GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171 F 843.766.1178

www.gel.com

February 10, 2015

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

Re: CHPRC SAF F14-021
Work Order: 364997
SDG: GEL364997

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on January 14, 2015. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

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

Sincerely,

Heather Shaffer

Heather Shaffer
Project Manager

Purchase Order: 300416ES20 - 7H
Chain of Custody: F14-021-036 and F14-021-037
Enclosures

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Case Narrative

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F14-021
SDG: GEL364997

February 10, 2015

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 January 14, 2015, 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 and DER

Sample Identification
The laboratory received the following samples:

Laboratory Identification	Sample Description
364997001	B30894
364997002	B30895

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.

This package, to the best of my knowledge, 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 Manger (or designee) and the laboratory's client services representative as verified by their signatures on this report.

Heather Shaffer

Heather Shaffer
Project Manager

Chain of Custody and Supporting Documentation

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F14-021-036	PAGE 1 OF 1
COLLECTOR: P.S. HAWKEY	COMPANY CONTACT: TODAK, D	TELEPHONE NO.: 376-6427	PROJECT COORDINATOR: TODAK, D	PRICE CODE: 7H	DATA TURNAROUND
SAMPLING LOCATION: 105KW Monthly Pt 12	PROJECT DESIGNATION: 105KW Monthly Sampling – Water		SAF NO.: F14-021	AIR QUALITY ☐	30 Days / 30 Days
ICE CHEST NO.: GWS-431	FIELD LOGBOOK NO.: HNF-N-251-4	ACTUAL SAMPLE DEPTH: N/A	COA: 301348	METHOD OF SHIPMENT: FEDERAL EXPRESS	ORIGINAL
SHIPPED TO: GEL Laboratories, LLC	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: 7725 6223 6187		

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.

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool <=6C
HOLDING TIME	28 Days
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	1L
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

364997

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B30894	WATER	01-13-15	0830

CHAIN OF POSSESSION / SIGN/ PRINT NAMES

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
P.S. HAWKEY	01-13-15 1015	L.D. Wall	JAN 13 2015 1015
L.D. Wall	JAN 13 2015 1400	FEDEX	
FED EX		Valencia Dent P. Valent	1.14.15 0855

SPECIAL INSTRUCTIONS
Lab advised to remove tritium and conductivity aliquots prior to preservation. TRVL-14-212
(1) 120.1_CONDUCTIVITY: COMMON; AMCMISO_EIE_PLATE_AEA: COMMON {Americium-241}; GAMMA_GS: COMMON {Cesium-137}; PUISO_PLATE_AEA: COMMON; SRTOT_SEP_PRECIP_GPC: COMMON; TRITIUM_DIST_LSC: COMMON; UISO_PLATE_AEA: COMMON;

TRVL- 14- 212

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

PRINTED ON 12/19/2014

A-6003-618 (REV 2)

2/10/2015

REV.0

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F14-021-037	PAGE 1 OF 1
COLLECTOR: P.S. HAWKEY	COMPANY CONTACT: TODAK, D	TELEPHONE NO.: 376-6427	PROJECT COORDINATOR: TODAK, D	PRICE CODE: 7H	DATA TURNAROUND
SAMPLING LOCATION: 105KW Monthly Pt 16	PROJECT DESIGNATION: 105KW Monthly Sampling – Water		SAF NO.: F14-021	AIR QUALITY ☐	30 Days / 30 Days
ICE CHEST NO.: GWS-431	FIELD LOGBOOK NO.: HNF-N-251-4	ACTUAL SAMPLE DEPTH: N/A	COA: 301348	METHOD OF SHIPMENT: FEDERAL EXPRESS	ORIGINAL
SHIPPED TO: GEL Laboratories, LLC	OFFSITE PROPERTY NO.: N/A		BILL OF LADING/AIR BILL NO.: 7725 6223 6187		

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.

