GEL Laboratories LLC
a member of The GEL Group INC

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2040 Savage Road Charleston, SC 29407
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gel.com

February 22, 2018

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

Re: CHPRC SAF F17-070
Work Order: 443932
SDG: GEL443932

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on February 16, 2018. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

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

Sincerely,

Heather Shaffer

Heather Shaffer
Project Manager

Purchase Order: 303979
Chain of Custody: F17-070-274, F17-070-275, F17-070-279, F17-070-280, F17-070-459 and F17-070-460
Enclosures

Table of Contents

Case Narrative

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF F17-070
SDG: GEL443932

February 22, 2018

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 February 16, 2018, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

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

Sample Identification
The laboratory received the following samples:

Laboratory Identification	Sample Description
443932001	B3H7Y1
443932002	B3H7Y6
443932003	B3H7Y2
443932004	B3H7Y7
443932005	B3H916
443932006	B3H917

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, General Chemistry, Metals and Radiochemistry.

We certify that this package is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager (or designee) and the laboratory's client services representative as verified by their signatures on this report.

Heather Shaffer

Heather Shaffer
Project Manager

Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL443932
Work Order #: 443932

GC/MS Volatile

Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer

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

Metals

Determination of Metals by ICP-MS

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

General Chemistry

Ion Chromatography

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

Technical Information

Sample Dilutions
The following samples 1203973091 (Non SDG 443931003DUP), 1203973092 (Non SDG 443931003PS), 443932005 (B3H916) and 443932006 (B3H917) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	443932	
	005	006
Chloride	10X	20X
Nitrate	10X	20X
Sulfate	10X	20X

Radiochemistry

I129LL_SEP_LEPS_GS: COMMON (low level)

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

Technical Information

Sample Re-prep/Re-analysis
Samples were reprepped due to high recovery. The re-analysis is being reported.

9310_ALPHABETA_GPC: COMMON

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

Technical Information

Gross Alpha/Beta Preparation Information
High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating.

Miscellaneous Information

Additional Comments
The matrix spike and matrix spike duplicate, 1203973073 (B3H7Y1MS) and 1203973074 (B3H7Y1MSD), aliquots were reduced to conserve sample volume.

TC99_EIE_LSC: COMMON

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

TRITIUM_DIST_LSC: COMMON

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

applicable, with the following exceptions.

Miscellaneous Information

Additional Comments
The matrix spike, 1203973173 (B3H7Y1MS), aliquot was reduced to conserve sample volume.

Certification Statement

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

Chain of Custody and Supporting Documentation

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443932		F17-070-274	PAGE 1 OF 1
COLLECTOR Jeff Tucksen CHPRC	**COMPANY CONTACT** LYNCH, SA	**TELEPHONE NO.** 373-5586	**PROJECT COORDINATOR** LYNCH, SA	**REQUIRED TAT** 7 Days
SAMPLING LOCATION C9607, I-007	**PROJECT DESIGNATION** 200-UP-1 Remedial Action Wells Sampling and Analysis - Water		**SAF NO.** F17-070	ORIGINAL
ICE CHEST NO. GW5-660	**FIELD LOGBOOK NO.** HNF-N-645 6 - 85	**ACTUAL SAMPLE DEPTH** 382.52 FT	**PURCHASE ORDER/CHARGE CODE** 300192	**METHOD OF SHIPMENT** FEDERAL EXPRESS
SHIPPED TO GEL Laboratories, LLC	**OFFSITE PROPERTY NO.** 9061		**BILL OF LADING/AIR BILL NO.** 7714 9119 1873	

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
N/A

PRESERVATION	HNO3 to pH <2	HNO3 to pH <2	None	HNO3 to pH <2	None
HOLDING TIME	6 Months	6 Months	6 Months	6 Months	6 Months
TYPE OF CONTAINER	G/P	P	G/P	G/P	P
NO. OF CONTAINER(S)	1	1	4	1	1
VOLUME	500mL	1L	1L	500mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	9310_ALPHABETA_GPC: COMMON {Gross alpha, Gross beta};	I129LL_SEP_LEPS_GS: COMMON;	TC99_EIE_LSC: COMMON;	TRITIUM_DIST_LSC: COMMON;
SAMPLE NO.	**FILTERED**	**MATRIX***	**SAMPLE DATE**	**SAMPLE TIME**					
B3H7Y1	Yes	WATER	FEB 14 2018	1406	✓	✓	✓	✓	✓

