

9/2/2016



September 02, 2016

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

Re: CHPRC SAF F16-028
Work Order: 402787
SDG: GEL402787

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on July 30, 2016. 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,

B Luthman
Brielle Luthman for
Heather Shaffer
Project Manager

Purchase Order: 300192 - 8H
Chain of Custody: F16-028-022
Enclosures



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Sample Issue Resolution

SAMPLE ISSUE RESOLUTION

SIR NUM SIR16-538
REV NUM 0
DATE INITIATED 8/1/2016

SAMPLE EVENT INFORMATION

SAF NUM(S) F16-028
OPERABLE UNIT(S) 200-WA-1
PROJECT(S) 200-WA-1
SAMPLE EVENT TITLE(S) 200-WA-1 OU OPPORTUNISTIC SAMPLING C9414 AND C9567 - SOIL
LABORATORY GEL Laboratories, LLC

SAMPLING INFORMATION

NUMBER OF SAMPLES 1
SAMPLE NUMBERS B35XH9
SAMPLE MATRIX SOIL
COLLECTION DATE -
SDG NUM GEL402787

ISSUE BACKGROUND

CLASS Chain of Custody Issue (Field)
TYPE Other COC issue (Specify)
DESCRIPTION The lab received only page 1 of 2 for COC F16-028-022. Page 2 was not received and contains the requested analysis.

DISPOSITION

DESCRIPTION Proposed Resolution: Please provide the lab with page 2 of 2.
JUSTIFICATION Final Disposition: Accept proposed resolution.

SUBMITTED BY: Heather Shaffer DATE: 08/01/2016
ACCEPTED BY: Sarah Nagel DATE: 08/01/2016

SAMPLE ISSUE RESOLUTION

SIR NUM	SIR16-588
REV NUM	0
DATE INITIATED	8/23/2016

SAMPLE EVENT INFORMATION

SAF NUM(S) F16-028
OPERABLE UNIT(S) 200-WA-1
PROJECT(S) 200-WA-1
SAMPLE EVENT TITLE(S) 200-WA-1 OU OPPORTUNISTIC SAMPLING C9414 AND C9567 - SOIL
LABORATORY GEL Laboratories, LLC

SAMPLING INFORMATION

NUMBER OF SAMPLES 1
SAMPLE NUMBERS B35XH9
SAMPLE MATRIX SOIL
COLLECTION DATE 7/28/2016 - 7/28/2016
SDG NUM GEL402787

ISSUE BACKGROUND

CLASS General Laboratory Direction
TYPE Analysis Turnaround Time Modification
DESCRIPTION Due to the in-growth required for Ra-226, the lab has requested an extension on the turnaround time. The lab is expecting to report by 9/3/16.

DISPOSITION

DESCRIPTION Proposed Resolution: The lab will ingrow for the required amount of time.

JUSTIFICATION Final Disposition: Extend the due date to 9/3/16

SUBMITTED BY: Heather Shaffer DATE: 08/18/2016
ACCEPTED BY: Dave Todak DATE: 08/23/2016

Case Narrative

**General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F16-028
SDG: GEL402787**

September 02, 2016

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 July 30, 2016, for analysis. The sample was delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. The client was notified that page 2 of 2 was not sent to the lab. The client sent one page, and then followed up with a second version of page 2. Please see the enclosed SIR for further details.. The lab requested an extension on the due date to allow for in-growth of Ra-226. Please see the enclosed SIR for further details.

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 and DER.

Sample Identification

The laboratory received the following sample:

Laboratory Identification	Sample Description
402787001	B35XH9

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, Metals 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.

9/2/2016

B. Luthman
Brielle Luthman for
Heather Shaffer
Project Manager

Technical Case Narrative
CH2M Hill Plateau Remediation Company (CPRC)
SDG #: GEL402787
Work Order #: 402787

Metals

Determination of Metals by ICP-MS

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 ICPMS solid samples in this SDG were diluted the standard two times.

Analyte	402787
	001
Uranium	2X

General Chemistry

Ion Chromatography

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.

pH

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

Holding Times

Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified.

Sample	Analyte	Value
--------	---------	-------

1203599132 (B35XH9DUP)	pH	Received 30-JUL-16, out of holding 28-JUL-16
402787001 (B35XH9)	pH	Received 30-JUL-16, out of holding 28-JUL-16

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 1203598130 (LCS) was recounted due to high carrier/tracer yield. The recount is reported. Sample 1203598128 (MB) was recounted due to a peak shift. The recount is reported.

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

Samples 1203598131 (MB) and 402787001 (B35XH9) were recounted due to a peak shift. The recounts are reported.

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.

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.

THISO_IE_PLATE_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.

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 + (Add-on)

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**

Sample 1203601566 (MB) was recounted due to a suspected blank 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.

C14_LSC: 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**

Samples were recounted due to low recovery. The recounts are reported.

NI63_LSC

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 low recovery. The re-analysis is being reported.

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				F16-028-022	PAGE 1 OF 2
COLLECTOR Larry Rosane CHPRC		COMPANY CONTACT TODAK, D		TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D		PRICE CODE 8H
SAMPLING LOCATION C9411, I-004		PROJECT DESIGNATION 200-WA-1 Opportunistic sampling - soil			SAF NO. F16-028	AIR QUALITY <input type="checkbox"/>	DATA TURNAROUND 30 Days / 30 Days
ICE CHEST NO. GWS-530		FIELD LOGBOOK NO. HNF-N-645-5 p912 179.5" - 182.0"		ACTUAL SAMPLE DEPTH		COA 300192	METHOD OF SHIPMENT FEDERAL EXPRESS
SHIPPED TO GEL Laboratories, LLC		OFFSITE PROPERTY NO. AW 7/21/16 WA-6883			BILL OF LADING/AIR BILL NO. AW 7/21/16 WA-7768 17848 4018		

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. NA	PRESERVATION	Cool <=6C	None	None	None	None
		HOLDING TIME	6 Months	6 Months	6 Months	None	ASAP
		TYPE OF CONTAINER	G/P	G/P	G/P	Moisture Resistant Cont	G/P
		NO. OF CONTAINER(S)	1	1	1	1	1
		VOLUME	250mL	250mL	500mL	200g	60mL
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS	SEE ITEM (4) IN SPECIAL INSTRUCTIONS	SEE ITEM (5) IN SPECIAL INSTRUCTIONS

402787

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME					
B35XH9	SOIL	7-28-16	0900	✓	✓	✓	✓	✓

9/21/2016

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM Larry Rosane CHPRC	DATE/TIME 7/28/16 1255	RECEIVED BY/STORED IN SSU-1	DATE/TIME 7/28/16 1255	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM SSU #1	DATE/TIME JUL 29 2016 0720	RECEIVED BY/STORED IN Troy Bacon CHPRC	DATE/TIME JUL 29 2016 0720		
RELINQUISHED BY/REMOVED FROM Troy Bacon CHPRC	DATE/TIME JUL 29 2016 1400	RECEIVED BY/STORED IN FEDEX	DATE/TIME		
RELINQUISHED BY/REMOVED FROM fx	DATE/TIME	RECEIVED BY/STORED IN M. Kristian White	DATE/TIME 730-16 0855		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME		

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

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CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F16-028-022	PAGE 2 OF 2
COLLECTOR	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 8H	DATA TURNAROUND 30 Days / 30 Days	
SAMPLING LOCATION C9411, I-004	PROJECT DESIGNATION 200-WA-1 Opportunistic sampling - soil		SAF NO. F16-028	AIR QUALITY <input type="checkbox"/>		
ICE CHEST NO.	FIELD LOGBOOK NO.	ACTUAL SAMPLE DEPTH	COA 300192	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL	
SHIPPED TO GEL Laboratories, LLC	OFFSITE PROPERTY NO.		BILL OF LADING/AIR BILL NO.			

