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 24, 2015

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

Re: CHPRC SAF F13-034
Work Order: 361720
SDG: GEL361720

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on November 20, 2014. This revised data report has been prepared and reviewed in accordance with GEL's standard operating procedures. This data package was revised due to a self-identified error in the lab regarding the TPU result for Alphaspec Am/Cm.

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: 303110 - 9C
Chain of Custody: F13-034-028 and F13-034-030
Enclosures

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To: **Distribution List**

From: **Robert L. Pullano, Director Quality Systems**

Subject: **CARR150212-928: Tracer Uncertainty Error for Americium and Curium by Alpha Spec**

Date: **February 20, 2015**

During a recent data audit, GEL uncovered a transcription error that affects the Combined Standard Uncertainty (CSU), also referred to as the Total Propagated Uncertainty (TPU), for samples analyzed for Americium/Curium by alpha spectrometry using Americium-243 tracer 1666-A.

Issue:

Tracer Uncertainty for Americium tracer 1666-A was entered incorrectly (entered in percentage format instead of decimal format). Specifically the uncertainty was entered as 0.45 instead of 0.0045.

The error occurred on November 18, 2014. The first batch using this tracer was prepared on November 25, 2014.

How does this affect the reported data:

This transcription error caused the Tracer Yield Uncertainty term to be biased high, resulting in a high bias for the CSU (TPU). Typically Tracer Yield Uncertainty is in the range of 3% to 8%. In this case, the Tracer Yield Uncertainty would be approximately 45%.

The extent of the high bias of the CSU (TPU) is relative to the Count Rate of the sample itself. For samples that have a Counting Uncertainty greater than 100% of sample Activity (which is indicative of samples with Activity below the MDC), the bias in the CSU (TPU) could be considered insignificant due to the overwhelming contribution from the Counting Uncertainty. For samples with Counting Uncertainty Less than 100% of sample Activity, the CSU (TPU) reported may have a significant high bias. Again, the actual bias is dependent on the Counting Uncertainty.

If the reported CSU (TPU) is utilized to make decisions on the presence (or absence) of activity in the sample, the bias in the TPU may result in an improper decision. This occurrence was infrequent in most of the associated data.

Additionally, if a Duplicate Relative Error Ratio (RER) is calculated for the analytical batch and the sample and/or duplicate results have a counting Uncertainty less than 100%, the RER would be significantly biased low.

problem solved

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What data is NOT affected:

- No other reportable parameters for Americium/Curium (i.e. Activity, Uncertainty, Minimum Detectable Activity, Critical Level or Decision Level) are affected by this transcription error.
- Samples analyzed prior to November 18, 2014 are not affected
- Americium/Curium analysis analyzed after November 18, 2014 that **did not** utilize Am-243 tracer 1666-A.
- Uranium, Plutonium, Thorium, Neptunium, Radium, Polonium analysis are not affected.
- This transcription error was identified and corrected on February 10, 2015. All data analyzed and reported after this date is not affected.

What samples are affected:

This transcription error is limited to Americium/Curium data analyzed by Alpha Spectrometry which utilized tracer 1666-A. This tracer was validated on 11/18/2014 and subsequently used for analysis. **This affects only the CSU (TPU) and RER reported for Americium/Curium analysis.**

Actions taken:

A query was run on all data analyzed since 11/18/2014 to identify the samples that utilized Am-243 tracer 1666-A and all affected clients were notified of the issue.

All uncertainty data associated with tracers used in the laboratory were validated and found to be correctly transcribed in the database.

All affected data were recalculated and will be re-reported to our clients by February 26, 2015.

Additionally, a second verification step of all new uncertainty data manually transcribed into LIMS was implemented.

We have conducted a thorough investigation of this issue and have determined that the problem was isolated to this one specific instance. We believe the actions that have been implemented will prevent recurrence of this problem.

GEL prides itself on superior performance in all aspects of its testing and this unusual error, while minor in significance, has been brought to the attention of the laboratory management. We regret any inconvenience this error has caused you in the use of the data provided.

Table of Contents

Case Narrative

This data package was revised due to a self-identified error in the lab regarding the TPU result for Alphaspec Am/Cm.

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F13-034
SDG: GEL361720

February 24, 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 November 20, 2014, 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
361720001	B2YPP0
361720002	B2YPN8

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: GC/MS Volatile 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

361720

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F13-034-030	PAGE 1 OF 2
COLLECTOR D. Floyd	**COMPANY CONTACT** EVANS, RT	**TELEPHONE NO.** 373-7924	**PROJECT COORDINATOR** EVANS, RT	**PRICE CODE** 9C	**DATA TURNAROUND**
SAMPLING LOCATION 200W P&T GAC Container #20-0166	**PROJECT DESIGNATION** 200W Pump & Treat - Loaded GAC for Regeneration		**SAF NO.** F13-034	**AIR QUALITY** ☐	15 Days / 15 Days
ICE CHEST NO. GWS-329	**FIELD LOGBOOK NO.** HNF-N-585-6	**ACTUAL SAMPLE DEPTH** N/A	**COA** 303110	**METHOD OF SHIPMENT** FEDERAL EXPRESS	ORIGINAL
SHIPPED TO GEL Laboratories, LLC	**OFFSITE PROPERTY NO.** 5215		**BILL OF LADING/AIR BILL NO.** 7718 8958 5435		

361720

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~4C	None	None
HOLDING TIME	14 Days	6 Months	6 Months
TYPE OF CONTAINER	G	G/P	G/P
NO. OF CONTAINER(S)	1	1	1
VOLUME	~~40mL~~ 60mL ULH 11/13/14	500mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B2YPP0	OTHER SOLID	11/17/14	1010	✓	✓	✓

CHAIN OF POSSESSION		SIGN/ PRINT NAMES		SPECIAL INSTRUCTIONS
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS
D. Floyd	11/17/14 1115	M.A. White CHPRC	11/17/14 1115	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
M.A. White CHPRC	NOV 17 2014 1400	FEDEX		
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	
FED EX		P.W. Dent Patricia Dent	11.20.14 0915	
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	
RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME	

TRVL-14-187

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

PRINTED ON 11/6/2014

A-6003-618 (REV 2)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F13-034-030	PAGE 2 OF 2
COLLECTOR D. Floyd.	**COMPANY CONTACT** EVANS, RT	**TELEPHONE NO.** 373-7924	**PROJECT COORDINATOR** EVANS, RT	**PRICE CODE** 9C / **DATA TURNAROUND**
SAMPLING LOCATION 200W P&T GAC Container #20-0166	**PROJECT DESIGNATION** 200W Pump & Treat - Loaded GAC for Regeneration		**SAF NO.** F13-034	**AIR QUALITY** ☐ / 15 Days / 15 Days
ICE CHEST NO. GWS-329	**FIELD LOGBOOK NO.** HNF-N-585-6	**ACTUAL SAMPLE DEPTH** N/A	**COA** 303110	**METHOD OF SHIPMENT** FEDERAL EXPRESS / **ORIGINAL**
SHIPPED TO GEL Laboratories, LLC	**OFFSITE PROPERTY NO.** 5215		**BILL OF LADING/AIR BILL NO.** 7718 8958 5435	

SPECIAL INSTRUCTIONS

** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. TRVL-14-187
(1) 8260_VOA_GCMS: COMMON {Carbon tetrachloride, Chloroform, Vinyl chloride};
(2) TC99_SEP_GPC: COMMON; I129_SEP_LEPS_GS: COMMON; TRITIUM_DIST_LSC: COMMON; C14_LSC: COMMON; NI63_LSC: COMMON; SE79_SEP_IE_LSC: COMMON; PAISO_PLATE_AEA: COMMON; THISO_IE_PLATE_AEA: COMMON {Thorium-230, Thorium-232};
(3) GAMMA_GS: COMMON; GAMMA_GS: COMMON (Add-on) {Protactinium-231, Thorium-234}; PUISO_PLATE_AEA: COMMON; AMCMISO_EIE_PLATE_AEA: COMMON {Americium-241}; NP237_LLE_PLATE_AEA: COMMON; UISO_PLATE_AEA: COMMON; SRTOT_SEP_PRECIP_GPC: COMMON;