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
Jeff Tucksen CHPRC	FEB 14 2018 1450	SSU-1	FEB 14 2018 1450
SSU-1	FEB 15 2018 0900	TIM CALLAWAY CHPRC T-Callaway	FEB 15 2018 0900
TIM CALLAWAY CHPRC T-Callaway	FEB 15 2018 1400	FEDEX	
FedEx		C-Turplin	2/14/18 0845

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS
TRVL-18-058; Water samples to be purged until field readings of DO stabilize at or above 7,000 µg/L and REDOX potential is at least 200 Mv
(1) 6020_METALS_ICPMS: COMMON {Chromium}; 6020_METALS_ICPMS: COMMON (Add-on) {Manganese, Uranium};

FINAL SAMPLE DISPOSITION	**DISPOSAL METHOD**	**DISPOSED BY**	**DATE/TIME**

PRINTED ON 12/13/2017

FSR ID = FSR55027

TRVL NUM = TRVL-18-058

A-6003-618 (REV 3)

2/22/2018

REV.0

CH2MHill Plateau Remediation Company — **CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** 443932 — **F17-070-279** — **PAGE 1 OF 1**

COLLECTOR Jeff Tucksen CHPRC	**COMPANY CONTACT** LYNCH, SA	**TELEPHONE NO.** 373-5586	**PROJECT COORDINATOR** LYNCH, SA
SAMPLING LOCATION C9607, I-008	**PROJECT DESIGNATION** 200-UP-1 Remedial Action Wells Sampling and Analysis - Water		**SAF NO.** F17-070
ICE CHEST NO. GLOS-422	**FIELD LOGBOOK NO.** HNF-N-645 6-68	**ACTUAL SAMPLE DEPTH** 403.41 ft	**PURCHASE ORDER/CHARGE CODE** 300192
SHIPPED TO GEL Laboratories, LLC	**OFFSITE PROPERTY NO.** 90607		**BILL OF LADING/AIR BILL NO.** 7714 9639 8460

REQUIRED TAT 7 Days

ORIGINAL

METHOD OF SHIPMENT FEDERAL EXPRESS

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
N/A

PRESERVATION	HNO3 to pH <2	HNO3 to pH <2	None	HNO3 to pH <2	None
HOLDING TIME	6 Months	6 Months	6 Months	6 Months	6 Months
TYPE OF CONTAINER	G/P	P	G/P	G/P	P
NO. OF CONTAINER(S)	1	1	4	1	1
VOLUME	500mL	1L	1L	500mL	500mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS	9310_ALPHABETA_GPC: COMMON {Gross alpha, Gross beta};	I129LL_SEP_LEPS_GS: COMMON;	TC99_EIE_LSC: COMMON;	TRITIUM_DIST_LSC: COMMON;
SAMPLE NO.	**FILTERED**	**MATRIX***	**SAMPLE DATE**	**SAMPLE TIME**	
B3H7Y6	Yes	WATER	FEB 15 2018	1317	✓ ✓ ✓ ✓ ✓

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
Jeff Tucksen CHPRC	FEB 15 2018 1325	Chris Fulton CHPRC	FEB 15 2018 1325
Chris Fulton CHPRC	FEB 15 2018 1400	FEDEX	
FedEx		C. Tarplin	2/16/18 0545

SPECIAL INSTRUCTIONS
TRVL-18-058; Water samples to be purged until field readings of DO stabilize at or above 7,000 µg/L and REDOX potential is at least 200 Mv
(1) 6020_METALS_ICPMS: COMMON {Chromium}; 6020_METALS_ICPMS: COMMON (Add-on) {Manganese, Uranium};

FINAL SAMPLE DISPOSITION | **DISPOSAL METHOD** | **DISPOSED BY** | **DATE/TIME**

PRINTED ON 12/13/2017

FSR ID = FSR55028

TRVL NUM = TRVL-18-058

A-6003-618 (REV 3)

