2A.gcnf	Aliquot: 0.107 g	Count Time: 240 min
Prep Batch: 1707966	Prep Method: DOE EML HASL-300, U-02-R	Prep SOP Ref: GL-RAD-A-021
Prep Date: 10/09/2017 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		2.91	pCi/g	+/-0.965	1.06	0.442	1.00
15117-96-1/13982-7	Uranium-235/236	U	0.394	pCi/g	+/-0.434	0.438	0.296	1.00
7440-61-1	Uranium-238		1.92	pCi/g	+/-0.801	0.849	0.525	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Uranium-232 Tracer	17.5	19.6	pCi/g	89.1	(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: GEL432964	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 432964001	Date Collected: 09/13/2017 15:00	Matrix: SOIL
	Date Received: 09/15/2017 08:55	%Moisture: 13.4
Client ID: B3D1F1		Prep Basis: "Dry Weight Corrected"
Batch ID: 1703319	Method: SRTOT_SEP_PRECIP_GPC	SOP Ref: GL-RAD-A-004
Run Date: 10/03/2017 13:50	Analyst: KSD1	Instrument: PIC2D
Data File: S1703319.xls	Aliquot: 0.311 g	Count Time: 60 min
Prep Batch: 1703319	Prep Method: EPA 905.0 Modified/DOE RP5	Prep SOP Ref: GL-RAD-A-021
Prep Date: 10/02/2017 14:49		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
SR-RAD	Total Strontium		3.44	pCi/g	+/-1.26	1.53	1.72	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	8.50	7.85	mg	108	(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: GEL432964	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 432964001	Date Collected: 09/13/2017 15:00	Matrix: SOIL
	Date Received: 09/15/2017 08:55	%Moisture: 13.4
Client ID: B3D1F1		Prep Basis: "As Received"
Batch ID: 1701074	Method: I129_SEP_LEPS_GS	SOP Ref: GL-RAD-A-006
Run Date: 09/26/2017 15:19	Analyst: MJH1	Instrument: XRAY6
Data File: I432964001.CNF;1	Aliquot: 1.003 g	Count Time: 120 min
Prep Batch: 1701074	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 09/26/2017 12:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	0.0435	pCi/g	+/-0.246	0.247	0.648	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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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: GEL432964	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 432964001	Date Collected: 09/13/2017 15:00	Matrix: SOIL
	Date Received: 09/15/2017 08:55	%Moisture: 13.4
Client ID: B3D1F1		Prep Basis: "Dry Weight Corrected"
Batch ID: 1701394	Method: GAMMA_GS	SOP Ref: GL-RAD-A-013
Run Date: 09/28/2017 15:43	Analyst: MXR1	Instrument: GAM05
Data File: G432964001.CNF;1	Aliquot: 115.413 g	Count Time: 240 min
Prep Batch: 1701394	Prep Method: DOE HASL 300, 4.5.2.3/Ga-01	Prep SOP Ref: GL-RAD-A-021
Prep Date: 09/19/2017 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10045-97-3	Cesium-137	U	0.0102	pCi/g	+/-0.0193	0.0198	0.0327	0.100
10198-40-0	Cobalt-60	U	0.00147	pCi/g	+/-0.0185	0.0185	0.0347	0.100
14683-23-9	Europium-152	U	-0.00215	pCi/g	+/-0.0435	0.0435	0.0735	0.100
15585-10-1	Europium-154	U	-0.00202	pCi/g	+/-0.0486	0.0486	0.0846	0.100
14391-16-3	Europium-155	U	0.0578	pCi/g	+/-0.0744	0.0791	0.0684	0.100