361720

TRVL-14-187

PRINTED ON 11/6/2014

A-6003-618 (REV 2)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F13-034-028	PAGE 1 OF 2
COLLECTOR D. Floyd	**COMPANY CONTACT** EVANS, RT	**TELEPHONE NO.** 373-7924	**PROJECT COORDINATOR** EVANS, RT	**PRICE CODE** 9C	**DATA TURNAROUND**
SAMPLING LOCATION 200W P&T GAC Container #20-0164	**PROJECT DESIGNATION** 200W Pump & Treat - Loaded GAC for Regeneration		**SAF NO.** F13-034	**AIR QUALITY** ☐	15 Days / 15 Days
ICE CHEST NO. GWS-329	**FIELD LOGBOOK NO.** HNF-N-585-6	**ACTUAL SAMPLE DEPTH** N/A	**COA** 303110	**METHOD OF SHIPMENT** FEDERAL EXPRESS	ORIGINAL
SHIPPED TO GEL Laboratories, LLC	**OFFSITE PROPERTY NO.** 5215		**BILL OF LADING/AIR BILL NO.** 7718 8958 5435		

361720

MATRIX*
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L=Liquid
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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~4C	None	None
HOLDING TIME	14 Days	6 Months	6 Months
TYPE OF CONTAINER	G	G/P	G/P
NO. OF CONTAINER(S)	1	1	1
VOLUME	~~40mL~~ 60mL Jeff 11/13/14	500mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SEE ITEM (2) IN SPECIAL INSTRUCTIONS	SEE ITEM (3) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME			
B2YPN8	OTHER SOLID	11/7/14	1020	✓	✓	✓

February 25, 2015

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	
RELINQUISHED BY/REMOVED FROM: D. Floyd — DATE/TIME: 11/17/14 1115	RECEIVED BY/STORED IN: M.A. White CHPRC — DATE/TIME: 11/17/14 1115	
RELINQUISHED BY/REMOVED FROM: M.A. White CHPRC — DATE/TIME: NOV 17 2014 1400	RECEIVED BY/STORED IN: FEDEX — DATE/TIME:	
RELINQUISHED BY/REMOVED FROM: FED EX — DATE/TIME:	RECEIVED BY/STORED IN: P. Went Patricia Dent 11.20.14 0915 — 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:	
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
SEE PAGE 2 FOR ALL SPECIAL INSTRUCTIONS

TRVL-14-187

Rev. 1

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

PRINTED ON 11/6/2014

A-6003-618 (REV 2)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST			F13-034-028	PAGE 2 OF 2
COLLECTOR D. Floyd.	**COMPANY CONTACT** EVANS, RT	**TELEPHONE NO.** 373-7924	**PROJECT COORDINATOR** EVANS, RT	**PRICE CODE** 9C	**DATA TURNAROUND**
SAMPLING LOCATION 200W P&T GAC Container #20-0164	**PROJECT DESIGNATION** 200W Pump & Treat - Loaded GAC for Regeneration		**SAF NO.** F13-034	**AIR QUALITY** ☐	15 Days / 15 Days
ICE CHEST NO. GWS-329	**FIELD LOGBOOK NO.** HNF-N-585-6	**ACTUAL SAMPLE DEPTH** N/A	**COA** 303110	**METHOD OF SHIPMENT** FEDERAL EXPRESS	ORIGINAL
SHIPPED TO GEL Laboratories, LLC	**OFFSITE PROPERTY NO.** 5215		**BILL OF LADING/AIR BILL NO.** 7718 8958 5435		

SPECIAL INSTRUCTIONS

** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF. TRVL-14-187
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(2) TC99_SEP_GPC: COMMON; I129_SEP_LEPS_GS: COMMON; TRITIUM_DIST_LSC: COMMON; C14_LSC: COMMON; NI63_LSC: COMMON; SE79_SEP_IE_LSC: COMMON; PAISO_PLATE_AEA: COMMON; THISO_IE_PLATE_AEA: COMMON {Thorium-230, Thorium-232};
(3) GAMMA_GS: COMMON; GAMMA_GS: COMMON (Add-on) {Protactinium-231, Thorium-234}; PUISO_PLATE_AEA: COMMON; AMCMISO_EIE_PLATE_AEA: COMMON {Americium-241}; NP237_LLE_PLATE_AEA: COMMON; UISO_PLATE_AEA: COMMON; SRTOT_SEP_PRECIP_GPC: COMMON;

361720

TRVL-14-187

PRINTED ON 11/6/2014

A-6003-618 (REV 2)

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: CPRC			**SDG/AR/COC/Work Order:** 360720	
Received By: P. Ulent			**Date Received:** 11/20/14	
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): 0 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#:
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. 1.2c
2a	Daily check performed and passed on IR temperature gun?	X			Temperature Device Serial #: Secondary Temperature Device Serial # (If Applicable): 130462966
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.	X			Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other. 7718 8958 5251; 7719 1990 7747; 7718 8958 5435; 7719 2319 6838; 7719 1528 1925. 1.2c

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials DS Date 11/21/14 Page 1 of 1

Data Review Qualifier Definitions

GEL LABORATORIES LLC

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

Report Date: 24−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: 24−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 24 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	T104704235−15−10
Utah NELAP	SC000122014−16
Vermont	VT87156
Virginia NELAP	460202
Washington	C780−12

Volatile Analysis

Case Narrative

ChemStation Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG GEL361720

Method/Analysis Information

Procedure:	**Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer**
Analytical Method:	SW846 5035/8260C
Prep Method:	SW846 5035
Analytical Batch Number:	1438273
Prep Batch Number:	1438272

Sample Analysis

The following client and quality control samples were analyzed to complete this SDG using the methods referenced in the Analysis Information section:

Sample ID	Client ID
361720001	B2YPP0
361720002	B2YPN8
1203215512	Method Blank (MB)
1203215513	High Blank (HB)
1203215514	Laboratory Control Sample (LCS)
1203215515	361720001(B2YPP0) Post Spike (PS)
1203215516	361720001(B2YPP0) Post Spike Duplicate (PSD)

NOTE: For volatile organic analyses the matrix spike designations may be indicated as "PS" or "PSD". The "PS" designation (post spike) indicates that the matrix was fortified prior to analysis but after applying any prep factors, such as a dilution. The laboratory considers the MS/MSD and PS/PSD designations interchangeable.

The data results reported met all SOP and method criteria, unless otherwise discussed below.

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-OA-E-038 REV# 21.

Calibration Information

A complete list of the initial calibration data files with the correct dates and times of analysis are shown in the Calibration History report located in the Standard Data section of the data package. The surrogate compounds were calibrated using a minimum five-point calibration curve. The surrogates were added by the auto sampler at a concentration of 50 ug/L or 20 ug/L for low level analyses. GEL Laboratories LLC will not have surrogate recoveries reported for Dibromofluoromethane. This is due to increased regulations for this analyte and an industry shortage.

Initial Calibration
All initial calibration requirements have been met for this sample delivery group (SDG).

Continuing Calibration Verification Requirements
All associated calibration verification standard(s) (CCV) met the acceptance criteria.

Quality Control (QC) Information

Blank (MB) Statement
The blank analyzed with this SDG met the acceptance criteria.

Surrogate Recoveries
Surrogate recoveries in all client and quality control samples were within the acceptance limits.

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

QC Sample Designation
Sample 361720001 (B2YPP0) was designated for spike analysis.

Matrix Spike (PS) Recovery Statement
The spike 1203215515 (B2YPP0PS) recoveries were not all within the acceptance limits.

Matrix Spike Duplicate (PSD) Recovery Statement
The spike duplicate 1203215516 (B2YPP0PSD) recoveries were not all within the acceptance limits.

Relative Percent Difference (RPD) Statement
The RPDs between the matrix spike pair met the acceptance limits.

Internal Standard (ISTD) Acceptance
The internal standard responses in all client and quality control samples met the required acceptance criteria.