SPECIAL HANDLING AND/OR STORAGE

PRESERVATION	Cool <=6C
HOLDING TIME	28 Days
TYPE OF CONTAINER	G/P
NO. OF CONTAINER(S)	1
VOLUME	1L
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B30895	WATER	01-13-15	0830	←

364997

2/10/2015

CHAIN OF POSSESSION		SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM: P.S. HAWKEY	DATE/TIME: 01-13-15 1015	RECEIVED BY/STORED IN: L.D. Wall	DATE/TIME: JAN 13 2015 1015
RELINQUISHED BY/REMOVED FROM: L.D. Wall	DATE/TIME: JAN 13 2015 1400	RECEIVED BY/STORED IN: FEDEX	DATE/TIME:
RELINQUISHED BY/REMOVED FROM: FED EX	DATE/TIME:	RECEIVED BY/STORED IN: Patricia Dent	DATE/TIME: 1-14-15 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:
RELINQUISHED BY/REMOVED FROM	DATE/TIME:	RECEIVED BY/STORED IN	DATE/TIME:

SPECIAL INSTRUCTIONS
Lab advised to remove tritium and conductivity aliquots prior to preservation. TRVL-14-212
(1) 120.1_CONDUCTIVITY: COMMON; AMCMISO_EIE_PLATE_AEA: COMMON {Americium-241}; GAMMA_GS: COMMON {Cesium-137}; PUISO_PLATE_AEA: COMMON; SRTOT_SEP_PRECIP_GPC: COMMON; TRITIUM_DIST_LSC: COMMON; UISO_PLATE_AEA: COMMON;

TRVL-14-212

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

PRINTED ON 12/19/2014

A-6003-618 (REV 2)

REV.0

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: CPRC	SDG/AR/COC/Work Order: 304997
Received By: P Client	Date Received: 1-14-15

Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?	X		Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 400 CPM
Classified Radioactive II or III by RSO?		X	If yes, Were swipes taken of sample contatiners < action levels?
COC/Samples marked containing PCBs?		X	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		X	If yes, samples are to be segregeated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?	X		Hazard Class Shipped: UN#: 2910
Samples identified as Foreign Soil?		X	

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	X			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	X			Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius 2C
2a	Daily check performed and passed on IR temperature gun?	X			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable):
3	Chain of custody documents included with shipment?	X			
4	Sample containers intact and sealed?	X			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?		X		Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	VOA vials free of headspace (defined as < 6mm bubble)?		X		Sample ID's and containers affected:
7	Are Encore containers present?			X	(If yes, immediately deliver to Volatiles laboratory)
8	Samples received within holding time?	X			ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	X			Sample ID's and containers affected:
10	Date & time on COC match date & time on bottles?	X			Sample ID's affected:
11	Number of containers received match number indicated on COC?	X			Sample ID's affected:
12	Are sample containers identifiable as GEL provided?			X	
13	COC form is properly signed in relinquished/received sections?	X			
14	Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other 7725 6223 6187

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials HS Date 1/14/15 Page 1 of 1

GL-CHL-SR-001

Data Review Qualifier Definitions

GEL LABORATORIES LLC

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

Report Date: 10−FEB−15

Project Specific Qualifier Definitions for GEL Client Code: CPRC

Code	Status	Qualifier Definition	CofA	Department	Fraction	Additional Comments
U	Programmed	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.	Y			Includes MDA, TPU, count uncert.
J	Programmed	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	Y	Organics		Organics only
P	Programmed	Aroclor target analyte with greater than 25% difference between column analyses.	Y	Organics		PCB only
C	Manual	Analyte has been confirmed by GC/MS analysis	Y	Organics	Pesticide	IF GC/MS confirmation was attempted but unsuccessful do not qualify with C
B	Programmed	The analyte was detected in both the associated QC blank and in the sample.	Y	Organics		
E	Manual	Concentration exceeds the calibration range of the instrument	Y	Organics		Qualifier Uploaded
A	Manual	The TIC is a suspected aldol−condensation product	Y	Organics	Semi−Volatile	Uploaded with TIC
X	Programmed	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			Replaces H Hold Date In RAD replaces UI. Same usage as standard X as well.
N	Programmed	Spike Sample recovery is outside control limits.	Y			
*	Programmed	Duplicate analysis not within control limits	Y	Inorganics		
>	Programmed	Result greater than quantifiable range or greater than upper limit of the analysis range	Y	General Chemistry		
Z	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
B	Programmed	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).	Y	Inorganics	Metals	Replaces J Estimated Value
D	Programmed	Results are reported from a diluted aliquot of sample.	Y			Dilution
E	Programmed	Reported value is estimated due to interferences. See comment in narrative.	Y	Inorganics	Metals	GEL E
M	Manual	Duplicate precision not met.	Y	Inorganics	Metals	Replaces *
o	Programmed	Analyte failed to recover within LCS limits (0rganics only)	Y	Organics		
S	Manual	Reported value determined by the Method of Standard Additions (MSA)	Y	Inorganics		Not coded B/C Rarely preformed
T	Programmed	Spike and/or spike duplicate sample recovery is outside control limits.	Y	Organics		GC/MS only
W	Manual	Post−digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Y	Inorganics		No GFAA in house.
B	Programmed	The associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample	Y	Radiological		
Y	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
+	Manual	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Y	Inorganics		
B	Programmed	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).	Y	General Chemistry		Replaces J Estimated Value
C	Programmed	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.	Y	Inorganics	Metals	Replaces B Blank Detection
C	Programmed	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.	Y	General Chemistry		Replaces B Blank Detection
<	Programmed	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	Y	General Chemistry		for Reactive CN/S