SPECIAL INSTRUCTIONS

(1) 6020_METALS_ICPMS: COMMON (Add-on) {Uranium}; 9056_ANIONS_IC: COMMON {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate}; 9056_ANIONS_IC: COMMON (Add-on) {Phosphorus in phosphate};
 (2) GAMMA_GS: COMMON; GAMMA_GS: COMMON (Add-on) {Radium-226, Radium-228};
 (3) AMCMISO_IE_PRECIP_AEA: COMMON {Americium-241}; C14_LSC: COMMON; I129_SEP_LEPS_GS: COMMON; NI63_LSC: COMMON; PUIISO_PLATE_AEA: COMMON; SRTOT_SEP_PRECIP_GPC: COMMON; TC99_EIE_LSC: COMMON; THISO_IE_PLATE_AEA: COMMON {Thorium-232}; UIISO_IE_PRECIP_AEA: COMMON; NP237_IE_PRECIP_AEA: COMMON; TRITIUM_DIST_LSC: COMMON;
 (4) Moisture Content - D2216 {Percent moisture (wet sample)};
 (5) 9045_pH (Non-Aqueous): COMMON {pH Measurement};

COPY

9/2/2016

SAMPLE RECEIPT & REVIEW FORM

Client: <u>CPAC</u>		SDG/AR/COC/Work Order: <u>402787</u>	
Received By: <u>MK</u>		Date Received: <u>8/21/16</u> <u>7-30-16</u>	
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.
COC/Samples marked as radioactive?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>CPAC</u>
Classified Radioactive II or III by RSO?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

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 type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius <u>1c 2c</u>
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>130962962</u> Secondary Temperature Device Serial # (if Applicable):
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6 Do Low Level Perchlorate samples have headspace as required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
7 VOA vials contain acid preservation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If unknown, select No)
8 VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
9 Are Encore containers present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
10 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
11 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
12 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
13 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
14 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
15 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

16 Carrier and tracking number.	Circle Applicable:					
	FedEx Air	FedEx Ground	UPS	Field Services	Courier	Other
		<u>7768</u>	<u>7848</u>	<u>3824</u>	<u>2c</u>	
			<u>8036</u>	<u>0750</u>	<u>2c</u>	
			<u>7848</u>	<u>4018</u>	<u>2c</u>	
			<u>8036</u>	<u>1297</u>	<u>1c</u>	
		<u>7848</u>	<u>3456</u>	<u>2c</u>		

Comments (Use Continuation Form if needed):

CH2MHill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F16-028-022	PAGE 2 OF 2
COLLECTOR Larry Rosane /CHPRC	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D		PRICE CODE 8H	DATA TURNAROUND
SAMPLING LOCATION C9411, I-004	PROJECT DESIGNATION 200-WA-1 Opportunistic sampling - soil		SAF NO. F16-028		AIR QUALITY <input type="checkbox"/>	30 Days / 30 Days
ICE CHEST NO.	FIELD LOGBOOK NO. HNF-N- 645-5 pg 12	ACTUAL SAMPLE DEPTH 179.5' - 182.0'	COA 300192	METHOD OF SHIPMENT FEDERAL EXPRESS		ORIGINAL
SHIPPED TO GEL Laboratories, LLC	OFFSITE PROPERTY NO. N/A	BILL OF LADING/AIR BILL NO. N/A				

SPECIAL INSTRUCTIONS

- (1) 6020_METALS_ICPMS: COMMON (Add-on) {Uranium}; 9056_ANIONS_IC: COMMON {Chloride, Fluoride, Nitrogen in Nitrate, Nitrogen in Nitrite, Sulfate}; 9056_ANIONS_IC: COMMON (Add-on) {Phosphorus in phosphate};
- (2) GAMMA_GS: COMMON; GAMMA_GS: COMMON (Add-on) {Radium-226, Radium-228};
- (3) AMCMISO_IE_PRECIP_AEA: COMMON {Americium-241}; C14_LSC: COMMON; I129_SEP_LEPS_GS: COMMON; NI63_LSC: COMMON; PUIISO_PLATE_AEA: COMMON; SRTOT_SEP_PRECIP_GPC: COMMON; TC99_EIE_LSC: COMMON; THISO_IE_PLATE_AEA: COMMON {Thorium-232}; UIISO_IE_PRECIP_AEA: COMMON; NP237_IE_PRECIP_AEA: COMMON; TRITIUM_DIST_LSC: COMMON;
- (4) Moisture Content - D2216 {Percent moisture (wet sample)};
- (5) 9045_pH (Non-Aqueous): COMMON {pH Measurement};

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Data Review Qualifier Definitions

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 02 September 2016

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	LA160006
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122016-1
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
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-16-11
Utah NELAP	SC000122016-20
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL402787
Work Order #: 402787

Product: Determination of Metals by ICP-MS**Analytical Method:** 6020_METALS_ICPMS**Analytical Procedure:** GL-MA-E-014 REV# 28**Analytical Batch:** 1586950**Preparation Method:** SW846 3050B**Preparation Procedure:** GL-MA-E-009 REV# 26**Preparation Batch:** 1586949

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402787001	B35XH9
1203597774	Method Blank (MB)ICP-MS
1203597775	Laboratory Control Sample (LCS)
1203597778	402787001(B35XH9L) Serial Dilution (SD)
1203597776	402787001(B35XH9D) Sample Duplicate (DUP)
1203597777	402787001(B35XH9S) 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**Preparation/Analytical Method Verification**

Method SW-846 3050B is not a total digestion technique for most samples. It is a very strong acid digestion that will dissolve almost all elements that could become environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

Sample Dilutions

Dilutions are performed to minimize matrix interferences resulting from elevated mineral element concentrations present in solid samples and/or to bring over range target analyte concentrations into the linear calibration range of the instrument. The ICPMS solid samples in this SDG were diluted the standard two times.