Technical Information

Holding Time Specifications
GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection or sample receipt. Those holding times expressed in hours are calculated in the ALPHALIMS system. Those holding times expressed as days expire at midnight on the day of expiration. All samples in this SDG met the specified holding time.

Sample Preservation and Integrity
All samples met the sample preservation and integrity requirements.

Sample Dilutions/Methanol Dilutions
Samples were analyzed using a methanol dilution extraction procedure because the sample matrices were not amenable to more concentrated analyses.

Sample Re-extraction/Re-analysis
Re-analyses were not required for samples in this SDG.

Miscellaneous Information

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. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

Data Exception (DER) Documentation
The following DER was generated for this SDG: 1363563.

Manual Integrations
Data files associated with the initial calibration, continuing calibration check, and samples did not require manual integrations.

TIC Comment
Tentatively identified compounds (TIC) were not required for this SDG.

Additional Comments
Samples were characterized as miscellaneous solids. The samples were lightweight black chips resembling charcoal. There was an exothermic reaction when the Methanol was added during the extraction step and vigorous bubbling was observed. A serial dilution was required.

System Configuration

The Volatile-GC/MS analysis was performed on the following instrument configuration:

Instrument ID	Instrument	System Configuration	Column ID	Column Description	P & T Trap
VOA2.I	Agilent 7890/5975 GC/MS w/ OI Eclipse/Archon Autosampler	HP7890N/HP5975C	DB-624	J&W, 60m x 0.25mm x 1.4um	Trap 10

Certification Statement

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

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Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL361720 GEL Work Order: 361720

The Qualifiers in this report are defined as follows:

D Results are reported from a diluted aliquot of sample.

E Concentration exceeds the calibration range of the instrument

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

T Spike and/or spike duplicate 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.

DL Indicates that sample is diluted.
RA Indicates that sample is re-analyzed without re-extraction.
RE Indicates that sample is re-extracted.

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: Erin Haubert **Name: Erin Haubert**

Date: 10 DEC 2014 **Title: Data Validator**

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 F13-034**

Report Date: December 10, 2014

Client Sample ID: B2YPP0
Sample ID: 361720001
Matrix: OTHER SOLID
Collect Date: 17-NOV-14 10:10
Receive Date: 20-NOV-14
Collector: Client

Project: CPRC0F13034
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics										
Volatiles by SW846 8260C "As Received"										
Carbon tetrachloride 56-23-5	DT	4820000	15000	100000	ug/kg	25000	CDS1 11/21/14	1347	1438273	1
Chloroform 67-66-3	DJ	86000	15000	100000	ug/kg	25000				
Vinyl chloride 75-01-4	DTU	0.00	15000	100000	ug/kg	25000				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 5035	5035/8260C Prep	CDS1	11/21/14	0855	1438272

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 5035/8260C	

Surrogate/Tracer recovery	Test	Result		Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	Volatiles by SW846 8260C "As Received"	2540000	ug/kg	50.0	102	(70%-128%)
Bromofluorobenzene	Volatiles by SW846 8260C "As Received"	2460000	ug/kg	50.0	98.3	(63%-138%)
Toluene-d8	Volatiles by SW846 8260C "As Received"	2570000	ug/kg	50.0	103	(80%-120%)

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 F13-034**

Report Date: December 10, 2014

Client Sample ID: B2YPN8
Sample ID: 361720002
Matrix: OTHER SOLID
Collect Date: 17-NOV-14 10:20
Receive Date: 20-NOV-14
Collector: Client

Project: CPRC0F13034
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	AnalystDate	Time	Batch	Method
Volatile Organics										
Volatiles by SW846 8260C "As Received"										
Carbon tetrachloride 56-23-5	DT	4500000	15000	100000	ug/kg	25000	CDS1 11/21/14	1417	1438273	1
Chloroform 67-66-3	DJ	81500	15000	100000	ug/kg	25000				
Vinyl chloride 75-01-4	DTU	0.00	15000	100000	ug/kg	25000				

The following Prep Methods were performed

Method	Description	Analyst	Date	Time	Prep Batch
SW846 5035	5035/8260C Prep	CDS1	11/21/14	0856	1438272

The following Analytical Methods were performed

Method	Description	Analyst Comments
1	SW846 5035/8260C	

Surrogate/Tracer recovery	Test	Result		Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	Volatiles by SW846 8260C "As Received"	2610000	ug/kg	50.0	104	(70%-128%)
Bromofluorobenzene	Volatiles by SW846 8260C "As Received"	2480000	ug/kg	50.0	99.1	(63%-138%)
Toluene-d8	Volatiles by SW846 8260C "As Received"	2600000	ug/kg	50.0	104	(80%-120%)

Quality Control Summary

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

QC Summary

Report Date: December 10, 2014

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

Contact: **Mr. Scot Fitzgerald**

Workorder: **361720**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS										
Batch 1438273										
QC1203215513 HB										
Carbon tetrachloride			DU	30.0	ug/kg				CDS1	11/21/14 10:46
Chloroform			DU	30.0	ug/kg					
Vinyl chloride			DU	30.0	ug/kg					
**1,2-Dichloroethane-d4	50.0			50.6	ug/L		101	(70%-128%)		
**Bromofluorobenzene	50.0			47.6	ug/L		95.2	(63%-138%)		
**Toluene-d8	50.0			50.5	ug/L		101	(80%-120%)		
QC1203215514 LCS										
Carbon tetrachloride	50.0			60.4	ug/kg		121	(70%-130%)		11/21/14 07:47
Chloroform	50.0			53.3	ug/kg		107	(70%-130%)		
Vinyl chloride	50.0			48.3	ug/kg		96.5	(70%-130%)		
**1,2-Dichloroethane-d4	50.0			52.8	ug/L		106	(70%-128%)		
**Bromofluorobenzene	50.0			48.2	ug/L		96.4	(63%-138%)		
**Toluene-d8	50.0			52.2	ug/L		104	(80%-120%)		
QC1203215512 MB										
Carbon tetrachloride			U	0.300	ug/kg					11/21/14 10:16
Chloroform			U	0.300	ug/kg					
Vinyl chloride			U	0.300	ug/kg					
**1,2-Dichloroethane-d4	50.0			51.6	ug/L		103	(70%-128%)		
**Bromofluorobenzene	50.0			46.9	ug/L		93.7	(63%-138%)		
**Toluene-d8	50.0			50.1	ug/L		100	(80%-120%)		
QC1203215515 361720001 PS										

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QC Summary

Workorder: **361720**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS											
Batch 1438273											
Carbon tetrachloride	50.0	DT	96.3	DE	134	ug/L		75.9	(70%-130%)		11/21/14 16:18
Chloroform	50.0	DJ	1.72	D	45.2	ug/L		87	(70%-130%)	CDS1	
Vinyl chloride	50.0	DTU	0.00	DT	28.7	ug/L		57.3*	(70%-130%)		
**1,2-Dichloroethane-d4	50.0		50.9		51.9	ug/L		104	(70%-128%)		
**Bromofluorobenzene	50.0		49.1		48.5	ug/L		97	(63%-138%)		
**Toluene-d8	50.0		51.3		52.0	ug/L		104	(80%-120%)		
QC1203215516 361720001 PSD											
Carbon tetrachloride	50.0	DT	96.3	DET	111	ug/L	18.9	29.5*	(0%-20%)		11/21/14 16:48
Chloroform	50.0	DJ	1.72	D	40.8	ug/L	10.1	78.2	(0%-20%)		
Vinyl chloride	50.0	DTU	0.00	DT	27.4	ug/L	4.68	54.7*	(0%-20%)		
**1,2-Dichloroethane-d4	50.0		50.9		51.5	ug/L		103	(70%-128%)		
**Bromofluorobenzene	50.0		49.1		48.1	ug/L		96.1	(63%-138%)		
**Toluene-d8	50.0		51.3		51.6	ug/L		103	(80%-120%)		

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- 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
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.
- T Spike and/or spike duplicate 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

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QC Summary

Workorder: **361720**

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

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

o Analyte failed to recover within LCS limits (0rganics only)

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.