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

Report Date: 10−FEB−15

Project Specific Qualifier Definitions for GEL Client Code: CPRC

Code	Status	Qualifier Definition	CofA	Department	Fraction	Additional Comments
UX	Manual	Gamma Spectroscopy−−Uncertain identification	Y	Radiological		

Laboratory Certifications

List of current GEL Certifications as of 10 February 2015

State	Certification
Alaska	UST−110
Arkansas	88−0651
CLIA	42D0904046
California	2940 Interim
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC000122013−10
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−12−00283, P330−12−00284
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC000122013−10
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	LA150001
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC000122013−10
Nebraska	NE−OS−26−13
Nevada	SC000122014−1
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
Oklahoma	9904
Pennsylvania NELAP	68−00485
Plant Material Permit	PDEP−12−00260
South Carolina Chemistry	10120001
South Carolina GVL	23611001
South Carolina Radiochemi	10120002
Tennessee	TN 02934
Texas NELAP	T104704235−14−9
Utah NELAP	SC000122014−16
Vermont	VT87156
Virginia NELAP	460202
Washington	C780−12

General Chem Analysis

Case Narrative

General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL364997
Work Order #: 364997

Method/Analysis Information

Product: **Specific Conductivity**

Analytical Batch: 1451425 **Method:** 120.1_CONDUCTIVITY: COMMON

Sample Analysis

The following samples were analyzed using the analytical protocol as established in EPA 120.1:

Sample ID	Client ID
364997001	B30894
364997002	B30895
1203247702	Laboratory Control Sample (LCS)
1203247704	364997001(B30894) Sample Duplicate (DUP)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-GC-E-009 REV# 11.

Preparation/Analytical Method Verification

The SOP stated above has been prepared based on technical research and testing conducted by GEL Laboratories, LLC. and with guidance from the regulatory documents listed in this "Method/Analysis Information" section.

Calibration Information

The Titration and Ion analysis was performed on a ManSci PC-Titrate TitraSip System.

Initial Standardization
The titrant was properly standardized

Calibration Verification Information
All associated calibration verification standard(s) (ICV or CCV) met the acceptance criteria.

Quality Control (QC) Information

Method Blank (MB) Statement

This batch does not require a method blank.

Laboratory Control Sample (LCS) Recovery
The LCS spike recovery met the acceptance limits.

Quality Control (QC) Designation
The following sample was selected for QC analysis: 364997001 (B30894).

Duplicate Relative Percent Difference (RPD) Statement
The RPD between the sample and its duplicate met the acceptance limits.

Technical Information

GEL assigns holding times based on the date and time of sample collection. Those holding times expressed in hours are calculated in the AlphaLims system by hours. Those holding times expressed as days expire at midnight on the day of expiration.

Holding Times
All samples in this SDG met the specified holding time.

Sample Dilutions
The samples in this SDG did not require dilutions.

Sample Re-analysis
The samples in this SDG did not require re-analysis.

Miscellaneous Information

Data Exception (DER) Documentation
Data exception reports (DERs) are generated to document procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Additional Comments
Additional comments were not required for this SDG.

Electronic Packaging Comment
This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:
Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

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: GEL364997 GEL Work Order: 364997

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature: Tom Lewis, Jr **Name: Thomas Lewis**

Date: 09 FEB 2015 **Title: Data Validator**

Sample Data Summary

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

Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: **CHPRC SAF F14-021**

Report Date: February 9, 2015

Client Sample ID:	B30894	Project:	CPRC0F14021
Sample ID:	364997001	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	13-JAN-15 08:30		
Receive Date:	14-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Titration and Ion Analysis											
120.1_CONDUCTIVITY: COMMON "As Received"											
Conductivity	U	1.87	3.63	14.5	umhos/cm	1	PXO1	01/20/15	1530	1451425	1