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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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: GEL432964	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 432964001	Date Collected: 09/13/2017 15:00	Matrix: SOIL
	Date Received: 09/15/2017 08:55	%Moisture: 13.4
Client ID: B3D1F1		Prep Basis: "As Received"
Batch ID: 1702868	Method: TRITIUM_DIST_LSC	SOP Ref: GL-RAD-A-002
Run Date: 09/29/2017 13:21	Analyst: BXM4	Instrument: LSCBROWN
Data File: T1702868R.xls	Aliquot: 1.252 g	Count Time: 20 min
Prep Batch: 1702868	Prep Method: EPA 906.0 Modified	
Prep Date: 09/27/2017 13:56		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium	U	-0.486	pCi/g	+/-14.7	14.7	26.4	30.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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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: GEL432964	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 432964001	Date Collected: 09/13/2017 15:00	Matrix: SOIL
	Date Received: 09/15/2017 08:55	%Moisture: 13.4
Client ID: B3D1F1		Prep Basis: "As Received"
Batch ID: 1702873	Method: C14_LSC	SOP Ref: GL-RAD-A-003
Run Date: 09/29/2017 11:53	Analyst: BXM4	Instrument: LSCGREEN
Data File: C1702873.xls	Aliquot: 0.501 g	Count Time: 40 min
Prep Batch: 1702873	Prep Method: EPA EERF C-01 Modified	
Prep Date: 09/28/2017 11:37		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14762-75-5	Carbon-14	U	-0.365	pCi/g	+/-2.34	2.34	4.05	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
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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: GEL432964	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 432964001	Date Collected: 09/13/2017 15:00	Matrix: SOIL
	Date Received: 09/15/2017 08:55	%Moisture: 13.4
Client ID: B3D1F1		Prep Basis: "Dry Weight Corrected"
Batch ID: 1703156	Method: NI63_LSC	SOP Ref: GL-RAD-A-022
Run Date: 10/06/2017 15:23	Analyst: TXJ1	Instrument: LSCBROWN
Data File: N1703156.xls	Aliquot: 0.557 g	Count Time: 30 min
Prep Batch: 1703156	Prep Method: DOE RESL Ni-1, Modified	Prep SOP Ref: GL-RAD-A-021
Prep Date: 10/05/2017 11:53		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
NI-63	Nickel-63	U	2.88	pCi/g	+/-3.87	3.90	6.53	10.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Nickel Carrier	19.0	25.2	mg	75.4	(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: GEL432964	Client: CPRC001	Project: CPRC0F17009
Lab Sample ID: 432964001	Date Collected: 09/13/2017 15:00	Matrix: SOIL
	Date Received: 09/15/2017 08:55	%Moisture: 13.4
Client ID: B3D1F1		Prep Basis: "As Received"
Batch ID: 1703178	Method: TC99_EIE_LSC	SOP Ref: GL-RAD-A-059
Run Date: 10/08/2017 08:44	Analyst: CXS7	Instrument: LSCBROWN
Data File: E1703178.xls	Aliquot: 1.244 g	Count Time: 15 min
Prep Batch: 1703178	Prep Method: DOE EML HASL-300, Tc-02-	
Prep Date: 10/02/2017 14:16		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	1.35	pCi/g	+/-2.33	2.33	3.96	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	37800	38700	CPM	97.7	(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: GEL432964
Lab Sample ID: 432964002

Client: CPRC001
Date Collected: 09/13/2017 15:00
Date Received: 09/15/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 12.2

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL432964
Lab Sample ID: 432964003

Client: CPRC001
Date Collected: 09/13/2017 15:00
Date Received: 09/15/2017 08:55

Project: CPRC0F17009
Matrix: SOIL
%Moisture: 8.3

Quality Control Summary

GEL LABORATORIES LLC

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QC Summary

Report Date: October 13, 2017

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Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Workorder: 432964

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch	1703577								
QC1203882283	MB								
Americium-241			U	0.120	pCi/g			MXS2	10/04/1709:20
				Uncert: +/-0.275					
				TPU: +/-0.276					
**Americium-243 Tracer	18.7			16.2	pCi/g	REC: 87	(30%-105%)		
				Uncert: +/-2.37					
				TPU: +/-3.59					
QC1203882284	432964001	DUP							
Americium-241		U	0.129	U	0.213	pCi/g			10/04/1709:20
				Uncert: +/-0.296	+/-0.307	RPD: 0	N/A		
				TPU: +/-0.297	+/-0.308	RER: 0.384	(0-2)		
**Americium-243 Tracer	20.8		16.5	20.7	pCi/g	REC: 100	(30%-105%)		
				Uncert: +/-2.53	+/-2.47				
				TPU: +/-3.82	+/-3.77				
QC1203882285	LCS								
Americium-241				17.6	pCi/g	REC: 103	(80%-120%)		10/04/1709:20
				Uncert: +/-2.30					
				TPU: +/-3.44					
**Americium-243 Tracer	18.7			16.6	pCi/g	REC: 89	(30%-105%)		
				Uncert: +/-2.33					
				TPU: +/-3.53					
Batch	1703578								
QC1203882286	MB								
Neptunium-237			U	-0.203	pCi/g			MXS2	10/03/1713:35
				Uncert: +/-0.315					
				TPU: +/-0.315					
**Americium-243 Tracer	1930			1030	pCi/g	REC: 54	(30%-105%)		
QC1203882287	432964001	DUP							
Neptunium-237		U	-0.305	U	-0.164	pCi/g			
				Uncert: +/-0.243	+/-0.148	RPD: 0	N/A		
				TPU: +/-0.243	+/-0.148	RER: 0.972	(0-2)		
**Americium-243 Tracer	2040		1780	1870	pCi/g	REC: 92	(30%-105%)		
QC1203882288	LCS								
Neptunium-237				40.2	pCi/g	REC: 114	(80%-120%)		
				Uncert: +/-3.05					
				TPU: +/-5.82					
**Americium-243 Tracer	1930			1870	pCi/g	REC: 97	(30%-105%)		
Batch	1703579								
QC1203882289	MB								
Plutonium-238			U	-0.0215	pCi/g			MXS2	10/04/1709:19
				Uncert: +/-0.186					
				TPU: +/-0.186					
Plutonium-239/240			U	0.115	pCi/g				
				Uncert: +/-0.316					