Miscellaneous

DATA EXCEPTION REPORT

Mo.Day Yr.	Division:	Quality Criteria:	Type:
10-DEC-14	Federal	SOP	Process
Instrument Type:	**Test / Method:**	**Matrix Type:**	**Client Code:**
VOA GC/MS	8260C	Solid	CPRC001
Batch ID:	**Sample Numbers:**		
1438273	361720001-002		

Potentially affected work order(s)(SDG): 361720(GEL361720)

Application Issues:

Failed Recovery for MS/PS

Failed Recovery for MSD/PSD

Specification and Requirements Exception Description:	DER Disposition:
1. The recovery for Vinyl chloride was outside of acceptance limits in the matrix spike and in the matrix spike duplicate performed on sample 361720001. 2. The recovery for Carbon tetrachloride was outside of acceptance limits in the matrix spike duplicate performed on sample 361720001. The post spiked concentration of Carbon tetrachloride exceeded the calibration range of the instrument in both the matrix spike and in the matrix spike duplicate.	1,2. Narrate and report data.

Originator's Name:

Crystal Stacey 10-DEC-14

Data Validator/Group Leader:

Erin Haubert 10-DEC-14

Radiological Analysis

Radiochemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL361720
Work Order #: 361720

Method/Analysis Information

Product:	**Alphaspec Am241 Solid**
Analytical Method:	DOE EML HASL-300, Am-05-RC Modified
Prep Method:	Dry Soil Prep
Analytical Batch Number:	1438900
Prep Batch Number:	1438224

Sample ID	Client ID
361720001	B2YPP0
361720002	B2YPN8
1203217114	MB for batch 1438900
1203217116	Laboratory Control Sample (LCS)
1203217115	361720001(B2YPP0) Sample Duplicate (DUP)

The samples in this SDG were analyzed on a "dry weight" 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: 361720001 (B2YPP0).

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.

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
This data package revision contains revised TPU values for Americium-241. The relative error ratio (RER) has also been revised for Americium-241.

Qualifier Information

Manual qualifiers were not required.

Method/Analysis Information

Product:	**Alphaspec Np, Solid**
Analytical Method:	ASTM C 1476-00 Modified
Prep Method:	Dry Soil Prep
Analytical Batch Number:	1438901
Prep Batch Number:	1438224

Sample ID	Client ID
361720001	B2YPP0

361720002	B2YPN8
1203217117	MB for batch 1438901
1203217119	Laboratory Control Sample (LCS)
1203217118	361720001(B2YPP0) Sample Duplicate (DUP)

The samples in this SDG were analyzed on a "dry weight" 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-032 REV# 19.

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: 361720001 (B2YPP0).

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.

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:	**Alphaspec Pu, Solid**
Analytical Method:	DOE EML HASL-300, Pu-11-RC Modified
Prep Method:	Dry Soil Prep
Analytical Batch Number:	1438902
Prep Batch Number:	1438224

Sample ID	Client ID
361720001	B2YPP0
361720002	B2YPN8
1203217120	MB for batch 1438902
1203217122	Laboratory Control Sample (LCS)
1203217121	361720001(B2YPP0) Sample Duplicate (DUP)

The samples in this SDG were analyzed on a "dry weight" 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: 361720001 (B2YPP0).

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.

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:	**Alphaspec U, Solid**
Analytical Method:	DOE EML HASL-300, U-02-RC Modified
Prep Method:	Dry Soil Prep
Analytical Batch Number:	1438904
Prep Batch Number:	1438224

Sample ID	Client ID
361720001	B2YPP0
361720002	B2YPN8
1203217126	MB for batch 1438904
1203217128	Laboratory Control Sample (LCS)
1203217127	361720001(B2YPP0) Sample Duplicate (DUP)

The samples in this SDG were analyzed on a "dry weight" 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: 361720001 (B2YPP0).

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
Sample 361720001 (B2YPP0) 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:	**Alphaspec Th, Solid (Th230&232)**
Analytical Method:	DOE EML HASL-300, Th-01-RC Modified
Prep Method:	Dry Soil Prep
Analytical Batch Number:	1442050
Prep Batch Number:	1438224

Sample ID	Client ID
361720001	B2YPP0
361720002	B2YPN8
1203225007	MB for batch 1442050
1203225009	Laboratory Control Sample (LCS)
1203225008	361720001(B2YPP0) Sample Duplicate (DUP)

The samples in this SDG were analyzed on a "dry weight" 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-038 REV# 16.

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: 361720001 (B2YPP0).

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 were reprepped due to high blank activity. The re-analysis 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
Manual integration of alpha spectroscopy spectra 1203225009 (LCS) was performed to fully separate counts in Regions of Interest which would have been biased.

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 Cs137,Co60,Eu152,Eu154,E155, Pa231,Th234**
Analytical Method:	DOE HASL 300, 4.5.2.3/Ga-01-R
Prep Method:	Dry Soil Prep

Analytical Batch Number: 1438319

Prep Batch Number: 1438224

Sample ID	Client ID
361720001	B2YPP0
361720002	B2YPN8
1203215625	MB for batch 1438319
1203215627	Laboratory Control Sample (LCS)
1203215626	361720001(B2YPP0) Sample Duplicate (DUP)

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

Designated QC
The following sample was used for QC: 361720001 (B2YPP0).

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:	**Gamma I129, Solid**
Analytical Method:	DOE EML HASL-300,I-01 Modified
Analytical Batch Number:	1438595

Sample ID	Client ID
361720001	B2YPP0
361720002	B2YPN8
1203216348	MB for batch 1438595
1203216351	Laboratory Control Sample (LCS)
1203216349	361720001(B2YPP0) Sample Duplicate (DUP)
1203216350	361720001(B2YPP0) 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-006 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: 361720001 (B2YPP0).

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
Sample 1203216350 (B2YPP0MS) was recounted due to low recovery. 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.

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:	**GFPC, Sr90, solid**
Analytical Method:	EPA 905.0 Modified
Prep Method:	Dry Soil Prep
Analytical Batch Number:	1439370
Prep Batch Number:	1438224

Sample ID	Client ID
361720001	B2YPP0
361720002	B2YPN8
1203218264	MB for batch 1439370
1203218266	Laboratory Control Sample (LCS)
1203218265	361720001(B2YPP0) Sample Duplicate (DUP)

The samples in this SDG were analyzed on a "dry weight" 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: 361720001 (B2YPP0).

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.

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:	**Liquid Scint Ni63, Solid**
Analytical Method:	DOE RESL Ni-1, Modified
Prep Method:	Dry Soil Prep
Analytical Batch Number:	1438534
Prep Batch Number:	1438224

Sample ID	Client ID
361720001	B2YPP0
361720002	B2YPN8
1203216173	MB for batch 1438534
1203216175	Laboratory Control Sample (LCS)
1203216174	361720001(B2YPP0) Sample Duplicate (DUP)

The samples in this SDG were analyzed on a "dry weight" 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-022 REV# 16.

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: 361720001 (B2YPP0).

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:	**Liquid Scint Se79, Solid**
Analytical Method:	NERC ORD

Prep Method: Dry Soil Prep

Analytical Batch Number: 1438535

Prep Batch Number: 1438224

Sample ID	Client ID
361720001	B2YPP0
361720002	B2YPN8
1203216176	MB for batch 1438535
1203216178	Laboratory Control Sample (LCS)
1203216177	361720001(B2YPP0) Sample Duplicate (DUP)

The samples in this SDG were analyzed on a "dry weight" 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-031 REV# 11.

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: 361720001 (B2YPP0).

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.

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.

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:	**Liquid Scint Tc99, Solid**
Analytical Method:	DOE EML HASL-300, Tc-02-RC Modified
Analytical Batch Number:	1438544

Sample ID	Client ID
361720001	B2YPP0
361720002	B2YPN8
1203216202	MB for batch 1438544
1203216204	Laboratory Control Sample (LCS)
1203216203	361720001(B2YPP0) 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-059 REV# 3.

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: 361720001 (B2YPP0).