2/22/2018

REV.0

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443932			F17-070-275	PAGE 1 OF 1
COLLECTOR Jeff Tucksen CHPRC	**COMPANY CONTACT** LYNCH, SA	**TELEPHONE NO.** 373-5586	**PROJECT COORDINATOR** LYNCH, SA		**REQUIRED TAT** 7 Days
SAMPLING LOCATION C9607, I-007	**PROJECT DESIGNATION** 200-UP-1 Remedial Action Wells Sampling and Analysis - Water		**SAF NO.** F17-070		ORIGINAL
ICE CHEST NO. GWS-660	**FIELD LOGBOOK NO.** HNF-N-645 6 - 85	**ACTUAL SAMPLE DEPTH** 382.52 ft	**PURCHASE ORDER/CHARGE CODE** 300192		**METHOD OF SHIPMENT** FEDERAL EXPRESS
SHIPPED TO GEL Laboratories, LLC	**OFFSITE PROPERTY NO.** 9061		**BILL OF LADING/AIR BILL NO.** 777149119 1873		

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
N/A

PRESERVATION	HCl or H2SO4 to pH <2/Cool <=6C
HOLDING TIME	14 Days
TYPE OF CONTAINER	aGs*
NO. OF CONTAINER(S)	5
VOLUME	40mL
SAMPLE ANALYSIS	8260_VOA_GCMS: COMMON {Carbon tetrachloride, Trichloroethene};

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3H7Y2	No	WATER	FEB 14 2018	1406	✓

2/22/2018

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
Jeff Tucksen CHPRC	FEB 14 2018 1450	SSU-1	FEB 14 2018 1450
SSU-1 TIM CALLAWAY CHPRC	FEB 15 2018 0900	TIM CALLAWAY CHPRC	FEB 15 2018 0900
TIM CALLAWAY CHPRC	FEB 15 2018 1400	FEDEX	
FedEx		C. Tarplin	2/16/18 0845

SIGN/ PRINT NAMES

SPECIAL INSTRUCTIONS
TRVL-18-058; Water samples to be purged until field readings of DO stabilize at or above 7,000 µg/L and REDOX potential is at least 200 Mv

FINAL SAMPLE DISPOSITION | **DISPOSAL METHOD** | **DISPOSED BY** | **DATE/TIME**

PRINTED ON 12/13/2017

FSR ID = FSR55027

TRVL NUM = TRVL-18-058

A-6003-618 (REV 3)

REV.0

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 448932

F17-070-280 | PAGE 1 OF 1

COLLECTOR Jeff Tucksen CHPRC	**COMPANY CONTACT** LYNCH, SA	**TELEPHONE NO.** 373-5586	**PROJECT COORDINATOR** LYNCH, SA
SAMPLING LOCATION C9607, I-008	**PROJECT DESIGNATION** 200-UP-1 Remedial Action Wells Sampling and Analysis - Water		**SAF NO.** F17-070
ICE CHEST NO. GWS-422	**FIELD LOGBOOK NO.** HNF-N-645 6-68	**ACTUAL SAMPLE DEPTH** 403, 41 FT	**PURCHASE ORDER/CHARGE CODE** 300192
SHIPPED TO GEL Laboratories, LLC	**OFFSITE PROPERTY NO.** 9067		**BILL OF LADING/AIR BILL NO.** 7714 9639 8460

REQUIRED TAT 7 Days

ORIGINAL

METHOD OF SHIPMENT FEDERAL EXPRESS

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
N/A

PRESERVATION	HCl or H2SO4 to pH <2/Cool <=6C
HOLDING TIME	14 Days
TYPE OF CONTAINER	aGs*
NO. OF CONTAINER(S)	5
VOLUME	40mL
SAMPLE ANALYSIS	8260_VOA_GCMS: COMMON {Carbon tetrachloride, Trichloroethene};

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3H7Y7	No	WATER	FEB 15 2018	1317	✓

2/22/2018

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES RECEIVED BY/STORED IN	DATE/TIME
Jeff Tucksen CHPRC	FEB 15 2018 1305	Chris Fulton CHPRC	FEB 15 2018 1305
Chris Fulton CHPRC	FEB 15 2018 1405	FEDEX	
FedEx		C. Tarplin	2/16/18 0845

SPECIAL INSTRUCTIONS
TRVL-18-058; Water samples to be purged until field readings of DO stabilize at or above 7,000 µg/L and REDOX potential is at least 200 Mv