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 120.1	

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

Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: **CHPRC SAF F14-021**

Report Date: February 9, 2015

Client Sample ID:	B30895	Project:	CPRC0F14021
Sample ID:	364997002	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	13-JAN-15 08:30		
Receive Date:	14-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Titration and Ion Analysis											
120.1_CONDUCTIVITY: COMMON "As Received"											
Conductivity	U	-0.303	3.63	14.5	umhos/cm	1	PXO1	01/20/15	1533	1451425	1

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	EPA 120.1	

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: February 9, 2015

CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington

Contact: **Mr. Scot Fitzgerald**

Workorder: **364997**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Titration and Ion Analysis											
Batch 1451425											
QC1203247704 364997001 DUP											
Conductivity	U	3.63	U	3.63	umhos/cm	N/A			PXO1	01/20/15	15:31
QC1203247702 LCS											
Conductivity	1410			1410	umhos/cm		99.9	(95%-105%)		01/20/15	15:29

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

Radiochemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL364997
Work Order #: 364997

Method/Analysis Information

Product:	**UISO_IE_PLATE_AEA:COMMON**
Analytical Method:	DOE EML HASL-300, U-02-RC Modified
Analytical Batch Number:	1451470

Sample ID	Client ID
364997001	B30894
364997002	B30895
1203247810	MB for batch 1451470
1203247812	Laboratory Control Sample (LCS)
1203247811	364997001(B30894) Sample Duplicate (DUP)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 25.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volumes in this batch.

Designated QC
The following sample was used for QC: 364997001 (B30894).

QC Information

All of the QC samples meet the required acceptance limits with the following exceptions: The sample and the duplicate, 1203247811 (B30894DUP) and 364997001 (B30894), did not meet the U-235/236 and U-238 relative percent difference requirement; however, they do meet the relative error ratio requirement with a value of 1.87 and 1.25 respectively.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Recounts
Samples 1203247811 (B30894DUP) and 364997001 (B30894) were given additional clean-up steps and recounted in order to remove suspected interferences. The recounts are reported. Sample 1203247810 (MB) was recounted due to a suspected false positive. The recount is reported.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Manual Integration
No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**AMCMISO_EIE_PLATE_AEA:**
Analytical Method:	DOE EML HASL-300, Am-05-RC Modified
Analytical Batch Number:	1454734

Sample ID	Client ID
364997001	B30894
364997002	B30895
1203256347	MB for batch 1454734
1203256349	Laboratory Control Sample (LCS)
1203256348	364997002(B30895) Sample Duplicate (DUP)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 25.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 364997002 (B30895).

QC Information
All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
Samples 364997001 (B30894) and 364997002 (B30895) were reprepped due to high levels of Am-241 activity. The reanalysis is being reported.

Recounts
None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. The following DER was generated for this SDG: DER 1379799 was generated due to RDL less than MDA. 1. Sample 364997001 does not meet the detection limits for Cm-243/244 due to small aliquots used. 1. Aliquot was reduced due to high levels of Am-241 activity in the sample. Reporting results.

Manual Integration
No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC

The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**PUISO_PLATE_AEA:COMMON**
Analytical Method:	DOE EML HASL-300, Pu-11-RC Modified
Analytical Batch Number:	1454735

Sample ID	Client ID
364997001	B30894
364997002	B30895
1203256355	MB for batch 1454735
1203256357	Laboratory Control Sample (LCS)
1203256356	364997002(B30895) Sample Duplicate (DUP)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-011 REV# 25.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 364997002 (B30895).

QC Information
All of the QC samples meet the required acceptance limits with the following exceptions: The sample and the duplicate, 1203256356 (B30895DUP) and 364997002 (B30895), did not meet the relative percent difference requirement for Pu-238; however, they do meet the relative error ratio requirement with a value of 1.15. The blank did not meet the detection limits for Pu-238 and Pu-239/240 due to keeping the blank volume consistent with the other sample aliquots. All other samples met the detection limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
Samples 364997001 (B30894) and 364997002 (B30895) were reprepped due to high activity. The reanlaysis is being reported.

Recounts
None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Manual Integration
No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**GAMMA_GS:COMMON (Cs137)**
Analytical Method:	EPA 901.1
Analytical Batch Number:	1450581

Sample ID	Client ID
364997001	B30894
364997002	B30895
1203245477	MB for batch 1450581

1203245479	Laboratory Control Sample (LCS)
1203245478	364997001(B30894) Sample Duplicate (DUP)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-013 REV# 25.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volumes in this batch.