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:	**Liquid Scint C14, Solid**
Analytical Method:	EPA EERF C-01 Modified
Analytical Batch Number:	1439946

Sample ID	Client ID
361720001	B2YPP0
361720002	B2YPN8
1203219673	MB for batch 1439946
1203219676	Laboratory Control Sample (LCS)
1203219674	361720001(B2YPP0) Sample Duplicate (DUP)
1203219675	361720001(B2YPP0) 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-003 REV# 15.

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: 361720001 (B2YPP0).

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:	**LSC, Tritium Dist, Solid**
Analytical Method:	EPA 906.0 Modified
Analytical Batch Number:	1439958

Sample ID	Client ID
361720001	B2YPP0
361720002	B2YPN8
1203219723	MB for batch 1439958
1203219726	Laboratory Control Sample (LCS)
1203219724	361720001(B2YPP0) Sample Duplicate (DUP)
1203219725	361720001(B2YPP0) 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: 361720001 (B2YPP0).

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.

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: GEL361720 GEL Work Order: 361720

The Qualifiers in this report are defined as follows:

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

Review/Validation

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

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

Signature:  **Name: Theresa Austin**

Date: 19 FEB 2015 **Title: Group Leader**

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 F13-034

Report Date: February 19, 2015

Client Sample ID: B2YPP0
Sample ID: 361720001
Matrix: OTHER SOLID
Collect Date: 17-NOV-14
Receive Date: 20-NOV-14
Collector: Client
Moisture: 9.72%

Project: CPRC0F13034
Client ID: CPRC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis													
Alphaspec Am241 Solid "Dry Weight Corrected"													
Americium-241 14596-10-2	U	0.101	+/-0.198	0.274	+/-0.198	1.00	pCi/g		HAKB	12/06/14	1346	1438900	1
Alphaspec Np, Solid "Dry Weight Corrected"													
Neptunium-237 13994-20-2	U	-0.0598	+/-0.113	0.349	+/-0.113	1.00	pCi/g		HAKB	12/06/14	1346	1438901	2
Alphaspec Pu, Solid "Dry Weight Corrected"													
Plutonium-238 13981-16-3	U	-0.0148	+/-0.128	0.296	+/-0.128	1.00	pCi/g		HAKB	12/06/14	1346	1438902	3
Plutonium-239/240 OER-100-70	U	0.109	+/-0.213	0.296	+/-0.214	1.00	pCi/g						
Alphaspec Th, Solid (Th230&232) "Dry Weight Corrected"													
Thorium-230 14269-63-7	U	0.0898	+/-0.384	0.758	+/-0.387	1.00	pCi/g		MXS2	12/10/14	0929	1442050	4
Thorium-232 7440-29-1	U	-0.0299	+/-0.194	0.476	+/-0.195	1.00	pCi/g						
Alphaspec U, Solid "Dry Weight Corrected"													
Uranium-233/234 U-233/234	U	-0.0253	+/-0.365	0.863	+/-0.366	1.00	pCi/g		HAKB	12/09/14	1138	1438904	5
Uranium-235/236 15117-96-1/13982-70-2	U	-0.0188	+/-0.311	0.659	+/-0.313	1.00	pCi/g						
Uranium-238 7440-61-1	U	0.208	+/-0.434	0.645	+/-0.436	1.00	pCi/g						
Rad Gamma Spec Analysis													
Gamma Cs137,Co60,Eu152,Eu154,E155, Pa231,Th234 "Dry Weight Corrected"													
Cesium-137 10045-97-3	U	0.00357	+/-0.0182	0.0263	+/-0.0183	0.100	pCi/g		MXR1	11/29/14	1513	1438319	6
Cobalt-60 10198-40-0	U	-0.00668	+/-0.0163	0.0268	+/-0.0166	0.050	pCi/g						
Europium-152 14683-23-9	U	0.00972	+/-0.0381	0.0614	+/-0.0383	0.100	pCi/g						
Europium-154 15585-10-1	U	-0.00928	+/-0.0578	0.0825	+/-0.058		pCi/g						
Europium-155 14391-16-3	U	-0.0177	+/-0.0297	0.048	+/-0.0308		pCi/g						
Protactinium-231	U	0.0107	+/-0.609	0.856	+/-0.609		pCi/g						

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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 F13-034

Report Date: February 19, 2015

Client Sample ID: B2YPP0
Sample ID: 361720001
Project: CPRC0F13034
Client ID: CPRC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis													
Gamma Cs137,Co60,Eu152,Eu154,E155, Pa231,Th234 "Dry Weight Corrected"													
14331-85-2													
Thorium-234	U	0.0503	+/-0.245	0.257	+/-0.246		pCi/g						
15065-10-8													
Gamma I129, Solid "As Received"													
Iodine-129	U	-0.0248	+/-0.313	0.689	+/-0.313	2.00	pCi/g		BSW1	12/02/14	1204	1438595	7
15046-84-1													
Rad Gas Flow Proportional Counting													
GFPC, Sr90, solid "Dry Weight Corrected"													
Strontium-90	U	-0.298	+/-0.440	0.940	+/-0.440	2.00	pCi/g		KSD1	12/09/14	1147	1439370	8
10098-97-2													
Rad Liquid Scintillation Analysis													
LSC, Tritium Dist, Solid "As Received"													
Tritium	U	0.955	+/-11.8	21.4	+/-11.8	30.0	pCi/g		BYS1	12/03/14	1107	1439958	9
10028-17-8													
Liquid Scint C14, Solid "As Received"													
Carbon-14	U	-0.442	+/-2.17	3.80	+/-2.17	5.00	pCi/g		BYS1	12/03/14	1304	1439946	10
14762-75-5													
Liquid Scint Ni63, Solid "Dry Weight Corrected"													
Nickel-63	U	4.02	+/-11.7	20.0	+/-11.8	30.0	pCi/g		TYJ1	12/04/14	0839	1438534	11
NI-63													
Liquid Scint Se79, Solid "Dry Weight Corrected"													
Selenium-79	U	0.101	+/-2.80	4.77	+/-2.80	10.0	pCi/g		EXK2	12/02/14	2017	1438535	12
Liquid Scint Tc99, Solid "As Received"													
Technetium-99	U	-0.105	+/-6.92	12.0	+/-6.92	15.0	pCi/g		MYM1	12/07/14	1418	1438544	13
14133-76-7													

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	ASTM C 1476-00 Modified
3	DOE EML HASL-300, Pu-11-RC Modified
4	DOE EML HASL-300, Th-01-RC Modified
5	DOE EML HASL-300, U-02-RC Modified
6	DOE HASL 300, 4.5.2.3/Ga-01-R
7	DOE EML HASL-300,I-01 Modified
8	EPA 905.0 Modified

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 F13-034

Report Date: February 19, 2015

Client Sample ID: B2YPP0 Project: CPRC0F13034
Sample ID: 361720001 Client ID: CPRC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst Date	Time	Batch	Mtd.
9	EPA 906.0 Modified											
10	EPA EERF C-01 Modified											
11	DOE RESL Ni-1, Modified											
12	NERC ORD											
13	DOE EML HASL-300, Tc-02-RC Modified											

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Americium-243 Tracer	Alphaspec Am241 Solid "Dry Wei	87.4	(15%-125%)
Americium-243 Tracer	Alphaspec Np, Solid "Dry Weight (	99.4	(15%-125%)
Plutonium-242 Tracer	Alphaspec Pu, Solid "Dry Weight (	76.6	(15%-125%)
Thorium-229 Tracer	Alphaspec Th, Solid (Th230&232)	93.4	(15%-125%)
Uranium-232 Tracer	Alphaspec U, Solid "Dry Weight C	103	(15%-125%)
Strontium Carrier	GFPC, Sr90, solid "Dry Weight Co	72.8	(25%-125%)
Nickel Carrier	Liquid Scint Ni63, Solid "Dry Wei	74.5	(25%-125%)
Selenium Carrier	Liquid Scint Se79, Solid "Dry Wei	75.5	(25%-125%)
Technetium-99m Tracer	Liquid Scint Tc99, Solid "As Recei	87.4	(15%-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 :