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QC Summary

Workorder: 432964

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Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch	1703579								
**Plutonium-242 Tracer	17.6	TPU:		+/-0.317					
		Uncert:		14.0	pCi/g	REC: 79	(30%-105%)		
		TPU:		+/-2.47					
				+/-3.82					
QC1203882290 432964001 DUP									
Plutonium-238		U	0.0862	U	0.0448				10/04/1709:20
		Uncert:	+/-0.242		+/-0.249	RPD: 0	N/A		
		TPU:	+/-0.243		+/-0.249	RER: 0.233	(0-2)		
Plutonium-239/240		U	0.0862	U	0.0896				
		Uncert:	+/-0.242		+/-0.306	RPD: 0	N/A		
		TPU:	+/-0.243		+/-0.307	RER: 0.0172	(0-2)		
**Plutonium-242 Tracer	19.5		15.4		16.4	pCi/g	REC: 84	(30%-105%)	
		Uncert:	+/-2.49		+/-2.55				
		TPU:	+/-3.89		+/-4.00				
QC1203882291 LCS									
Plutonium-238				U	-0.0515				10/04/1709:20
		Uncert:			+/-0.233				
		TPU:			+/-0.233				
Plutonium-239/240	17.6				18.2	pCi/g	REC: 103	(80%-120%)	
		Uncert:			+/-2.32				
		TPU:			+/-3.67				
**Plutonium-242 Tracer	17.6				15.7	pCi/g	REC: 89	(30%-105%)	
		Uncert:			+/-2.28				
		TPU:			+/-3.57				
Batch	1707966								
QC1203892476 MB									
Uranium-233/234				U	0.312	pCi/g		MXS2	10/11/1709:06
		Uncert:			+/-0.337				
		TPU:			+/-0.339				
Uranium-235/236				U	0.109	pCi/g			
		Uncert:			+/-0.301				
		TPU:			+/-0.301				
Uranium-238				U	0.108	pCi/g			
		Uncert:			+/-0.284				
		TPU:			+/-0.285				
**Uranium-232 Tracer	18.9				18.4	pCi/g	REC: 97	(30%-105%)	
		Uncert:			+/-2.26				
		TPU:			+/-3.49				
QC1203892477 432964001 DUP									
Uranium-233/234			2.91		3.02	pCi/g			10/11/1708:42
		Uncert:	+/-0.965		+/-0.980	RPD: 4	(0%-30%)		
		TPU:	+/-1.06		+/-1.07	RER: 0.139	(0-2)		
Uranium-235/236		U	0.394	U	0.296	pCi/g			
		Uncert:	+/-0.434		+/-0.390	RPD: 28	(0% - 100%)		
		TPU:	+/-0.438		+/-0.393	RER: 0.326	(0-2)		
Uranium-238			1.92		1.76	pCi/g			
		Uncert:	+/-0.801		+/-0.752	RPD: 9	(0%-30%)		
		TPU:	+/-0.849		+/-0.795	RER: 0.266	(0-2)		
**Uranium-232 Tracer	20.0		17.5		17.3	pCi/g	REC: 87	(30%-105%)	
		Uncert:	+/-2.46		+/-2.49				