Designated QC
The following sample was used for QC: 364997001 (B30894).

QC Information
All of the QC samples met the required acceptance limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Recounts
None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**SRTOT_SEP_PRECIP_GPC: COMMON**
Analytical Method:	EPA 905.0 Modified
Analytical Batch Number:	1451151

Sample ID	Client ID
364997001	B30894
364997002	B30895
1203246936	MB for batch 1451151
1203246938	Laboratory Control Sample (LCS)
1203246937	364997002(B30895) Sample Duplicate (DUP)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-004 REV# 17.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 364997002 (B30895).

QC Information
All of the QC samples meet the required acceptance limits with the following exceptions: The blank 1203246936 (MB) activity is greater than the MDC but is less than five percent of the lowest activity in the batch.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Chemical Recoveries
All chemical recoveries meet the required acceptance limits for this sample set.

Recounts
None of the samples in this sample set were recounted.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Manual Integration
No manual integrations were performed on data in this batch.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments
Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**TRITIUM_DIST_LSC: COMMON**
Analytical Method:	EPA 906.0 Modified
Analytical Batch Number:	1451221

Sample ID	Client ID
364997001	B30894
364997002	B30895
1203247167	MB for batch 1451221
1203247170	Laboratory Control Sample (LCS)
1203247168	364997001(B30894) Sample Duplicate (DUP)
1203247169	364997001(B30894) Matrix Spike (MS)

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-RAD-A-002 REV# 21.

Calibration Information:

Calibration Information
All initial and continuing calibration requirements have been met.

Standards Information
Standard solutions for these analysis are NIST traceable or verified with a NIST traceable standard and used before the expiration dates.

Sample Geometry
All counting sources were prepared in the same geometry as the calibration standards.

Quality Control (QC) Information:

Blank Information
The blank volume is representative of the sample volume in this batch.

Designated QC
The following sample was used for QC: 364997001 (B30894).

QC Information
All of the QC samples meet the required acceptance limits with the following exceptions: The Matrix Spike 1203247169 (B30894MS) did not meet recovery requirements due to the sample activity being greater than five times the spiked nominal concentration. The blank, 1203247167 (MB), did not meet the detection limit due to keeping the blank volume consistent with the other sample aliquots. All other samples met the detection limits.

Technical Information:

Holding Time
All sample procedures for this sample set were performed within the required holding time.

Sample Re-prep/Re-analysis
None of the samples in this sample set required reprep or reanalysis.

Recounts
Samples were recounted to verify sample results. The recount results are similar to the original results. Original results are reported.

Miscellaneous Information:

Data Exception (DER) Documentation
Data exception reports are generated to document any procedural anomalies that may deviate from referenced SOP or contractual documents. A data exception report (DER) was not generated for this SDG.

Sample-Specific MDA/MDC
The MDA/MDC reported on the certificate of analysis is a sample-specific MDA/MDC.

Additional Comments

Additional comments were not required for this sample set.

Qualifier Information

Manual qualifiers were not required.

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: GEL364997 GEL Work Order: 364997

The Qualifiers in this report are defined as follows:

B The associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this 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: Heather M. McCarty **Name: Heather McCarty**

Date: 06 FEB 2015 **Title: Analyst II**

GEL Laboratories LLC
Form GEL-DER

DER Report No.: 1379799
Revision No.: 1

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
06-FEB-15	Radiochemistry	Specifications	Process
Instrument Type: ALPHA SPECTROMETER	**Test / Method:** DOE EML HASL-300, Am-05-RC Modified	**Matrix Type:** Liquid	**Client Code:** CPRC
Batch ID: 1454734	**Sample Numbers:** See Below		

Potentially affected work order(s)(SDG): 364997(GEL364997)

Application Issues:

RDL less than MDA

Specification and Requirements Exception Description:	DER Disposition:
1. Sample 364997001 does not meet the detection limits for Cm-243/244 due to small aliquots used.	1. Aliquot was reduced due to high levels of Am-241 activity in the sample. Reporting results.