FINAL SAMPLE DISPOSITION | **DISPOSAL METHOD** | **DISPOSED BY** | **DATE/TIME**

PRINTED ON 12/13/2017

FSR ID = FSR55028

TRVL NUM = TRVL-18-058

A-6003-618 (REV 3)

REV.0

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443932

F17-070-459 | **PAGE 1 OF 1**

COLLECTOR Jeff Tucksen CHPRC	**COMPANY CONTACT** LYNCH, SA	**TELEPHONE NO.** 373-5586	**PROJECT COORDINATOR** LYNCH, SA
SAMPLING LOCATION C9607, I-007	**PROJECT DESIGNATION** 200-UP-1 Remedial Action Wells Sampling and Analysis - Water		**SAF NO.** F17-070
ICE CHEST NO. GW5-660	**FIELD LOGBOOK NO.** HNF-N-645 6 - 85	**ACTUAL SAMPLE DEPTH** 382.52 FT	**PURCHASE ORDER/CHARGE CODE** 300192
SHIPPED TO GEL Laboratories, LLC	**OFFSITE PROPERTY NO.** 9061		**BILL OF LADING/AIR BILL NO.** 7714 9119 1873

REQUIRED TAT 7 Days

ORIGINAL

METHOD OF SHIPMENT FEDERAL EXPRESS

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
N/A

PRESERVATION	Cool <=6C
HOLDING TIME	48 Hours
TYPE OF CONTAINER	P
NO. OF CONTAINER(S)	1
VOLUME	125mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3H916	Yes	WATER	FEB 14 2018	1406	✓

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN/ PRINT NAMES RECEIVED BY/STORED IN	DATE/TIME
Jeff Tucksen CHPRC	FEB 14 2018 1450	SSU-1	FEB 14 2018 1450
SSU-1	FEB 15 2018 0400	TIM CALLAWAY CHPRC	FEB 15 2018 0400
TIM CALLAWAY CHPRC	FEB 15 2018 1400	FEDEX	
FedEx		C. Tarplin	2/16/18 0845

SPECIAL INSTRUCTIONS
TRVL-18-058; Water samples to be purged until field readings of DO stabilize at or above 7,000 µg/L and REDOX potential is at least 200 Mv
(1) 300.0_ANIONS_IC: COMMON {Chloride, Nitrogen in Nitrate, Sulfate};

FINAL SAMPLE DISPOSITION | **DISPOSAL METHOD** | **DISPOSED BY** | **DATE/TIME**

PRINTED ON 12/13/2017

FSR ID = FSR55027

TRVL NUM = TRVL-18-058

A-6003-618 (REV 3)

2/22/2018

REV.0

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 443932

F17-070-460 | PAGE 1 OF 1

COLLECTOR Jeff Tucksen CHPRC	**COMPANY CONTACT** LYNCH, SA	**TELEPHONE NO.** 373-5586	**PROJECT COORDINATOR** LYNCH, SA
SAMPLING LOCATION C9607, I-008	**PROJECT DESIGNATION** 200-UP-1 Remedial Action Wells Sampling and Analysis - Water		**SAF NO.** F17-070
ICE CHEST NO. GWS-422	**FIELD LOGBOOK NO.** HNF-N-645 L-68	**ACTUAL SAMPLE DEPTH** 2-15-18 304, 403.41 FT	**PURCHASE ORDER/CHARGE CODE** 300192
SHIPPED TO GEL Laboratories, LLC	**OFFSITE PROPERTY NO.** 9067		**BILL OF LADING/AIR BILL NO.** 7714 9629 8460

REQUIRED TAT 7 Days

ORIGINAL

METHOD OF SHIPMENT FEDERAL EXPRESS

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
N/A

PRESERVATION	Cool <=6C
HOLDING TIME	48 Hours
TYPE OF CONTAINER	P
NO. OF CONTAINER(S)	1
VOLUME	125mL
SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS

SAMPLE NO.	FILTERED	MATRIX*	SAMPLE DATE	SAMPLE TIME	
B3H917	Yes	WATER	FEB 15 2018	1317	✓

2/22/2018

CHAIN OF POSSESSION

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
Jeff Tucksen CHPRC	FEB 15 2018 1305	Chris Fulton CHPRC	FEB 15 2018 1305
Chris Fulton CHPRC	FEB 15 2018 1400	FEDEX	
FedEx		C-Tamplin	2/16/18 0545