A The TIC is a suspected aldol-condensation product
B The analyte was detected in both the associated QC blank and in the sample.
B The associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample
C Analyte has been confirmed by GC/MS analysis
D Results are reported from a diluted aliquot of sample.
E Concentration exceeds the calibration range of the instrument
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
N Spike Sample recovery is outside control limits.
P Aroclor target analyte with greater than 25% difference between column analyses.
T Spike and/or spike duplicate 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
o Analyte failed to recover within LCS limits (0rganics only)
The above sample is reported on a dry weight 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 F13-034

Report Date: February 19, 2015

Client Sample ID: B2YPN8
Sample ID: 361720002
Matrix: OTHER SOLID
Collect Date: 17-NOV-14
Receive Date: 20-NOV-14
Collector: Client
Moisture: 8.5%

Project: CPRC0F13034
Client ID: CPRC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Alpha Spec Analysis													
Alphaspec Am241 Solid "Dry Weight Corrected"													
Americium-241 14596-10-2	U	0.00236	+/-0.175	0.388	+/-0.175	1.00	pCi/g		HAKB	12/06/14	1346	1438900	1
Alphaspec Np, Solid "Dry Weight Corrected"													
Neptunium-237 13994-20-2	U	-0.0996	+/-0.154	0.445	+/-0.154	1.00	pCi/g		HAKB	12/06/14	1346	1438901	2
Alphaspec Pu, Solid "Dry Weight Corrected"													
Plutonium-238 13981-16-3	U	0.0476	+/-0.179	0.300	+/-0.179	1.00	pCi/g		HAKB	12/06/14	1346	1438902	3
Plutonium-239/240 OER-100-70	U	-0.0451	+/-0.136	0.382	+/-0.136	1.00	pCi/g						
Alphaspec Th, Solid (Th230&232) "Dry Weight Corrected"													
Thorium-230 14269-63-7	U	-0.0456	+/-0.405	0.960	+/-0.406	1.00	pCi/g		MXS2	12/10/14	0929	1442050	4
Thorium-232 7440-29-1	U	-0.0215	+/-0.233	0.523	+/-0.234	1.00	pCi/g						
Alphaspec U, Solid "Dry Weight Corrected"													
Uranium-233/234 U-233/234	U	0.191	+/-0.286	0.445	+/-0.288	1.00	pCi/g		HAKB	12/06/14	1345	1438904	5
Uranium-235/236 15117-96-1/13982-70-2	U	0.0199	+/-0.208	0.434	+/-0.208	1.00	pCi/g						
Uranium-238 7440-61-1	U	-0.0414	+/-0.125	0.351	+/-0.125	1.00	pCi/g						
Rad Gamma Spec Analysis													
Gamma Cs137,Co60,Eu152,Eu154,E155, Pa231,Th234 "Dry Weight Corrected"													
Cesium-137 10045-97-3	U	0.00991	+/-0.0118	0.0206	+/-0.0127	0.100	pCi/g		MXR1	11/29/14	1533	1438319	6
Cobalt-60 10198-40-0	U	0.00137	+/-0.0129	0.0225	+/-0.0129	0.050	pCi/g						
Europium-152 14683-23-9	U	-0.0205	+/-0.0349	0.0506	+/-0.0362	0.100	pCi/g						
Europium-154 15585-10-1	U	-0.0129	+/-0.0387	0.0641	+/-0.0391		pCi/g						
Europium-155 14391-16-3	U	0.00787	+/-0.032	0.0519	+/-0.0322		pCi/g						
Protactinium-231 14331-85-2	U	0.317	+/-0.476	0.789	+/-0.498		pCi/g						

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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 F13-034

Report Date: February 19, 2015

Client Sample ID: B2YPN8
Sample ID: 361720002
Project: CPRC0F13034
Client ID: CPRC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst	Date	Time	Batch	Mtd.
Rad Gamma Spec Analysis													
Gamma Cs137,Co60,Eu152,Eu154,E155, Pa231,Th234 "Dry Weight Corrected"													
Thorium-234 15065-10-8	U	-0.643	+/-0.746	0.854	+/-0.814		pCi/g						
Gamma I129, Solid "As Received"													
Iodine-129 15046-84-1	U	-0.288	+/-0.396	0.671	+/-0.418	2.00	pCi/g		BSW1	12/02/14	1205	1438595	7
Rad Gas Flow Proportional Counting													
GFPC, Sr90, solid "Dry Weight Corrected"													
Strontium-90 10098-97-2	U	0.171	+/-0.430	0.777	+/-0.431	2.00	pCi/g		KSD1	12/09/14	1147	1439370	8
Rad Liquid Scintillation Analysis													
LSC, Tritium Dist, Solid "As Received"													
Tritium 10028-17-8	U	11.3	+/-14.0	23.7	+/-14.2	30.0	pCi/g		BYS1	12/03/14	1124	1439958	9
Liquid Scint C14, Solid "As Received"													
Carbon-14 14762-75-5	U	1.14	+/-2.00	3.40	+/-2.00	5.00	pCi/g		BYS1	12/03/14	1325	1439946	10
Liquid Scint Ni63, Solid "Dry Weight Corrected"													
Nickel-63 NI-63	U	3.88	+/-9.36	15.9	+/-9.39	30.0	pCi/g		TYJ1	12/04/14	0941	1438534	11
Liquid Scint Se79, Solid "Dry Weight Corrected"													
Selenium-79	U	-0.243	+/-3.03	5.18	+/-3.03	10.0	pCi/g		EXK2	12/02/14	2120	1438535	12
Liquid Scint Tc99, Solid "As Received"													
Technetium-99 14133-76-7	U	-1.64	+/-6.58	11.5	+/-6.58	15.0	pCi/g		MYM1	12/07/14	1445	1438544	13

The following Analytical Methods were performed

Method	Description
1	DOE EML HASL-300, Am-05-RC Modified
2	ASTM C 1476-00 Modified
3	DOE EML HASL-300, Pu-11-RC Modified
4	DOE EML HASL-300, Th-01-RC Modified
5	DOE EML HASL-300, U-02-RC Modified
6	DOE HASL 300, 4.5.2.3/Ga-01-R
7	DOE EML HASL-300,I-01 Modified
8	EPA 905.0 Modified
9	EPA 906.0 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 F13-034

Report Date: February 19, 2015

Client Sample ID: B2YPN8 Project: CPRC0F13034
Sample ID: 361720002 Client ID: CPRC001

Parameter	Qualifier	Result	Uncertainty	MDC	TPU	RL	Units	DF	Analyst Date	Time	Batch	Mtd.
10	EPA EERF C-01 Modified											
11	DOE RESL Ni-1, Modified											
12	NERC ORD											
13	DOE EML HASL-300, Tc-02-RC Modified											

Surrogate/Tracer recovery	Test	Recovery%	Acceptable Limits
Americium-243 Tracer	Alphaspec Am241 Solid "Dry Wei	83.1	(15%-125%)
Americium-243 Tracer	Alphaspec Np, Solid "Dry Weight (	98.6	(15%-125%)
Plutonium-242 Tracer	Alphaspec Pu, Solid "Dry Weight (	81.4	(15%-125%)
Thorium-229 Tracer	Alphaspec Th, Solid (Th230&232)	91.4	(15%-125%)
Uranium-232 Tracer	Alphaspec U, Solid "Dry Weight C	95.1	(15%-125%)
Strontium Carrier	GFPC, Sr90, solid "Dry Weight Co	87.7	(25%-125%)
Nickel Carrier	Liquid Scint Ni63, Solid "Dry Wei	76.1	(25%-125%)
Selenium Carrier	Liquid Scint Se79, Solid "Dry Wei	76.0	(25%-125%)
Technetium-99m Tracer	Liquid Scint Tc99, Solid "As Recei	81.9	(15%-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 :

A The TIC is a suspected aldol-condensation product
B The analyte was detected in both the associated QC blank and in the sample.
B The associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample
C Analyte has been confirmed by GC/MS analysis
D Results are reported from a diluted aliquot of sample.
E Concentration exceeds the calibration range of the instrument
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
N Spike Sample recovery is outside control limits.
P Aroclor target analyte with greater than 25% difference between column analyses.
T Spike and/or spike duplicate 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
o Analyte failed to recover within LCS limits (0rganics only)
The above sample is reported on a dry weight basis.