Originator's Name:

Jessica Downey 06-FEB-15

Data Validator/Group Leader:

Jessica Davis 06-FEB-15

Sample Data Summary

GEL LABORATORIES LLC
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Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF F14-021

Report Date: February 10, 2015

Client Sample ID:	B30894	Project:	CPRC0F14021
Sample ID:	364997001	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	13-JAN-15		
Receive Date:	14-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis													
AMCMISO_EIE_PLATE_AEA: "As Received"													
Americium-241 14596-10-2		13200	+/-735	67.8	+/-2090	1.00	pCi/L		JXR1	02/05/15	1522	1454734	1
Curium-243/244	U	17.2	+/-36.2	53.9	+/-36.2	1.00	pCi/L						
PUISO_PLATE_AEA:COMMON "As Received"													
Plutonium-238 13981-16-3		1090	+/-232	96.3	+/-297	1.00	pCi/L		JXR1	02/05/15	1523	1454735	2
Plutonium-239/240 OER-100-70		9280	+/-665	83.0	+/-1710	1.00	pCi/L						
UISO_IE_PLATE_AEA:COMMON "As Received"													
Uranium-233/234 U-233/234		50.6	+/-4.51	0.501	+/-10.0	1.00	pCi/L		JXR1	02/04/15	1538	1451470	3
Uranium-235/236 15117-96-1/13982-70-2		7.47	+/-1.77	0.811	+/-2.21	1.00	pCi/L						
Uranium-238 7440-61-1		40.2	+/-4.02	0.501	+/-8.15	1.00	pCi/L						
Rad Gamma Spec Analysis													
GAMMA_GS:COMMON (Cs137) "As Received"													
Cesium-137 10045-97-3		8.11E+05	+/-1250	220	+/-68000	15.0	pCi/L		MJH1	02/02/15	0910	1450581	4
Rad Gas Flow Proportional Counting													
SRTOT_SEP_PRECIP_GPC: COMMON "As Received"													
Total Strontium SR-RAD	B	3.91E+05	+/-305	1.62	+/-89600	2.00	pCi/L		KSD1	01/30/15	1517	1451151	5
Rad Liquid Scintillation Analysis													
TRITIUM_DIST_LSC: COMMON "As Received"													
Tritium 10028-17-8		1.20E+06	+/-23300	861	+/- 2.33E+05	100	pCi/L		BYS1	01/22/15	1427	1451221	6

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	DOE EML HASL-300, Pu-11-RC Modified
3	DOE EML HASL-300, U-02-RC Modified

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Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF F14-021

Report Date: February 10, 2015

Client Sample ID: B30894 Project: CPRC0F14021
Sample ID: 364997001 Client ID: CPRC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst Date	Time Batch	Mtd.
4	EPA 901.1										
5	EPA 905.0 Modified										
6	EPA 906.0 Modified										

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Americium-243 Tracer	AMCMISO_EIE_PLATE_AEA: "	93.0	(15%-125%)
Plutonium-236 Tracer	PUISO_PLATE_AEA:COMMON	83.4	(15%-125%)
Uranium-232 Tracer	UISO_IE_PLATE_AEA:COMMO	71.5	(15%-125%)
Strontium Carrier	SRTOT_SEP_PRECIP_GPC: COM	98.8	(25%-125%)

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
The above sample is reported on an "as received" basis.

GEL LABORATORIES LLC
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Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF F14-021

Report Date: February 10, 2015

Client Sample ID:	B30895	Project:	CPRC0F14021
Sample ID:	364997002	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	13-JAN-15		
Receive Date:	14-JAN-15		
Collector:	Client		

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis													
AMCMISO_EIE_PLATE_AEA: "As Received"													
Americium-241 14596-10-2		176	+/-12.4	1.17	+/-29.7	1.00	pCi/L		JXR1	02/05/15	1522	1454734	1
Curium-243/244	U	0.514	+/-0.902	1.36	+/-0.905	1.00	pCi/L						
PUISO_PLATE_AEA:COMMON "As Received"													
Plutonium-238 13981-16-3		24.5	+/-5.28	1.59	+/-6.91	1.00	pCi/L		JXR1	02/05/15	1523	1454735	2
Plutonium-239/240 OER-100-70		147	+/-12.8	1.63	+/-29.6	1.00	pCi/L						
UISO_IE_PLATE_AEA:COMMON "As Received"													
Uranium-233/234 U-233/234	U	0.168	+/-0.334	0.542	+/-0.335	1.00	pCi/L		JXR1	02/02/15	1322	1451470	3
Uranium-235/236 15117-96-1/13982-70-2	U	0.168	+/-0.335	0.544	+/-0.336	1.00	pCi/L						
Uranium-238 7440-61-1	U	0.230	+/-0.373	0.577	+/-0.375	1.00	pCi/L						
Rad Gamma Spec Analysis													
GAMMA_GS:COMMON (Cs137) "As Received"													
Cesium-137 10045-97-3		70600	+/-341	52.6	+/-5740	15.0	pCi/L		MJH1	02/02/15	0910	1450581	4
Rad Gas Flow Proportional Counting													
SRTOT_SEP_PRECIP_GPC: COMMON "As Received"													
Total Strontium SR-RAD	B	2730	+/-27.1	1.30	+/-629	2.00	pCi/L		KSD1	01/30/15	1508	1451151	5
Rad Liquid Scintillation Analysis													
TRITIUM_DIST_LSC: COMMON "As Received"													
Tritium 10028-17-8		1.33E+06	+/-25800	942	+/- 2.58E+05	100	pCi/L		BYS1	01/22/15	1432	1451221	6