Analyte	402787
	001
Uranium	2X

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: GEL402787 GEL Work Order: 402787

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- D Results are reported from a diluted aliquot of sample.
- 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: Nik-Cole Elmore

Date: 01 SEP 2016

Title: Data Validator

Sample Data Summary

METALS
-1-
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL402787

CONTRACT: CPRC0F16028

METHOD TYPE: SW846

SAMPLE ID:402787001

BASIS: Dry Weight

DATE COLLECTED 28-JUL-16

CLIENT ID: B35XH9

LEVEL: Low

DATE RECEIVED 30-JUL-16

MATRIX: SOIL

%SOLIDS: 86

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440-61-1	Uranium	1470	ug/kg	D	15.4	46.7	46.7	2	MS	SKJ	08/16/16 13:37	160816-1	1586950

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1586950	1586949	SW846 3050B	0.507	g	50	mL	08/02/16	JP1

***Analytical Methods:**

MS SW846 3050B/6020A

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: September 1, 2016

CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 402787

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS											
Batch	1586950										
QC1203597776	402787001	DUP									
Uranium		D	1470	D	1490	ug/kg	1.48	(0%-20%)	SKJ	08/16/16	13:38
QC1203597775	LCS										
Uranium	4830			D	4390	ug/kg		90.9	(80%-120%)	08/16/16	13:35
QC1203597774	MB										
Uranium				DU	12.7	ug/kg				08/16/16	13:34
QC1203597777	402787001	MS									
Uranium	5640	D	1470	D	6500	ug/kg		89.1	(75%-125%)	08/16/16	13:39
QC1203597778	402787001	SDILT									
Uranium		D	6.30	D	1.26	ug/L	.286	(0%-10%)		08/16/16	13:41

Notes:

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- 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.
- E Reported value is estimated due to interferences. See comment in narrative.
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- S Reported value determined by the Method of Standard Additions (MSA)
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
- 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: 402787

Page 2 of 2

Parmname	NOM	Sample Qual	QC	Units	RPD/D%	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.

General Chem Analysis

Case Narrative

**General Chemistry
Technical Case Narrative
CH2M Hill Plateau Remediation Company (CPRC)
SDG #: GEL402787
Work Order #: 402787**

Product: Ion Chromatography

Analytical Method: 9056_ANIONS_IC

Analytical Procedure: GL-GC-E-086 REV# 25

Analytical Batches: 1591048 and 1591047

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402787001	B35XH9
1203608371	Method Blank (MB)
1203608372	Laboratory Control Sample (LCS)
1203608373	402541001(B35XH7) Sample Duplicate (DUP)
1203608374	402541001(B35XH7) Matrix Spike (MS)

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: pH**Analytical Method:** SW846 9045D**Analytical Procedure:** GL-GC-E-008 REV# 21**Analytical Batch:** 1587527

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402787001	B35XH9
1203599131	Laboratory Control Sample (LCS)
1203599132	402787001(B35XH9) Sample Duplicate (DUP)

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**Holding Times**

Samples (See Below) were received by the laboratory outside of the method specified holding time. The data is qualified.

Sample	Analyte	Value
1203599132 (B35XH9DUP)	pH	Received 30-JUL-16, out of holding 28-JUL-16
402787001 (B35XH9)	pH	Received 30-JUL-16, out of holding 28-JUL-16

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

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**Qualifier Definition Report
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL402787 GEL Work Order: 402787

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).

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: Kristen Mizzell

Date: 23 AUG 2016

Title: Analyst I

Sample Data Summary

9/2/2016

GEL LABORATORIES LLC

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Certificate of Analysis

Report Date: August 23, 2016

Company : CH2MHill Plateau Remediation Company
 Address : MSIN R3-50 CHPRC
 PO Box 1600
 Richland, Washington 99352
 Contact: Mr. Scot Fitzgerald
 Project: CHPRC SAF F16-028

Client Sample ID: B35XH9 Project: CPRC0F16028
 Sample ID: 402787001 Client ID: CPRC001
 Matrix: SOIL
 Collect Date: 28-JUL-16 09:00
 Receive Date: 30-JUL-16
 Collector: Client
 Moisture: 15.5%

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
9056_ANIONS_IC:COMMON + (Add-on) "Dry Weight Corrected"												
Chloride		2460	837	2330	ug/Kg	9.83	1	MXL2	08/18/16	0740	1591048	1
Fluoride	B	1010	395	1160	ug/Kg	9.83	1					
Nitrate-N		8890	384	1160	ug/Kg	9.83	1					
Nitrite-N	U	384	384	1160	ug/Kg	9.83	1					
Phosphorus in phosphate	U	779	779	2330	ug/Kg	9.83	1					
Sulfate		20300	1550	4650	ug/Kg	9.83	1					

Titration and Ion Analysis												
9045_pH (Non-Aqueous):COMMON "As Received"												
pH at Temp 22.1C	X	8.55	0.010	0.100	SU		1	RXB5	08/03/16	1929	1587527	2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
SW846 9056A	SW846 9056A Total Anions in Soil	MXL2	08/17/16	1156	1591047

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	SW846 9045D	

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: August 23, 2016

CH2MHill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 402787

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1591048										
QC1203608373	402541001	DUP									
Chloride	B	1850	B	1670	ug/Kg	10.3	^	(+/-2200)	MXL2	08/18/16	06:40
Fluoride	B	680	B	676	ug/Kg	0.562	^	(+/-1100)			
Nitrate-N		1550		1570	ug/Kg	1.52	^	(+/-1100)			
Nitrite-N	U	363	U	364	ug/Kg	N/A					
Phosphorus in phosphate	U	736	U	738	ug/Kg	N/A					
Sulfate		11900		10800	ug/Kg	9.32	^	(+/-4410)			
QC1203608372	LCS										
Chloride		49900		47200	ug/Kg			94.7	(80%-120%)		08/18/16 05:40
Fluoride		24900		23100	ug/Kg			92.7	(80%-120%)		
Nitrate-N		24900		23700	ug/Kg			95.2	(80%-120%)		
Nitrite-N		24900		24000	ug/Kg			96.1	(80%-120%)		
Phosphorus in phosphate		12500		12400	ug/Kg			99.6	(80%-120%)		
Sulfate		99800		96700	ug/Kg			96.9	(80%-120%)		
QC1203608371	MB										
Chloride			U	716	ug/Kg						08/18/16 05:10
Fluoride			U	338	ug/Kg						
Nitrate-N			U	328	ug/Kg						
Nitrite-N			U	328	ug/Kg						
Phosphorus in phosphate			U	667	ug/Kg						
Sulfate			U	1320	ug/Kg						

QC1203608374 402541001 MS

GEL LABORATORIES LLC

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

QC Summary

Workorder: 402787

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Ion Chromatography											
Batch	1591048										
Chloride	54700	B	1850	53400	ug/Kg		94.3	(48%-145%)		08/18/16	07:10
Fluoride	27300	B	680	25100	ug/Kg		89.4	(30%-135%)	MXL2		
Nitrate-N	27300		1550	28500	ug/Kg		98.6	(70%-125%)			
Nitrite-N	27300	U	363	27000	ug/Kg		98.8	(70%-120%)			
Phosphorus in phosphate	13700	U	736	10000	ug/Kg		73.5	(35%-134%)			
Sulfate	109000		11900	117000	ug/Kg		96.4	(45%-162%)			

Titration and Ion Analysis

Batch	1587527										
QC1203599132	402787001	DUP									
pH		X	8.55	X	8.56	SU	0.117	(0%-30%)	RXB5	08/03/16	19:33
QC1203599131	LCS										
pH	7.00				6.99	SU	99.9	(70%-130%)		08/03/16	19:28

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

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 #: GEL402787
Work Order #: 402787

Product: AMCMISO_EIE_PRECIP_AEA: COMMON
Analytical Method: AMCMISO_EIE_PREC_AEA
Analytical Procedure: GL-RAD-A-011 REV# 26
Analytical Batch: 1587115

Preparation Method: Dry Soil Prep
Preparation Procedure: GL-RAD-A-021 REV# 20
Preparation Batch: 1586883

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402787001	B35XH9
1203598128	Method Blank (MB)
1203598129	402787001(B35XH9) Sample Duplicate (DUP)
1203598130	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 1203598130 (LCS) was recounted due to high carrier/tracer yield. The recount is reported. Sample 1203598128 (MB) was recounted due to a peak shift. The recount is reported.