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Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch	1707966								
QC1203892478	LCS	TPU:	+/-3.78	+/-3.83					
Uranium-233/234				26.2	pCi/g				10/11/1708:42
		Uncert:		+/-2.90					
		TPU:		+/-4.90					
Uranium-235/236				2.13	pCi/g				
		Uncert:		+/-0.944					
		TPU:		+/-0.998					
Uranium-238	24.3			24.4	pCi/g	REC: 100	(80%-120%)		
		Uncert:		+/-2.79					
		TPU:		+/-4.62					
**Uranium-232 Tracer	18.9			17.0	pCi/g	REC: 90	(30%-105%)		
		Uncert:		+/-2.48					
		TPU:		+/-3.78					
Rad Gamma Spec									
Batch	1701074								
QC1203876164	MB								
Iodine-129			U	0.0376	pCi/g			MJH1	09/26/1717:48
		Uncert:		+/-0.327					
		TPU:		+/-0.327					
QC1203876165	432119001	DUP							
Iodine-129		U	0.0625	U	0.570	pCi/g			09/26/1717:48
		Uncert:	+/-0.383		+/-0.511		RPD: 0	N/A	
		TPU:	+/-0.384		+/-0.514		RER: 1.55	(0-2)	
QC1203876166	432119001	MS							
Iodine-129		U	0.0625		36.2	pCi/g	REC: 91	(75%-125%)	09/26/1717:48
		Uncert:	+/-0.383		+/-3.47				
		TPU:	+/-0.384		+/-5.01				
QC1203876167	LCS								
Iodine-129			33.1		34.1	pCi/g	REC: 103	(80%-120%)	09/27/1705:55
		Uncert:			+/-3.06				
		TPU:			+/-4.58				
Batch	1701394								
QC1203876948	MB								
Cesium-137			U	0.0108	pCi/g			MXR1	10/02/1707:41
		Uncert:		+/-0.0112					
		TPU:		+/-0.0123					
Cobalt-60			U	0.00554	pCi/g				
		Uncert:		+/-0.0115					
		TPU:		+/-0.0117					
Europium-152			U	0.018	pCi/g				
		Uncert:		+/-0.0285					
		TPU:		+/-0.0296					
Europium-154			U	0.0413	pCi/g				
		Uncert:		+/-0.0382					
		TPU:		+/-0.0426					
Europium-155			U	0.00719	pCi/g				
		Uncert:		+/-0.0203					
		TPU:		+/-0.0206					
QC1203876949	433007007	DUP							

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
Rad Gamma Spec										
Batch	1701394									
Cesium-137		U	-0.00525	U	-0.0061	pCi/g				
	Uncert:		+/-0.0198		+/-0.0161		RPD: 0		N/A	
	TPU:		+/-0.020		+/-0.0163		RER: 0.878		(0-2)	
Cobalt-60		U	0.00615	U	0.0113	pCi/g				
	Uncert:		+/-0.0218		+/-0.0204		RPD: 0		N/A	
	TPU:		+/-0.022		+/-0.0211		RER: 0.429		(0-2)	
Europium-152		U	0.0129	U	-0.0279	pCi/g				
	Uncert:		+/-0.0504		+/-0.0393		RPD: 0		N/A	
	TPU:		+/-0.0507		+/-0.0413		RER: 1.48		(0-2)	
Europium-154		U	0.0351	U	0.0138	pCi/g				
	Uncert:		+/-0.0646		+/-0.0557		RPD: 0		N/A	
	TPU:		+/-0.0666		+/-0.0561		RER: 0.0758		(0-2)	
Europium-155		U	0.000643	UX	0.00	pCi/g				
	Uncert:		+/-0.0583		+/-0.105		RPD: 15		N/A	
	TPU:		+/-0.0583		+/-0.106		RER: 1.44		(0-2)	
QC1203876950	LCS									
Americium-241	488				559	pCi/g	REC: 114		(80%-120%)	10/02/1717:33
	Uncert:				+/-13.2					
	TPU:				+/-56.4					
Cesium-137	175				173	pCi/g	REC: 99		(80%-120%)	
	Uncert:				+/-3.46					
	TPU:				+/-14.4					
Cobalt-60	141				137	pCi/g	REC: 97		(80%-120%)	
	Uncert:				+/-3.70					
	TPU:				+/-13.3					
Europium-152				U	0.268	pCi/g				
	Uncert:				+/-1.35					
	TPU:				+/-1.35					
Europium-154				U	0.406	pCi/g				
	Uncert:				+/-1.04					
	TPU:				+/-1.06					
Europium-155				U	-0.287	pCi/g				
	Uncert:				+/-1.07					
	TPU:				+/-1.08					
Rad Gas Flow										
Batch	1703319									
QC1203881612	MB									
Total Strontium				U	1.05	pCi/g				
	Uncert:				+/-0.734					
	TPU:				+/-0.781					
**Strontium Carrier	7.85				7.70	mg	REC: 98		(40%-110%)	
QC1203881613	433007004	DUP								
Total Strontium		U	0.940		1.19	pCi/g				
	Uncert:		+/-0.677		+/-0.783		RPD: 24		(0% - 100%)	
	TPU:		+/-0.718		+/-0.840		RER: 0.447		(0-2)	
**Strontium Carrier	7.85		8.60		7.80	mg	REC: 99		(40%-110%)	
QC1203881614	LCS									
Total Strontium	76.2				68.3	pCi/g	REC: 90		(80%-120%)	10/03/1713:50
	Uncert:				+/-3.78					
	TPU:				+/-17.8					