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	DOE EML HASL-300, Pu-11-RC Modified
3	DOE EML HASL-300, U-02-RC Modified
4	EPA 901.1

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Certificate of Analysis

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF F14-021

Report Date: February 10, 2015

Client Sample ID: B30895 Project: CPRC0F14021
Sample ID: 364997002 Client ID: CPRC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst Date	Time Batch	Mtd.
5	EPA 905.0 Modified										
6	EPA 906.0 Modified										

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Americium-243 Tracer	AMCMISO_EIE_PLATE_AEA: "	85.3	(15%-125%)
Plutonium-236 Tracer	PUISO_PLATE_AEA:COMMON	67.5	(15%-125%)
Uranium-232 Tracer	UISO_IE_PLATE_AEA:COMMO	90.0	(15%-125%)
Strontium Carrier	SRTOT_SEP_PRECIP_GPC: CON	87.7	(25%-125%)

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
The above sample is reported on an "as received" basis.

Quality Control Data

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

QC Summary

Report Date: February 10, 2015

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

Workorder: **364997**

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch 1451470									
QC1203247810 MB									
Uranium-233/234			U	0.333	pCi/L			JXR1	02/04/1515:38
	Uncert:			+/-0.494					
	TPU:			+/-0.498					
Uranium-235/236			U	0.303	pCi/L				
	Uncert:			+/-0.437					
	TPU:			+/-0.441					
Uranium-238			U	-0.0263	pCi/L				
	Uncert:			+/-0.227					
	TPU:			+/-0.228					
QC1203247811 364997001 DUP									
Uranium-233/234		50.6		60.4	pCi/L				02/04/1515:38
	Uncert:	+/-4.51		+/-6.90		RPD: 18	(0% - 20%)		
	TPU:	+/-10.0		+/-15.2		RER: 1.05	(0-2)		
Uranium-235/236		7.47		11.9	pCi/L				
	Uncert:	+/-1.77		+/-3.09		RPD: 46*	(0% - 20%)		
	TPU:	+/-2.21		+/-4.09		RER: 1.87	(0-2)		
Uranium-238		40.2		49.9	pCi/L				
	Uncert:	+/-4.02		+/-6.28		RPD: 22*	(0% - 20%)		
	TPU:	+/-8.15		+/-12.8		RER: 1.25	(0-2)		
QC1203247812 LCS									
Uranium-233/234				28.8	pCi/L				02/02/1513:20
	Uncert:			+/-3.64					
	TPU:			+/-6.44					
Uranium-235/236				2.06	pCi/L				
	Uncert:			+/-1.03					
	TPU:			+/-1.10					
Uranium-238	27.2			27.8	pCi/L	REC: 102	(80%-120%)		
	Uncert:			+/-3.58					
	TPU:			+/-6.26					
Batch 1454734									
QC1203256347 MB									
Americium-241			U	-0.115	pCi/L			JXR1	02/05/1515:22
	Uncert:			+/-0.442					
	TPU:			+/-0.443					
Curium-243/244			U	-0.0377	pCi/L				
	Uncert:			+/-0.423					
	TPU:			+/-0.424					
QC1203256348 364997002 DUP									
Americium-241		176		161	pCi/L				02/05/1515:22
	Uncert:	+/-12.4		+/-10.8		RPD: 9	(0% - 20%)		
	TPU:	+/-29.7		+/-25.1		RER: 0.726	(0-2)		
Curium-243/244		U 0.514	U	-0.133	pCi/L				
	Uncert:	+/-0.902		+/-0.391		RPD: 0	N/A		
	TPU:	+/-0.905		+/-0.392		RER: 1.29	(0-2)		