Product: PUIISO_PRECIP_AEA:COMMON
Analytical Method: PUIISO_PRECIP_AEA
Analytical Procedure: GL-RAD-A-011 REV# 26
Analytical Batch: 1587116

Preparation Method: Dry Soil Prep
Preparation Procedure: GL-RAD-A-021 REV# 20
Preparation Batch: 1586883

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402787001	B35XH9
1203598131	Method Blank (MB)
1203598132	402787001(B35XH9) Sample Duplicate (DUP)
1203598133	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 1203598131 (MB) and 402787001 (B35XH9) were recounted due to a peak shift. The recounts are reported.

Product: UIISO_IE_PRECIP_AEA:COMMON

Analytical Method: UIISO_IE_PRECIP_AEA

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

Analytical Batch: 1587117

Preparation Method: Dry Soil Prep

Preparation Procedure: GL-RAD-A-021 REV# 20

Preparation Batch: 1586883

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402787001	B35XH9
1203598134	Method Blank (MB)
1203598135	402787001(B35XH9) Sample Duplicate (DUP)
1203598136	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: 1587118

Preparation Method: Dry Soil Prep

Preparation Procedure: GL-RAD-A-021 REV# 20

Preparation Batch: 1586883

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402787001	B35XH9
1203598137	Method Blank (MB)
1203598138	402787001(B35XH9) Sample Duplicate (DUP)
1203598139	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: THISO_IE_PLATE_AEA: COMMON

Analytical Method: THISO_IE_PRECIP_AEA

Analytical Procedure: GL-RAD-A-038 REV# 17

Analytical Batch: 1587119

Preparation Method: Dry Soil Prep

Preparation Procedure: GL-RAD-A-021 REV# 20

Preparation Batch: 1586883

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402787001	B35XH9
1203598140	Method Blank (MB)
1203598141	402787001(B35XH9) Sample Duplicate (DUP)
1203598142	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: ASTM D 2216 (Modified)

Analytical Procedure: GL-OA-E-020 REV# 10

Analytical Batch: 1586886

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402787001	B35XH9
1203597629	402787001(B35XH9) 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: 1585659

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402787001	B35XH9
1203594530	Method Blank (MB)
1203594531	402432001(B35XH3) Sample Duplicate (DUP)
1203594532	402432001(B35XH3) Matrix Spike (MS)
1203594533	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 + (Add-on)

Analytical Method: GAMMA_GS

Analytical Procedure: GL-RAD-A-013 REV# 25

Analytical Batch: 1587994

Preparation Method: Dry Soil Prep

Preparation Procedure: GL-RAD-A-021 REV# 20

Preparation Batch: 1586883

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402787001	B35XH9
1203600272	Method Blank (MB)
1203600273	402941001(B35XJ1) Sample Duplicate (DUP)
1203600274	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.

Quality Control (QC) Information

QC Information

All of the QC samples meet the required acceptance limits with the following exceptions: The sample and the duplicate, 1203600273 (B35XJ1DUP), relative error ratio is greater than the client requirement for Eu-155; however, both results are less than their respective MDCs.

Qualifier Information

Qualifier	Reason	Analyte	Sample	Client Sample
X	Data rejected due to interference.	Europium-155	402787001	B35XH9

Product: SRTOT_SEP_PRECIP_GPC: COMMON

Analytical Method: SRTOT_SEP_PRECIP_GPC

Analytical Procedure: GL-RAD-A-004 REV# 17

Analytical Batch: 1588469

Preparation Method: Dry Soil Prep

Preparation Procedure: GL-RAD-A-021 REV# 20

Preparation Batch: 1586883

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402787001	B35XH9
1203601566	Method Blank (MB)
1203601567	402432002(B35XH5) Sample Duplicate (DUP)
1203601568	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 1203601566 (MB) was recounted due to a suspected blank false positive. The recount is reported.

Product: TC99_SEP_GPC

Analytical Method: TC99_EIE_LSC

Analytical Procedure: GL-RAD-A-059 REV# 4

Analytical Batch: 1588132

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402787001	B35XH9
1203600560	Method Blank (MB)
1203600561	402432001(B35XH3) Sample Duplicate (DUP)
1203600562	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: C14_LSC: COMMON

Analytical Method: C14_LSC

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

Analytical Batch: 1588489

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402787001	B35XH9
1203601657	Method Blank (MB)
1203601658	402432001(B35XH3) Sample Duplicate (DUP)
1203601659	402432001(B35XH3) Matrix Spike (MS)
1203601660	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: TRITIUM_DIST_LSC: COMMON

Analytical Method: TRITIUM_DIST_LSC

Analytical Procedure: GL-RAD-A-002 REV# 21

Analytical Batch: 1588517

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402787001	B35XH9
1203601770	Method Blank (MB)
1203601771	402432001(B35XH3) Sample Duplicate (DUP)
1203601772	402432001(B35XH3) Matrix Spike (MS)
1203601773	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

Samples were recounted due to low recovery. The recounts are reported.

Product: NI63_LSC

Analytical Method: NI63_LSC

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

Analytical Batch: 1591683

Preparation Method: Dry Soil Prep

Preparation Procedure: GL-RAD-A-021 REV# 20

Preparation Batch: 1586883

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

<u>GEL Sample ID#</u>	<u>Client Sample Identification</u>
402787001	B35XH9
1203609943	Method Blank (MB)
1203609944	402432001(B35XH3) Sample Duplicate (DUP)
1203609945	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 low recovery. The re-analysis is being reported.

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: GEL402787 GEL Work Order: 402787

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: Theresa Austin

Date: 02 SEP 2016

Title: Group Leader

Sample Data Summary

Rad
Certificate of Analysis
Sample Summary

SDG Number: GEL402787	Client: CPRC001	Project: CPRC0F16028
Lab Sample ID: 402787001	Date Collected: 07/28/2016 09:00	Matrix: SOIL
	Date Received: 07/30/2016 08:55	%Moisture: 15.5
Client ID: B35XH9		Prep Basis: "Dry Weight Corrected"
Batch ID: 1587115	Method: AMCMISO_EIE_PREC_AEA	SOP Ref: GL-RAD-A-011
Run Date: 08/17/2016 09:36	Analyst: JXH2	Instrument: 1236
Data File: S0402787001_AM.1A.gcnf	Aliquot: 0.111 g	Count Time: 240 min
Prep Batch: 1587115	Prep Method: DOE EML HASL-300, Am-05	Prep SOP Ref: GL-RAD-A-021
Prep Date: 08/15/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14596-10-2	Americium-241	U	0.00	pCi/g	+/-0.253	0.254	0.376	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	10.2	19.3	pCi/g	52.8	(30%-105%)

Comments:

- 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
- 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: GEL402787	Client: CPRC001	Project: CPRC0F16028
Lab Sample ID: 402787001	Date Collected: 07/28/2016 09:00	Matrix: SOIL
	Date Received: 07/30/2016 08:55	%Moisture: 15.5
Client ID: B35XH9		Prep Basis: "Dry Weight Corrected"
Batch ID: 1587116	Method: PUIISO_PRECIP_AEA	SOP Ref: GL-RAD-A-011
Run Date: 08/29/2016 17:14	Analyst: JXH2	Instrument: 1097
Data File: S0402787001_PU.2A.gcnf	Aliquot: 0.111 g	Count Time: 240 min
Prep Batch: 1587116	Prep Method: DOE EML HASL-300, Pu-11-	Prep SOP Ref: GL-RAD-A-021
Prep Date: 08/15/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
I3981-16-3	Plutonium-238	U	0.236	pCi/g	+/-0.254	0.255	0.289	1.00
OER-100-70	Plutonium-239/240	U	-0.0104	pCi/g	+/-0.156	0.156	0.365	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Plutonium-242 Tracer	16.3	17.8	pCi/g	92	(30%-105%)

Comments:

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
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: GEL402787
Lab Sample ID: 402787001

Client: CPRC001
Date Collected: 07/28/2016 09:00
Date Received: 07/30/2016 08:55

Project: CPRC0F16028
Matrix: SOIL
%Moisture: 15.5

Client ID: B35XH9
Batch ID: 1587117
Run Date: 08/17/2016 09:00
Data File: S0402787001_UU.1A.gcnf
Prep Batch: 1587117
Prep Date: 08/15/2016 00:00

Method: UIISO_IE_PRECIP_AEA
Analyst: JXH2
Aliquot: 0.111 g
Prep Method: DOE EML HASL-300, U-02-R
Prep SOP Ref: GL-RAD-A-021

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-011
Instrument: 1024
Count Time: 240 min

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
U-233/234 <small>13968-55-3/13966-29-5</small>	Uranium-233/234		1.18	pCi/g	+/-0.529	0.550	0.404	1.00
15117-96-1/13982-7	Uranium-235/236	U	0.00	pCi/g	+/-0.136	0.136	0.203	1.00
7440-61-1	Uranium-238		0.821	pCi/g	+/-0.445	0.458	0.360	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Uranium-232 Tracer	16.8	18.8	pCi/g	89.6	(30%-105%)

Comments:

- 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
- 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: GEL402787
Lab Sample ID: 402787001

Client: CPRC001
Date Collected: 07/28/2016 09:00
Date Received: 07/30/2016 08:55

Project: CPRC0F16028
Matrix: SOIL
%Moisture: 15.5

Client ID: B35XH9
Batch ID: 1587118
Run Date: 08/17/2016 11:11
Data File: S0402787001_NP.1A.gcnf
Prep Batch: 1587118
Prep Date: 08/15/2016 00:00

Method: ASTM C 1475-00 Modified
Analyst: JXH2
Aliquot: 0.119 g
Prep Method: ASTM C 1475-00 Modified

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-032
Instrument: 1201
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	0.00341	pCi/g	+/-0.253	0.253	0.562	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Americium-243 Tracer	1180	1690	pCi/g	69.7	(30%-105%)

Comments:

- 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
- 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: GEL402787
Lab Sample ID: 402787001

Client: CPRC001
Date Collected: 07/28/2016 09:00
Date Received: 07/30/2016 08:55

Project: CPRC0F16028
Matrix: SOIL
%Moisture: 15.5

Client ID: B35XH9
Batch ID: 1587119
Run Date: 08/17/2016 09:06
Data File: S0402787001_TH.1A.gcnf
Prep Batch: 1587119
Prep Date: 08/15/2016 00:00

Method: THISO_IE_PRECIP_AEA
Analyst: JXH2
Aliquot: 0.112 g
Prep Method: DOE EML HASL-300, Th-01-

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-038
Instrument: 1163
Count Time: 240 min
Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
TH-232 <small>7440-29-1</small>	Thorium-232		1.61	pCi/g	+/-0.676	0.719	0.395	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Thorium-229 Tracer	17.2	18.1	pCi/g	94.7	(30%-105%)

Comments:

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

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: GEL402787
Lab Sample ID: 402787001

Client: CPRC001
Date Collected: 07/28/2016 09:00
Date Received: 07/30/2016 08:55

Project: CPRC0F16028
Matrix: SOIL
%Moisture: 15.5

Client ID: B35XH9
Batch ID: 1588469
Run Date: 08/22/2016 17:20
Data File: S1588469r2.xls
Prep Batch: 1588469
Prep Date: 08/19/2016 00:00

Method: SRTOT_SEP_PRECIP_GPC
Analyst: KSD1
Aliquot: 0.482 g
Prep Method: EPA 905.0 Modified/DOE RP5

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-004
Instrument: PIC9A
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	0.246	pCi/g	+/-0.633	0.636	1.13	2.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Strontium Carrier	5.90	7.37	mg	80.1	(40%-110%)

Comments:

- 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
- 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: GEL402787	Client: CPRC001	Project: CPRC0F16028
Lab Sample ID: 402787001	Date Collected: 07/28/2016 09:00	Matrix: SOIL
	Date Received: 07/30/2016 08:55	%Moisture: 15.5
Client ID: B35XH9		Prep Basis: "As Received"
Batch ID: 1585659	Method: I129_SEP_LEPS_GS	SOP Ref: GL-RAD-A-006
Run Date: 08/22/2016 11:52	Analyst: MJH1	Instrument: XRAY2
Data File: I402787001.CNF;1	Aliquot: 1.182 g	Count Time: 60 min
Prep Batch: 1585659	Prep Method: DOE EML HASL-300,I-01 M	
Prep Date: 08/19/2016 00:00		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129	U	-0.128	pCi/g	+/-0.598	0.601	1.15	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.
 - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- 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

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SDG Number: GEL402787
 Lab Sample ID: 402787001
 Client ID: B35XH9
 Batch ID: 1587994
 Run Date: 09/01/2016 08:58
 Data File: G402787001.CNF;2
 Prep Batch: 1587994
 Prep Date: 08/11/2016 00:00

Client: CPRC001
 Date Collected: 07/28/2016 09:00
 Date Received: 07/30/2016 08:55
 Method: GAMMA_GS
 Analyst: RXF2
 Aliquot: 132.853 g
 Prep Method: DOE HASL 300, 4.5.2.3/Ga-01

Project: CPRC0F16028
 Matrix: SOIL
 %Moisture: 15.5
 Prep Basis: "Dry Weight Corrected"
 SOP Ref: GL-RAD-A-013
 Instrument: GAM06
 Count Time: 720 min
 Prep SOP Ref: GL-RAD-A-021

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10045-97-3	Cesium-137	U	-0.0172	pCi/g	+/-0.0152	0.0172	0.0191	0.100
10198-40-0	Cobalt-60	U	-0.0111	pCi/g	+/-0.0141	0.015	0.0215	0.100
14683-23-9	Europium-152	U	0.000594	pCi/g	+/-0.028	0.028	0.0515	0.100
15585-10-1	Europium-154	U	0.0114	pCi/g	+/-0.0404	0.0407	0.065	0.100
14391-16-3	Europium-155	UX	0.00	pCi/g	+/-0.0591	0.0599	0.053	0.100
13982-63-3	Radium-226		1.03	pCi/g	+/-0.066	0.110	0.0382	1.00
15262-20-1	Radium-228		1.42	pCi/g	+/-0.136	0.230	0.0761	3.00

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.