SPECIAL INSTRUCTIONS
TRVL-18-058; Water samples to be purged until field readings of DO stabilize at or above 7,000 µg/L and REDOX potential is at least 200 Mv
(1) 300.0_ANIONS_IC: COMMON {Chloride, Nitrogen in Nitrate, Sulfate};

FINAL SAMPLE DISPOSITION | **DISPOSAL METHOD** | **DISPOSED BY** | **DATE/TIME**

REV.0

PRINTED ON 12/13/2017

FSR ID = FSR55028

TRVL NUM = TRVL-18-058

A-6003-618 (REV 3)

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

45

Client: CRC	**SDG/AR/COC/Work Order:** 443932
Received By: C. Tarplin	**Date Received:** 16 Feb 2018
Carrier and Tracking Number	Circle Applicable: FedEx Express FedEx Ground UPS Field Services Courier Other 771494666170 771491191873 771496298585 771496298460 771444454512

Suspected Hazard Information	Yes	No	
Shipped as a DOT Hazardous?		X	Hazard Class Shipped: UN#:
COC/Samples marked or classified as radioactive?	X		Maximum Net Counts Observed* (Observed Counts - Area Background Counts): 0 (CPM) mR/Hr Classified as: (Rad 1) Rad 2 Rad 3
Is package, COC, and/or Samples marked HAZ?		X	If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:

*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.

	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	Chain of custody documents included with shipment?	X			
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	X			Preservation Method: (Wet Ice) Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP: 2°C
4	Daily check performed and passed on IR temperature gun?	X			**Temperature Device Serial #:** IR4-17 Secondary Temperature Device Serial # (If Applicable):
5	Sample containers intact and sealed?	X			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?	X			Sample ID's and Containers Affected: If Preservation added, Lot#:
7	Do any samples require Volatile Analysis?	X			If Yes, Are Encores or Soil Kits present? Yes___ No X (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes X No___ N/A___ (If unknown, select No) VOA vials free of headspace? Yes___ No X N/A___ Sample ID's and containers affected: B3H7Y7 has one vial w/ headspace B3H4B9 has one vial w/ headspace B3H7Y2 has one vial w/ headspace
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			

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials MSH Date 02/19/18 Page 1 of 1

GL-CHL-SR-001 Rev 5

Data Review Qualifier Definitions

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

Report Date: 22−FEB−18

Project Specific Qualifier Definitions for GEL Client Code: CPRC

Qualifier	Qualifier Definition	Department	Fraction
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.		
J	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).Value is estimated	Organics	
P	Aroclor target analyte with greater than 25% difference between column analyses.	Organics	
C	Analyte has been confirmed by GC/MS analysis	Organics	Pesticide
B	The analyte was detected in both the associated QC blank and in the sample.	Organics	
E	Concentration exceeds the calibration range of the instrument	Organics	
A	The TIC is a suspected aldol−condensation product	Organics	Semi−Volatile
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
N	Spike Sample recovery is outside control limits.		
*	Duplicate analysis not within control limits	Inorganics	
>	Result greater than quantifiable range or greater than upper limit of the analysis range	General Chemistry	
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Inorganics	Metals
D	Results are reported from a diluted aliquot of sample.		
E	Reported value is estimated due to interferences. See comment in narrative.	Inorganics	Metals
M	Duplicate precision not met.	Inorganics	Metals
o	Analyte failed to recover within LCS limits (0rganics only)	Organics	
S	Reported value determined by the Method of Standard Additions (MSA)	Inorganics	
T	Spike and/or spike duplicate sample recovery is outside control limits.	Organics	
W	Post−digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Inorganics	
B	The analyte was detected in the associated method blank >/= MDC or >5% sample activity.	Radiological	
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
+	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Inorganics	
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	General Chemistry	
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Inorganics	Metals
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.	General Chemistry	
<	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	General Chemistry	
UX	Gamma Spectroscopy−−Uncertain identification	Radiological	

Laboratory Certifications

List of current GEL Certifications as of 22 February 2018

State	Certification
Alaska	17−018
Arkansas	88−0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−15−00283, P330−15−00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA180011
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE−OS−26−13
Nevada	SC000122018−1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R−158
Oklahoma	9904
Pennsylvania NELAP	68−00485
Puerto Rico	SC00012
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−18−13
Utah NELAP	SC000122017−25
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Volatile Analysis