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria		Range	Analyst	Date Time
Rad Alpha Spec										
Batch 1454734										
QC1203256349 LCS										
Americium-241	28.2			32.7	pCi/L	REC:	116	(80%-120%)		02/05/1515:22
	Uncert:			+/-5.40						
	TPU:			+/-7.37						
Curium-243/244	55.4			61.6	pCi/L	REC:	111	(80%-120%)		
	Uncert:			+/-7.35						
	TPU:			+/-12.0						
Batch 1454735										
QC1203256355 MB										
Plutonium-238			U	0.487	pCi/L				JXR1	02/05/1515:23
	Uncert:			+/-1.13						
	TPU:			+/-1.13						
Plutonium-239/240			U	1.33	pCi/L					
	Uncert:			+/-1.48						
	TPU:			+/-1.50						
QC1203256356 364997002 DUP										
Plutonium-238		24.5		19.3	pCi/L					02/05/1515:23
	Uncert:	+/-5.28		+/-4.44		RPD:	24*	(0% - 20%)		
	TPU:	+/-6.91		+/-5.57		RER:	1.15	(0-2)		
Plutonium-239/240		147		138	pCi/L					
	Uncert:	+/-12.8		+/-11.7		RPD:	7	(0% - 20%)		
	TPU:	+/-29.6		+/-26.5		RER:	0.479	(0-2)		
QC1203256357 LCS										
Plutonium-238			U	-0.191	pCi/L					02/05/1515:21
	Uncert:			+/-0.504						
	TPU:			+/-0.506						
Plutonium-239/240	39.4			44.8	pCi/L	REC:	114	(80%-120%)		
	Uncert:			+/-6.53						
	TPU:			+/-9.99						
Rad Gamma Spec										
Batch 1450581										
QC1203245477 MB										
Cesium-137			U	-6.51	pCi/L				MJH1	02/03/1509:33
	Uncert:			+/-5.40						
	TPU:			+/-6.17						
QC1203245478 364997001 DUP										
Cesium-137		8.11E+05		8.02E+05	pCi/L					02/02/1512:02
	Uncert:	+/-1250		+/-1220		RPD:	1	(0% - 20%)		
	TPU:	+/-68000		+/-66700		RER:	0.183	(0-2)		
QC1203245479 LCS										
Americium-241	1.24E+05			1.27E+05	pCi/L	REC:	102	(80%-120%)		02/02/1511:30
	Uncert:			+/-2150						
	TPU:			+/-9280						
Cobalt-60	58600			57900	pCi/L	REC:	99	(80%-120%)		
	Uncert:			+/-1050						
	TPU:			+/-5130						
Cesium-137	50000			51200	pCi/L	REC:	102	(80%-120%)		
	Uncert:			+/-869						
	TPU:			+/-4300						
Rad Gas Flow										

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QC Summary

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gas Flow									
Batch 1451151									
QC1203246936 MB									
Total Strontium			B	16.9	pCi/L			KSD1	01/30/1515:08
Uncert:				+/-2.22					
TPU:				+/-4.49					
QC1203246937 364997002 DUP									
Total Strontium	B	2730	B	2510	pCi/L				01/30/1515:08
Uncert:		+/-27.1		+/-25.8		RPD: 8	(0% - 20%)		
TPU:		+/-629		+/-592		RER: 0.499	(0-2)		
QC1203246938 LCS									
Total Strontium	119		B	124	pCi/L	REC: 104	(80%-120%)		01/30/1515:08
Uncert:				+/-5.72					
TPU:				+/-29.0					
Rad Liquid Scintillation									
Batch 1451221									
QC1203247167 MB									
Tritium			U	20.3	pCi/L			BYS1	01/22/1514:37
Uncert:				+/-59.1					
TPU:				+/-59.2					
QC1203247168 364997001 DUP									
Tritium		1.20E+06		1.17E+06	pCi/L				01/22/1516:40
Uncert:		+/-23300		+/-22700		RPD: 2	(0% - 20%)		
TPU:		+/-2.33E+05		+/-2.28E+05		RER: 0.177	(0-2)		
QC1203247169 364997001 MS									
Tritium	1870	1.20E+06		1.24E+06	pCi/L	REC: N/A			01/22/1516:45
Uncert:		+/-23300		+/-24100					
TPU:		+/-2.33E+05		+/-2.41E+05					
QC1203247170 LCS									
Tritium	1870			1850	pCi/L	REC: 99	(80%-120%)		01/22/1516:50
Uncert:				+/-398					
TPU:				+/-535					

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

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 acceptence 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.