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

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: GEL402787	Client: CPRC001	Project: CPRC0F16028
Lab Sample ID: 402787001	Date Collected: 07/28/2016 09:00	Matrix: SOIL
	Date Received: 07/30/2016 08:55	%Moisture: 15.5
Client ID: B35XH9		Prep Basis: "As Received"
Batch ID: 1588132	Method: TC99_EIE_LSC	SOP Ref: GL-RAD-A-059
Run Date: 08/17/2016 09:15	Analyst: CXS7	Instrument: LSCGOLD
Data File: E1588132.xls	Aliquot: 1.202 g	Count Time: 20 min
Prep Batch: 1588132	Prep Method: DOE EML HASL-300, Tc-02-	
Prep Date: 08/11/2016 13:02		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99	U	-0.288	pCi/g	+/-2.09	2.09	3.65	5.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	26000	31800	CPM	81.6	(30%-105%)

Comments:

- 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
- 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: GEL402787	Client: CPRC001	Project: CPRC0F16028
Lab Sample ID: 402787001	Date Collected: 07/28/2016 09:00	Matrix: SOIL
	Date Received: 07/30/2016 08:55	%Moisture: 15.5
Client ID: B35XH9		Prep Basis: "As Received"
Batch ID: 1588489	Method: C14_LSC	SOP Ref: GL-RAD-A-003
Run Date: 08/18/2016 08:58	Analyst: TXJ1	Instrument: LSCYELLOW
Data File: C1588489.xls	Aliquot: 0.53 g	Count Time: 45 min
Prep Batch: 1588489	Prep Method: EPA EERF C-01 Modified	
Prep Date: 08/17/2016 16:16		

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14762-75-5	Carbon-14	U	0.788	pCi/g	+/-1.68	1.68	2.85	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.
 - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- 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: GEL402787
Lab Sample ID: 402787001

Client: CPRC001
Date Collected: 07/28/2016 09:00
Date Received: 07/30/2016 08:55

Project: CPRC0F16028
Matrix: SOIL
%Moisture: 15.5

Client ID: B35XH9
Batch ID: 1588517
Run Date: 08/18/2016 02:18
Data File: T1588517R3.xls
Prep Batch: 1588517
Prep Date: 08/15/2016 15:12

Method: TRITIUM_DIST_LSC
Analyst: TXJ1
Aliquot: 1.26 g
Prep Method: EPA 906.0 Modified

Prep Basis: "As Received"
SOP Ref: GL-RAD-A-002
Instrument: LSCGOLD
Count Time: 60 min

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium	U	-2.65	pCi/g	+/-7.78	7.78	13.9	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.
 - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- 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: GEL402787
Lab Sample ID: 402787001

Client: CPRC001
Date Collected: 07/28/2016 09:00
Date Received: 07/30/2016 08:55

Project: CPRC0F16028
Matrix: SOIL
%Moisture: 15.5

Client ID: B35XH9
Batch ID: 1591683
Run Date: 08/23/2016 13:32
Data File: N1591683.xls
Prep Batch: 1591683
Prep Date: 08/22/2016 09:39

Method: NI63_LSC
Analyst: CXS7
Aliquot: 0.536 g
Prep Method: DOE RESL Ni-1, Modified

Prep Basis: "Dry Weight Corrected"
SOP Ref: GL-RAD-A-022
Instrument: LSCBROWN
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	-3.65	pCi/g	+/-3.69	3.69	6.70	10.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Nickel Carrier	17.3	24.6	mg	70.4	(40%-110%)

Comments:

- 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
- 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: GEL402787	Client: CPRC001	Project: CPRC0F16028
Lab Sample ID: 402787001	Date Collected: 07/28/2016 09:00	Matrix: SOIL
	Date Received: 07/30/2016 08:55	%Moisture: 15.5
Client ID: B35XH9		Prep Basis: "As Received"
Batch ID: 1586886	Method: ASTM D 2216 (Modified)	SOP Ref: GL-OA-E-020
Run Date: 08/02/2016 15:31	Analyst: JXO1	Instrument: SP-39020004
Data File:		Count Time:
Prep Batch: 1586886		
Prep Date: 08/02/2016 15:31		

CAS No.	Parmname	Qual	Result	Units	MDC
%MOISTURE	Moisture		13.8	percent +/-	

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.
 - X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: September 2, 2016
Page 1 of 8

Client : CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Workorder: 402787

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Gravimetric Solids									
Batch	1586886								
QC1203597629	402787001	DUP							
Moisture		13.8		14.7	percent	RPD: 9	(0%-20%)	JXO1	08/02/1615:31
Rad Alpha Spec									
Batch	1587115								
QC1203598128	MB								
Americium-241			U	0.0554	pCi/g			JXH2	08/29/1617:14
				Uncert: +/-0.208					
				TPU: +/-0.208					
**Americium-243 Tracer	19.3			15.0	pCi/g	REC: 78	(30%-105%)		
				Uncert: +/-2.32					
				TPU: +/-3.53					
QC1203598129	402787001	DUP							
Americium-241		U	0.00	U	0.415	pCi/g			08/17/1609:36
				Uncert: +/-0.253		RPD: 0	N/A		
				TPU: +/-0.254		RER: 1.38	(0-2)		
**Americium-243 Tracer	21.4	10.2		14.0	pCi/g	REC: 65	(30%-105%)		
				Uncert: +/-3.05					
				TPU: +/-4.50					
QC1203598130	LCS								
Americium-241		17.7		18.4	pCi/g	REC: 104	(80%-120%)		08/29/1617:14
				Uncert: +/-2.10					
				TPU: +/-3.17					
**Americium-243 Tracer	19.3			16.4	pCi/g	REC: 85	(30%-105%)		
				Uncert: +/-2.13					
				TPU: +/-3.28					
Batch	1587116								
QC1203598131	MB								
Plutonium-238			U	-0.0362	pCi/g			JXH2	08/29/1617:14
				Uncert: +/-0.160					
				TPU: +/-0.160					
Plutonium-239/240			U	-0.0694	pCi/g				
				Uncert: +/-0.234					
				TPU: +/-0.235					
**Plutonium-242 Tracer	17.8			11.3	pCi/g	REC: 64	(30%-105%)		
				Uncert: +/-2.28					
				TPU: +/-3.39					
QC1203598132	402787001	DUP							
Plutonium-238		U	0.236	U	0.00	pCi/g			08/17/1609:36
				Uncert: +/-0.254		RPD: 0	N/A		
				TPU: +/-0.255		RER: 1.56	(0-2)		
Plutonium-239/240		U	-0.0104	U	0.294	pCi/g			
				Uncert: +/-0.156		RPD: 22	(0% - 100%)		
				TPU: +/-0.156		RER: 1.65	(0-2)		