Quality Control Data

GEL LABORATORIES LLC
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QC Summary

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

Workorder: **361720**

Report Date: February 19, 2015

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch 1438900									
QC1203217114 MB									
Americium-241			U	0.130	pCi/g			HAKB	12/06/1413:46
Uncert:				+/-0.231					
TPU:				+/-0.231					
QC1203217115 361720001 DUP									
Americium-241	U	0.101	U	0.0387	pCi/g				
Uncert:		+/-0.198		+/-0.272		RPD: 0	N/A		
TPU:		+/-0.198		+/-0.272		RER: 0.360	(0-2)		
QC1203217116 LCS									
Americium-241	11.5			11.3	pCi/g	REC: 99	(80%-120%)		
Uncert:				+/-1.60					
TPU:				+/-2.14					
Batch 1438901									
QC1203217117 MB									
Neptunium-237			U	0.0506	pCi/g			HAKB	12/06/1413:46
Uncert:				+/-0.173					
TPU:				+/-0.173					
QC1203217118 361720001 DUP									
Neptunium-237	U	-0.0598	U	-0.0132	pCi/g				
Uncert:		+/-0.113		+/-0.113		RPD: 0	N/A		
TPU:		+/-0.113		+/-0.114		RER: 0.569	(0-2)		
QC1203217119 LCS									
Neptunium-237	38.5			44.8	pCi/g	REC: 116	(80%-120%)		
Uncert:				+/-2.97					
TPU:				+/-5.64					
Batch 1438902									
QC1203217120 MB									
Plutonium-238			U	0.0438	pCi/g			HAKB	12/06/1413:46
Uncert:				+/-0.164					
TPU:				+/-0.164					
Plutonium-239/240			U	0.0438	pCi/g				
Uncert:				+/-0.164					
TPU:				+/-0.164					
QC1203217121 361720001 DUP									
Plutonium-238	U	-0.0148	U	-0.0593	pCi/g				
Uncert:		+/-0.128		+/-0.137		RPD: 0	N/A		
TPU:		+/-0.128		+/-0.138		RER: 0.464	(0-2)		
Plutonium-239/240	U	0.109	U	-0.0272	pCi/g				
Uncert:		+/-0.213		+/-0.188		RPD: 0	N/A		
TPU:		+/-0.214		+/-0.188		RER: 0.935	(0-2)		
QC1203217122 LCS									
Plutonium-238			U	0.108	pCi/g				12/06/1413:46
Uncert:				+/-0.185					
TPU:				+/-0.186					
						REC:			

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QC Summary

Workorder: 361720

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch 1438902									
Plutonium-239/240	16.0			14.4	pCi/g	90	(80%-120%)		
Uncert:				+/-1.73					
TPU:				+/-2.52					
Batch 1438904									
QC1203217126 MB									
Uranium-233/234			U	-0.0124	pCi/g			HAKB	12/06/1413:45
Uncert:				+/-0.186					
TPU:				+/-0.186					
Uranium-235/236			U	-0.0184	pCi/g				
Uncert:				+/-0.158					
TPU:				+/-0.159					
Uranium-238			U	0.094	pCi/g				
Uncert:				+/-0.216					
TPU:				+/-0.217					
QC1203217127 361720001 DUP									
Uranium-233/234	U	-0.0253	U	-0.119	pCi/g				12/06/1413:39
Uncert:		+/-0.365		+/-0.168		RPD: 0	N/A		
TPU:		+/-0.366		+/-0.168		RER: 0.457	(0-2)		
Uranium-235/236	U	-0.0188	U	0.0246	pCi/g				
Uncert:		+/-0.311		+/-0.257		RPD: 0	N/A		
TPU:		+/-0.313		+/-0.257		RER: 0.210	(0-2)		
Uranium-238	U	0.208	U	-0.017	pCi/g				
Uncert:		+/-0.434		+/-0.147		RPD: 0	N/A		
TPU:		+/-0.436		+/-0.147		RER: 0.957	(0-2)		
QC1203217128 LCS									
Uranium-233/234				23.2	pCi/g				12/06/1413:38
Uncert:				+/-2.87					
TPU:				+/-4.93					
Uranium-235/236				1.33	pCi/g				
Uncert:				+/-0.836					
TPU:				+/-0.867					
Uranium-238	25.2			26.7	pCi/g	REC: 106	(80%-120%)		
Uncert:				+/-3.07					
TPU:				+/-5.54					
Batch 1442050									
QC1203225007 MB									
Thorium-230			U	-0.0219	pCi/g			MXS2	12/10/1409:29
Uncert:				+/-0.373					
TPU:				+/-0.374					
Thorium-232			U	-0.0322	pCi/g				
Uncert:				+/-0.216					
TPU:				+/-0.217					
QC1203225008 361720001 DUP									
Thorium-230	U	0.0898	U	0.021	pCi/g				
Uncert:		+/-0.384		+/-0.377		RPD: 0	N/A		
TPU:		+/-0.387		+/-0.379		RER: 0.249	(0-2)		
Thorium-232	U	-0.0299	U	-0.0193	pCi/g				
Uncert:		+/-0.194		+/-0.218		RPD: 0	N/A		
TPU:		+/-0.195		+/-0.219		RER: 0.0703	(0-2)		
QC1203225009 LCS									

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QC Summary

Workorder: 361720

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Alpha Spec									
Batch 1442050									
Thorium-230	16.0			17.1	pCi/g	REC: 107	(80%-120%)		
	Uncert:			+/-2.66					
	TPU:			+/-4.18					
Thorium-232			U	0.0609	pCi/g				
	Uncert:			+/-0.297					
	TPU:			+/-0.297					
Rad Gamma Spec									
Batch 1438319									
QC1203215625 MB									
Cesium-137			U	0.00783	pCi/g			MXR1	11/29/1415:15
	Uncert:			+/-0.0115					
	TPU:			+/-0.012					
Cobalt-60			U	-0.000648	pCi/g				
	Uncert:			+/-0.012					
	TPU:			+/-0.012					
Europium-152			U	0.00693	pCi/g				
	Uncert:			+/-0.0525					
	TPU:			+/-0.0526					
Europium-154			U	0.00375	pCi/g				
	Uncert:			+/-0.0328					
	TPU:			+/-0.0328					
Europium-155			U	-0.0103	pCi/g				
	Uncert:			+/-0.030					
	TPU:			+/-0.0304					
Protactinium-231			U	0.443	pCi/g				
	Uncert:			+/-0.497					
	TPU:			+/-0.537					
Thorium-234			U	0.104	pCi/g				
	Uncert:			+/-0.628					
	TPU:			+/-0.628					
QC1203215626 361720001 DUP									
Cesium-137		U 0.00357	U	0.00273	pCi/g				11/29/1415:15
	Uncert:	+/-0.0182		+/-0.0287		RPD: 0	N/A		
	TPU:	+/-0.0183		+/-0.0287		RER: 0.0481	(0-2)		
Cobalt-60		U -0.00668	U	0.00447	pCi/g				
	Uncert:	+/-0.0163		+/-0.0185		RPD: 0	N/A		
	TPU:	+/-0.0166		+/-0.0186		RER: 0.878	(0-2)		
Europium-152		U 0.00972	U	0.0158	pCi/g				
	Uncert:	+/-0.0381		+/-0.0428		RPD: 0	N/A		
	TPU:	+/-0.0383		+/-0.0434		RER: 0.207	(0-2)		
Europium-154		U -0.00928	U	0.0157	pCi/g				
	Uncert:	+/-0.0578		+/-0.0646		RPD: 0	N/A		
	TPU:	+/-0.058		+/-0.065		RER: 0.561	(0-2)		
Europium-155		U -0.0177	U	0.00494	pCi/g				
	Uncert:	+/-0.0297		+/-0.0349		RPD: 0	N/A		
	TPU:	+/-0.0308		+/-0.0349		RER: 0.951	(0-2)		
Protactinium-231		U 0.0107	U	-0.0142	pCi/g				
	Uncert:	+/-0.609		+/-0.569		RPD: 0	N/A		
	TPU:	+/-0.609		+/-0.569		RER: 0.0586	(0-2)		
Thorium-234		U 0.0503	U	-0.742	pCi/g				