Case Narrative

GC/MS Volatile
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL443932
Work Order #: 443932

Product: **Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer**
Analytical Method: SW846 8260C
Analytical Procedure: GL-OA-E-038 REV# 26
Analytical Batch: 1739833

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

GEL Sample ID#	Client Sample Identification
443932003	B3H7Y2
443932004	B3H7Y7
1203973334	Method Blank (MB)
1203973335	Laboratory Control Sample (LCS)
1203973336	443833001(NonSDG) Post Spike (PS)
1203973337	443833001(NonSDG) Post Spike Duplicate (PSD)

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

Data Summary:

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

Certification Statement

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

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Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL443932 GEL Work Order: 443932

The Qualifiers in this report are defined as follows:

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.

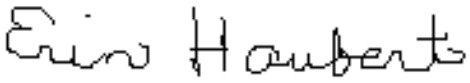
RA Indicates that sample is re-analyzed without re-extraction.

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:  **Name: Erin Haubert**

Date: 22 FEB 2018 **Title: Data Validator**

Sample Data Summary

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**GEL443932**	**Date Collected:**	**02/14/2018 14:06**	**Matrix:**	**WATER**
Lab Sample ID:	**443932003**	**Date Received:**	**02/16/2018 08:45**		
		Client:	**CPRC001**	**Project:**	**CPRC0F17070**
Client ID:	**B3H7Y2**	**Method:**	**SW846 8260C**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1739833**	**Inst:**	**VOA3.I**	**Dilution:**	**1**
Run Date:	**02/16/2018 15:58**	**Analyst:**	**JP1**	**Purge Vol:**	**5 mL**
Prep Date:	**02/16/2018 15:58**				
Data File:	**021618V3\3V513.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
56-23-5	Carbon tetrachloride		14.7	ug/L	0.300	2.00	5.00
79-01-6	Trichloroethylene	J	2.78	ug/L	0.300	2.00	5.00

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**GEL443932**	**Date Collected:**	**02/15/2018 13:17**	**Matrix:**	**WATER**
Lab Sample ID:	**443932004**	**Date Received:**	**02/16/2018 08:45**		
		Client:	**CPRC001**	**Project:**	**CPRC0F17070**
Client ID:	**B3H7Y7**	**Method:**	**SW846 8260C**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1739833**	**Inst:**	**VOA3.I**	**Dilution:**	**1**
Run Date:	**02/16/2018 16:30**	**Analyst:**	**JP1**	**Purge Vol:**	**5 mL**
Prep Date:	**02/16/2018 16:30**				
Data File:	**021618V3\3V514.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
56-23-5	Carbon tetrachloride		28.0	ug/L	0.300	2.00	5.00
79-01-6	Trichloroethylene	J	4.89	ug/L	0.300	2.00	5.00

Quality Control Summary

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

QC Summary

Report Date: February 22, 2018

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

Contact: **Mr. Scot Fitzgerald**

Workorder: **443932**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS										
Batch 1739833										
QC1203973335 LCS										
Carbon tetrachloride	50.0			49.7	ug/L		99	(70%-130%)	JP1	02/16/18 10:43
Trichloroethylene	50.0			48.3	ug/L		97	(70%-130%)		
**1,2-Dichloroethane-d4	50.0			52.3	ug/L		105	(70%-130%)		
**Bromofluorobenzene	50.0			51.1	ug/L		102	(70%-130%)		
**Toluene-d8	50.0			46.8	ug/L		94	(70%-130%)		
QC1203973334 MB										
Carbon tetrachloride			U	0.300	ug/L					02/16/18 12:17
Trichloroethylene			U	0.300	ug/L					
**1,2-Dichloroethane-d4	50.0			53.1	ug/L		106	(70%-130%)		
**Bromofluorobenzene	50.0			51.5	ug/L		103	(70%-130%)		
**Toluene-d8	50.0			46.9	ug/L		94	(70%-130%)		
QC1203973336 443833001 PS										
Carbon tetrachloride	50.0	U	0.00	58.8	ug/L		118	(70%-130%)		02/16/18 19:07
Trichloroethylene	50.0	U	0.00	53.7	ug/L		107	(70%-130%)		
**1,2-Dichloroethane-d4	50.0		51.1	53.5	ug/L		107	(70%-130%)		