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Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch	1587116								
**Plutonium-242 Tracer	19.7	16.3		19.6	pCi/g	REC: 100	(30%-105%)		
	Uncert:	+/-1.89		+/-2.37					
	TPU:	+/-2.86		+/-3.53					
QC1203598133 LCS									
Plutonium-238				0.318	pCi/g				08/17/1609:36
	Uncert:			+/-0.307					
	TPU:			+/-0.310					
Plutonium-239/240	17.8			15.6	pCi/g	REC: 87	(80%-120%)		
	Uncert:			+/-1.96					
	TPU:			+/-2.83					
**Plutonium-242 Tracer	17.8			18.5	pCi/g	REC: 104	(30%-105%)		
	Uncert:			+/-2.09					
	TPU:			+/-3.13					
Batch	1587117								
QC1203598134 MB									
Uranium-233/234			U	0.0187	pCi/g			JXH2	08/17/1609:01
	Uncert:			+/-0.196					
	TPU:			+/-0.196					
Uranium-235/236			U	0.0231	pCi/g				
	Uncert:			+/-0.242					
	TPU:			+/-0.242					
Uranium-238			U	-0.0481	pCi/g				
	Uncert:			+/-0.145					
	TPU:			+/-0.146					
**Uranium-232 Tracer	18.8			18.2	pCi/g	REC: 97	(30%-105%)		
	Uncert:			+/-2.20					
	TPU:			+/-3.41					
QC1203598135 402787001 DUP									
Uranium-233/234		1.18		1.06	pCi/g				08/17/1609:01
	Uncert:	+/-0.529		+/-0.621		RPD: 11	(0% - 100%)		
	TPU:	+/-0.550		+/-0.639		RER: 0.273	(0-2)		
Uranium-235/236	U	0.00	U	0.0966	pCi/g				
	Uncert:	+/-0.136		+/-0.272		RPD: 0	N/A		
	TPU:	+/-0.136		+/-0.272		RER: 0.622	(0-2)		
Uranium-238		0.821		1.04	pCi/g				
	Uncert:	+/-0.445		+/-0.598		RPD: 23	(0% - 100%)		
	TPU:	+/-0.458		+/-0.616		RER: 0.553	(0-2)		
**Uranium-232 Tracer	20.8	16.8		20.1	pCi/g	REC: 97	(30%-105%)		
	Uncert:	+/-2.00		+/-2.52					
	TPU:	+/-3.15		+/-3.89					
QC1203598136 LCS									
Uranium-233/234				25.4	pCi/g				08/17/1609:01
	Uncert:			+/-2.65					
	TPU:			+/-4.50					
Uranium-235/236				1.38	pCi/g				
	Uncert:			+/-0.712					
	TPU:			+/-0.739					
Uranium-238	24.3			25.1	pCi/g	REC: 103	(80%-120%)		
	Uncert:			+/-2.62					
	TPU:			+/-4.45					

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch	1587117								
**Uranium-232 Tracer	18.8			17.4	pCi/g	REC: 93 (30%-105%)			
	Uncert:			+/-2.29					
	TPU:			+/-3.53					
Batch	1587118								
QC1203598137 MB									
Neptunium-237			U	-0.0141	pCi/g			JXH2	08/17/1611:11
	Uncert:			+/-0.122					
	TPU:			+/-0.122					
**Americium-243 Tracer	1690			1750	pCi/g	REC: 103 (30%-105%)			
QC1203598138 402787001 DUP									
Neptunium-237		U	0.00341	U	0.0452				08/17/1611:11
	Uncert:		+/-0.253		+/-0.472	RPD: 0	N/A		
	TPU:		+/-0.253		+/-0.473	RER: 0.153	(0-2)		
**Americium-243 Tracer	1990		1180	878	pCi/g	REC: 44 (30%-105%)			
QC1203598139 LCS									
Neptunium-237	37.5			39.8	pCi/g	REC: 106 (80%-120%)			08/17/1611:11
	Uncert:			+/-2.96					
	TPU:			+/-5.27					
**Americium-243 Tracer	1690			1720	pCi/g	REC: 102 (30%-105%)			
Batch	1587119								
QC1203598140 MB									
Thorium-232			U	0.0231	pCi/g			JXH2	08/17/1609:05
	Uncert:			+/-0.168					
	TPU:			+/-0.168					
**Thorium-229 Tracer	18.1			16.8	pCi/g	REC: 92 (30%-105%)			
	Uncert:			+/-2.03					
	TPU:			+/-3.29					
QC1203598141 402787001 DUP									
Thorium-232			1.61	0.712	pCi/g				08/17/1609:06
	Uncert:		+/-0.676	+/-0.545		RPD: 77	(0% - 100%)		
	TPU:		+/-0.719	+/-0.556		RER: 1.94	(0-2)		
**Thorium-229 Tracer	19.7		17.2	15.7	pCi/g	REC: 80 (30%-105%)			
	Uncert:		+/-2.20	+/-2.58					
	TPU:		+/-3.51	+/-4.05					
QC1203598142 LCS									
Thorium-232	17.7			16.0	pCi/g	REC: 90 (80%-120%)			08/17/1609:06
	Uncert:			+/-2.00					
	TPU:			+/-3.10					
**Thorium-229 Tracer	18.1			18.0	pCi/g	REC: 99 (30%-105%)			
	Uncert:			+/-2.15					
	TPU:			+/-3.44					
Rad Gamma Spec									
Batch	1585659								
QC1203594530 MB									
Iodine-129			U	-0.191	pCi/g			MJH1	08/22/1612:30
	Uncert:			+/-0.373					
	TPU:			+/-0.383					
QC1203594531 402432001 DUP									
Iodine-129		U	0.435	U	0.0841	pCi/g			08/22/1612:30

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch	1585659								
		Uncert:	+/-0.415	+/-0.357					
		TPU:	+/-0.461	+/-0.359		RPD: 0	N/A		
						RER: 1.18	(0-2)		
QC1203594532	402432001	MS							
Iodine-129	31.9	U	0.435	33.6	pCi/g	REC: 105	(75%-125%)		08/22/1613:08
		Uncert:	+/-0.415	+/-3.62					
		TPU:	+/-0.461	+/-4.89					
QC1203594533	LCS								
Iodine-129	26.3			27.8	pCi/g	REC: 106	(80%-120%)		08/22/1613:08
		Uncert:		+/-3.37					
		TPU:		+/-4.37					
Batch	1587994								
QC1203600272	MB								
Cesium-137			U	0.00493	pCi/g			RXF2	09/01/1608:59
		Uncert:		+/-0.0175					
		TPU:		+/-0.0177					
Cobalt-60			U	0.00955	pCi/g				
		Uncert:		+/-0.0127					
		TPU:		+/-0.0134					
Europium-152			U	0.0251	pCi/g				
		Uncert:		+/-0.0453					
		TPU:		+/-0.0467					
Europium-154			U	0.0301	pCi/g				
		Uncert:		+/-0.0416					
		TPU:		+/-0.0437					
Europium-155			U	-0.000868	pCi/g				
		Uncert:		+/-0.042					
		TPU:		+/-0.042					
Radium-226			U	-0.00105	pCi/g				
		Uncert:		+/-0.0393					
		TPU:		+/-0.0393					
Radium-228			U	0.0189	pCi/g				
		Uncert:		+/-0.0737					
		TPU:		+/-0.0742					
QC1203600273	402941001	DUP							
Cesium-137		U	0.0112	U 0.0174	pCi/g				09/01/1609:00
		Uncert:	+/-0.0155	+/-0.0235		RPD: 0	N/A		
		TPU:	+/-0.0163	+/-0.0248		RER: 0.412	(0-2)		
Cobalt-60		U	0.00191	U -0.000809	pCi/g				
		Uncert:	+/-0.0113	+/-0.0208		RPD: 0	N/A		
		TPU:	+/-0.0113	+/-0.0208		RER: 0.225	(0-2)		
Europium-152		U	0.00143	U 0.0506	pCi/g				
		Uncert:	+/-0.0278	+/-0.0549		RPD: 0	N/A		
		TPU:	+/-0.0278	+/-0.0595		RER: 1.47	(0-2)		
Europium-154		U	0.0397	U 0.0113	pCi/g				
		Uncert:	+/-0.0378	+/-0.0698		RPD: 0	N/A		
		TPU:	+/-0.0418	+/-0.070		RER: 0.681	(0-2)		
Europium-155		UX	0.00	U -0.0497	pCi/g				
		Uncert:	+/-0.0622	+/-0.0667		RPD: 0	N/A		
		TPU:	+/-0.0627	+/-0.0705		RER: 3.39	(0-2)		