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QC Summary

Workorder: 361720

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch 1438319									
	Uncert:	+/-0.245		+/-0.920					
	TPU:	+/-0.246		+/-0.993		RPD: 0	N/A		
						RER: 1.52	(0-2)		
QC1203215627 LCS									
Americium-241	491			504	pCi/g	REC: 103	(80%-120%)		12/01/1405:55
	Uncert:			+/-27.5					
	TPU:			+/-46.3					
Cesium-137	187			179	pCi/g	REC: 96	(80%-120%)		
	Uncert:			+/-3.49					
	TPU:			+/-15.8					
Cobalt-60	205			195	pCi/g	REC: 95	(80%-120%)		
	Uncert:			+/-4.15					
	TPU:			+/-15.7					
Europium-152			U	-0.631	pCi/g				
	Uncert:			+/-2.21					
	TPU:			+/-2.23					
Europium-154			U	0.357	pCi/g				
	Uncert:			+/-1.35					
	TPU:			+/-1.36					
Europium-155			U	-0.688	pCi/g				
	Uncert:			+/-2.16					
	TPU:			+/-2.18					
Protactinium-231			U	-2.86	pCi/g				
	Uncert:			+/-31.7					
	TPU:			+/-31.7					
Thorium-234			U	12.6	pCi/g				
	Uncert:			+/-65.7					
	TPU:			+/-66.1					
Batch 1438595									
QC1203216348 MB									
Iodine-129			U	0.305	pCi/g			BSW1	12/02/1412:06
	Uncert:			+/-0.345					
	TPU:			+/-0.372					
QC1203216349 361720001 DUP									
Iodine-129	U	-0.0248	U	0.127	pCi/g				12/02/1413:09
	Uncert:	+/-0.313		+/-0.391		RPD: 0	N/A		
	TPU:	+/-0.313		+/-0.395		RER: 0.591	(0-2)		
QC1203216350 361720001 MS									
Iodine-129	29.7 U	-0.0248		24.1	pCi/g	REC: 81	(75%-125%)		12/03/1409:39
	Uncert:	+/-0.313		+/-4.00					
	TPU:	+/-0.313		+/-4.67					
QC1203216351 LCS									
Iodine-129	29.7			27.7	pCi/g	REC: 93	(80%-120%)		12/02/1414:13
	Uncert:			+/-4.62					
	TPU:			+/-5.39					
Rad Gas Flow									
Batch 1439370									
QC1203218264 MB									
Strontium-90			U	0.163	pCi/g			KSD1	12/09/1411:47
	Uncert:			+/-0.514					

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QC Summary

Workorder: 361720

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gas Flow									
Batch 1439370									
	TPU:			+/-0.515					
QC1203218265 361720001 DUP									
Strontium-90	U	-0.298	U	-0.341	pCi/g				12/09/1411:47
	Uncert:	+/-0.440		+/-0.457		RPD: 0	N/A		
	TPU:	+/-0.440		+/-0.457		RER: 0.132	(0-2)		
QC1203218266 LCS									
Strontium-90	46.9			56.0	pCi/g	REC: 119	(80%-120%)		12/09/1411:48
	Uncert:			+/-2.80					
	TPU:			+/-11.1					
Rad Liquid Scintillation									
Batch 1438534									
QC1203216173 MB									
Nickel-63			U	6.15	pCi/g			TYJ1	12/04/1410:43
	Uncert:			+/-9.29					
	TPU:			+/-9.36					
QC1203216174 361720001 DUP									
Nickel-63	U	4.02	U	3.87	pCi/g				12/04/1411:45
	Uncert:	+/-11.7		+/-13.4		RPD: 0	N/A		
	TPU:	+/-11.8		+/-13.4		RER: 0.0156	(0-2)		
QC1203216175 LCS									
Nickel-63	923			932	pCi/g	REC: 101	(80%-120%)		12/04/1412:47
	Uncert:			+/-23.6					
	TPU:			+/-178					
Batch 1438535									
QC1203216176 MB									
Selenium-79			U	-0.949	pCi/g			EXK2	12/02/1422:23
	Uncert:			+/-2.07					
	TPU:			+/-2.07					
QC1203216177 361720001 DUP									
Selenium-79	U	0.101	U	1.44	pCi/g				12/02/1423:25
	Uncert:	+/-2.80		+/-2.64		RPD: 0	N/A		
	TPU:	+/-2.80		+/-2.66		RER: 0.680	(0-2)		
QC1203216178 LCS									
Selenium-79	396			399	pCi/g	REC: 101	(80%-120%)		12/03/1400:27
	Uncert:			+/-8.49					
	TPU:			+/-89.8					
Batch 1438544									
QC1203216202 MB									
Technetium-99			U	1.68	pCi/g			MYM1	12/07/1415:13
	Uncert:			+/-5.02					
	TPU:			+/-5.03					
QC1203216203 361720001 DUP									
Technetium-99	U	-0.105	U	-0.0568	pCi/g				12/07/1415:40
	Uncert:	+/-6.92		+/-6.07		RPD: 0	N/A		
	TPU:	+/-6.92		+/-6.07		RER: 0.0102	(0-2)		
QC1203216204 LCS									
Technetium-99	240			232	pCi/g	REC: 97	(80%-120%)		12/07/1416:08
	Uncert:			+/-10.3					
	TPU:			+/-28.8					
Batch 1439946									

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QC Summary

Workorder: 361720

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Liquid Scintillation									
Batch 1439946									
QC1203219673 MB									
Carbon-14			U	-0.588	pCi/g			BYS1	12/03/1413:47
Uncert:				+/-1.88					
TPU:				+/-1.88					
QC1203219674 361720001 DUP									
Carbon-14	U	-0.442	U	2.10	pCi/g				12/03/1414:08
Uncert:		+/-2.17		+/-2.00		RPD: 0	N/A		
TPU:		+/-2.17		+/-2.01		RER: 1.69	(0-2)		
QC1203219675 361720001 MS									
Carbon-14	91.9 U	-0.442		97.5	pCi/g	REC: 106	(75%-125%)		12/03/1414:30
Uncert:		+/-2.17		+/-4.43					
TPU:		+/-2.17		+/-8.40					
QC1203219676 LCS									
Carbon-14	87.3			89.0	pCi/g	REC: 102	(80%-120%)		12/03/1414:51
Uncert:				+/-4.16					
TPU:				+/-7.73					
Batch 1439958									
QC1203219723 MB									
Tritium			U	4.28	pCi/g			BYS1	12/03/1411:40
Uncert:				+/-12.5					
TPU:				+/-12.6					
QC1203219724 361720001 DUP									
Tritium	U	0.955	U	3.03	pCi/g				12/03/1411:56
Uncert:		+/-11.8		+/-12.8		RPD: 0	N/A		
TPU:		+/-11.8		+/-12.8		RER: 0.233	(0-2)		
QC1203219725 361720001 MS									
Tritium	72.0 U	0.955		62.7	pCi/g	REC: 87	(75%-125%)		12/03/1412:12
Uncert:		+/-11.8		+/-17.2					
TPU:		+/-11.8		+/-22.3					
QC1203219726 LCS									
Tritium	70.0			65.6	pCi/g	REC: 94	(80%-120%)		12/03/1412:29
Uncert:				+/-17.5					
TPU:				+/-23.0					

Notes:

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

The Qualifiers in this report are defined as follows:

A	The TIC is a suspected aldol-condensation product
B	The analyte was detected in both the associated QC blank and in the sample.
B	The associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample
C	Analyte has been confirmed by GC/MS analysis
D	Results are reported from a diluted aliquot of sample.
E	Concentration exceeds the calibration range of the instrument
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
N	Spike Sample recovery is outside control limits.
P	Aroclor target analyte with greater than 25% difference between column analyses.
T	Spike and/or spike duplicate sample recovery is outside control limits.

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QC Summary

Workorder: **361720**

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

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

o Analyte failed to recover within LCS limits (0rganics only)

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.