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gas Flow									
Batch	1703319								
**Strontium Carrier	7.85			8.10	mg	REC: 103	(40%-110%)		
Rad Liquid Scintillation									
Batch	1702868								
QC1203880456	MB								
Tritium			U	-3.81	pCi/g			BXM4	09/28/1714:34
				Uncert: +/-15.7					
				TPU: +/-15.7					
QC1203880457	432964001	DUP							
Tritium		U	-0.486	U	-2.53	pCi/g			09/28/1714:50
				Uncert: +/-14.7	+/-15.6	RPD: 0	N/A		
				TPU: +/-14.7	+/-15.6	RER: 0.187	(0-2)		
QC1203880458	432964001	MS							
Tritium	168	U	-0.486		138	pCi/g	REC: 82	(75%-125%)	09/28/1715:07
				Uncert: +/-14.7	+/-41.9				
				TPU: +/-14.7	+/-52.3				
QC1203880459	LCS								
Tritium	86.8			74.6	pCi/g	REC: 86	(80%-120%)		09/28/1715:23
				Uncert: +/-22.0					
				TPU: +/-27.7					
Batch	1702873								
QC1203880472	MB								
Carbon-14			U	-1.01	pCi/g			BXM4	09/29/1714:40
				Uncert: +/-2.27					
				TPU: +/-2.27					
QC1203880473	432964001	DUP							
Carbon-14		U	-0.365	U	-0.917	pCi/g			09/29/1715:24
				Uncert: +/-2.34	+/-2.33	RPD: 0	N/A		
				TPU: +/-2.34	+/-2.33	RER: 0.327	(0-2)		
QC1203880474	432964001	MS							
Carbon-14	273	U	-0.365		258	pCi/g	REC: 94	(75%-125%)	09/29/1716:06
				Uncert: +/-2.34	+/-8.79				
				TPU: +/-2.34	+/-21.5				
QC1203880475	LCS								
Carbon-14	147			147	pCi/g	REC: 100	(80%-120%)		09/29/1716:48
				Uncert: +/-4.83					
				TPU: +/-11.9					
Batch	1703156								
QC1203881197	MB								
Nickel-63			U	-1.58	pCi/g			TXJ1	10/06/1717:30
				Uncert: +/-3.26					
				TPU: +/-3.26					
**Nickel Carrier	25.2			20.4	mg	REC: 81	(40%-110%)		
QC1203881198	432964001	DUP							
Nickel-63		U	2.88	U	0.705	pCi/g			10/06/1718:02
				Uncert: +/-3.87	+/-3.41	RPD: 0	N/A		
				TPU: +/-3.90	+/-3.41	RER: 0.824	(0-2)		
**Nickel Carrier	25.2		19.0		23.2	mg	REC: 92	(40%-110%)	
QC1203881199	LCS								
Nickel-63	226			207	pCi/g	REC: 92	(80%-120%)		10/06/1718:34

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Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
Rad Liquid Scintillation										
Batch	1703156									
				Uncert:						
				TPU:						
**Nickel Carrier	25.2			23.4	mg	REC:	93 (40%-110%)			
Batch	1703178									
QC1203881258	MB									
Technetium-99			U	-0.242	pCi/g			CXS7	10/08/1709:50	
				Uncert:						
				TPU:						
**Technetium-99m Tracer	38700			37100	CPM	REC:	96 (30%-105%)			
QC1203881259	432964001	DUP								
Technetium-99		U	1.35	U	-0.215	pCi/g			10/08/1710:06	
				Uncert:						
				TPU:						
**Technetium-99m Tracer	38700			37800	CPM	REC:	92 (30%-105%)			
QC1203881260	LCS									
Technetium-99	59.7			57.9	pCi/g	REC:	97 (80%-120%)		10/08/1710:23	
				Uncert:						
				TPU:						
**Technetium-99m Tracer	38700			37800	CPM	REC:	98 (30%-105%)			

Notes:

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

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 >= 2X the MDA and, after corrections, result is >= MDA for this sample
- 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.
- 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

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date	Time
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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.