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Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch	1587994								
Radium-226		0.769		0.695	pCi/g				
	Uncert:	+/-0.0546		+/-0.121		RPD: 10	(0% - 20%)		
	TPU:	+/-0.0638		+/-0.125		RER: 1.05	(0-2)		
Radium-228		1.18		1.10	pCi/g				
	Uncert:	+/-0.122		+/-0.197		RPD: 7	(0% - 20%)		
	TPU:	+/-0.136		+/-0.205		RER: 0.653	(0-2)		
QC1203600274	LCS								
Americium-241	489			521	pCi/g	REC: 106	(80%-120%)		09/01/1609:00
	Uncert:			+/-7.36					
	TPU:			+/-38.8					
Cesium-137	180			189	pCi/g	REC: 105	(80%-120%)		
	Uncert:			+/-3.17					
	TPU:			+/-8.68					
Cobalt-60	164			155	pCi/g	REC: 95	(80%-120%)		
	Uncert:			+/-3.35					
	TPU:			+/-6.60					
Europium-152			U	1.02	pCi/g				
	Uncert:			+/-1.41					
	TPU:			+/-1.49					
Europium-154			U	0.0687	pCi/g				
	Uncert:			+/-0.852					
	TPU:			+/-0.853					
Europium-155			U	-0.431	pCi/g				
	Uncert:			+/-1.05					
	TPU:			+/-1.07					
Radium-226			U	0.423	pCi/g				
	Uncert:			+/-0.951					
	TPU:			+/-0.970					
Radium-228			U	-1.16	pCi/g				
	Uncert:			+/-2.75					
	TPU:			+/-2.80					
Rad Gas Flow									
Batch	1588469								
QC1203601566	MB								
Total Strontium			U	-0.201	pCi/g			KSD1	08/23/1610:51
	Uncert:			+/-0.299					
	TPU:			+/-0.299					
**Strontium Carrier	7.37			6.60	mg	REC: 90	(40%-110%)		
QC1203601567	402432002	DUP							
Total Strontium		U	-0.276	U	0.387	pCi/g			08/22/1617:24
	Uncert:		+/-0.533		+/-0.827		RPD: 0	N/A	
	TPU:		+/-0.533		+/-0.833		RER: 1.31	(0-2)	
**Strontium Carrier	7.37	7.10		7.00	mg	REC: 95	(40%-110%)		
QC1203601568	LCS								
Total Strontium	45.3			47.3	pCi/g	REC: 104	(80%-120%)		08/22/1617:24
	Uncert:			+/-2.65					
	TPU:			+/-12.2					
**Strontium Carrier	7.37			6.80	mg	REC: 92	(40%-110%)		
Rad Liquid Scintillation									
Batch	1588132								

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Parname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Liquid Scintillation									
Batch	1588132								
QC1203600560	MB								
Technetium-99			U	-0.696	pCi/g			CXS7	08/17/1610:41
				Uncert: +/-1.85					
				TPU: +/-1.85					
*Technetium-99m Tracer		31800		25200	CPM	REC: 79 (30%-105%)			
QC1203600561	402432001	DUP							
Technetium-99		U	-1.53	U	-1.6				08/17/1611:03
				Uncert: +/-1.90		RPD: 0 N/A			
				TPU: +/-1.90		RER: 0.0483 (0-2)			
*Technetium-99m Tracer		31800		27400	CPM	REC: 76 (30%-105%)			
QC1203600562	LCS								
Technetium-99		62.0		74.0	pCi/g	REC: 119 (80%-120%)			08/17/1611:24
				Uncert: +/-3.82					
				TPU: +/-9.33					
*Technetium-99m Tracer		31800		24300	CPM	REC: 76 (30%-105%)			
Batch	1588489								
QC1203601657	MB								
Carbon-14			U	1.69	pCi/g			TXJ1	08/18/1612:03
				Uncert: +/-1.47					
				TPU: +/-1.48					
QC1203601658	402432001	DUP							
Carbon-14		U	1.23	U	0.652				08/18/1612:49
				Uncert: +/-1.59		RPD: 0 N/A			
				TPU: +/-1.59		RER: 0.525 (0-2)			
QC1203601659	402432001	MS							
Carbon-14		133	U	1.23	133	pCi/g	REC: 100 (75%-125%)		08/18/1613:35
				Uncert: +/-1.59					
				TPU: +/-1.59					
QC1203601660	LCS								
Carbon-14		124		127	pCi/g	REC: 102 (80%-120%)			08/18/1614:21
				Uncert: +/-3.68					
				TPU: +/-10.0					
Batch	1588517								
QC1203601770	MB								
Tritium			U	-3.78	pCi/g			TXJ1	08/18/1607:38
				Uncert: +/-6.87					
				TPU: +/-6.87					
QC1203601771	402432001	DUP							
Tritium		U	-5.81	U	0.214				08/18/1608:40
				Uncert: +/-7.41		RPD: 0 N/A			
				TPU: +/-7.41		RER: 1.11 (0-2)			
QC1203601772	402432001	MS							
Tritium		84.0	U	-5.81	73.0	pCi/g	REC: 87 (75%-125%)		08/18/1609:43
				Uncert: +/-7.41					
				TPU: +/-7.41					
QC1203601773	LCS								
Tritium		83.7		67.2	pCi/g	REC: 80 (80%-120%)			08/18/1610:45
				Uncert: +/-9.64					
				TPU: +/-18.0					
Batch	1591683								

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Liquid Scintillation									
Batch	1591683								
QC1203609943	MB								
Nickel-63			U	-0.199	pCi/g			CXS7	08/23/1615:39
				Uncert: +/-3.02					
				TPU: +/-3.02					
**Nickel Carrier	24.6			20.7	mg	REC: 84	(40%-110%)		
QC1203609944	402432001	DUP							
Nickel-63		U	0.607	U	-0.434	pCi/g			08/23/1616:11
					Uncert: +/-3.98			RPD: 0	N/A
					TPU: +/-3.98			RER: 0.373	(0-2)
**Nickel Carrier	24.6		17.4		19.3	mg	REC: 79	(40%-110%)	
QC1203609945	LCS								
Nickel-63	230				218	pCi/g	REC: 95	(80%-120%)	08/23/1616:43
					Uncert: +/-8.03				
					TPU: +/-41.1				
**Nickel Carrier	24.6				20.1	mg	REC: 82	(40%-110%)	

Notes:

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

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- < 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.
- E Reported value is estimated due to interferences. See comment in narrative.
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- S Reported value determined by the Method of Standard Additions (MSA)
- 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
- W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
- 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.