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QC Summary

Workorder: **443932**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS											
Batch 1739833											
**Bromofluorobenzene	50.0		50.5		50.0	ug/L		100	(70%-130%)	JP1	02/16/18 19:07
**Toluene-d8	50.0		48.7		46.3	ug/L		93	(70%-130%)		
QC1203973337 443833001 PSD											
Carbon tetrachloride	50.0	U	0.00		55.6	ug/L	6	111	(0%-20%)		02/16/18 19:39
Trichloroethylene	50.0	U	0.00		51.7	ug/L	4	103	(0%-20%)		
**1,2-Dichloroethane-d4	50.0		51.1		49.3	ug/L		99	(70%-130%)		
**Bromofluorobenzene	50.0		50.5		48.3	ug/L		97	(70%-130%)		
**Toluene-d8	50.0		48.7		44.9	ug/L		90	(70%-130%)		

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
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- o Analyte failed to recover within LCS limits (0rganics only)

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QC Summary

Workorder: **443932**

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

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

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

Surrogate Recovery Report

SDG Number: GEL443932

Matrix Type: LIQUID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203973335	LCS for batch 1739833	105	94	102
1203973334	MB for batch 1739833	106	94	103
443932003	B3H7Y2	106	95	102
443932004	B3H7Y7	103	95	101
1203973336	B3D7T6PS	107	93	100
1203973337	B3D7T6PSD	99	90	97

Surrogate		Acceptance Limits
DCED4	= 1,2-Dichloroethane-d4	(70%-130%)
TOL	= Toluene-d8	(70%-130%)
BFB	= Bromofluorobenzene	(70%-130%)

* Recovery outside Acceptance Limits
# Column to be used to flag recovery values
D Sample Diluted

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL443932
Work Order #: 443932

Product: **Determination of Metals by ICP-MS**
Analytical Method: SW846 3005A/6020B
Analytical Procedure: GL-MA-E-014 REV# 32
Analytical Batch: 1739928

Preparation Method: SW846 3005A
Preparation Procedure: GL-MA-E-006 REV# 14
Preparation Batch: 1739927

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

GEL Sample ID#	Client Sample Identification
443932001	B3H7Y1
443932002	B3H7Y6
1203973653	Method Blank (MB)**ICP-MS**
1203973654	Laboratory Control Sample (LCS)
1203973657	443932001(B3H7Y1L) Serial Dilution (SD)
1203973655	443932001(B3H7Y1S) Matrix Spike (MS)
1203973656	443932001(B3H7Y1SD) Matrix Spike Duplicate (MSD)

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

Data Summary:

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

Calibration Information

ICSA/ICSAB Statement
For the ICP-MS analysis, the ICSA solution contains analyte concentrations which are verified trace impurities indigenous to the purchased standard.

Certification Statement

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

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Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL443932 GEL Work Order: 443932

The Qualifiers in this report are defined as follows:

* Duplicate analysis not within control limits

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

D Results are reported from a diluted aliquot of sample.

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

Review/Validation

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

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

Signature:  **Name: Nik-Cole Elmore**

Date: 22 FEB 2018 **Title: Data Validator**

Sample Data Summary

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL443932 **CONTRACT:** CPRC0F17070 **METHOD TYPE:** SW846

SAMPLE ID: 443932001 **BASIS:** As Received **DATE COLLECTED** 14−FEB−18

CLIENT ID: B3H7Y1 **LEVEL:** Low **DATE RECEIVED** 16−FEB−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−47−3	Chromium	3	ug/L	U	3	10	10	1	MS	SKJ	02/20/18 12:51	180220−1	1739928
7439−96−5	Manganese	33	ug/L		1	5	5	1	MS	SKJ	02/20/18 12:51	180220−1	1739928
7440−61−1	Uranium	2.39	ug/L		0.067	0.2	0.2	1	MS	SKJ	02/20/18 12:51	180220−1	1739928

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739928	1739927	SW846 3005A	50	mL	50	mL	02/16/18	JXM8

***Analytical Methods:**

MS **SW846 3005A/6020B**

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL443932 **CONTRACT:** CPRC0F17070 **METHOD TYPE:** SW846

SAMPLE ID: 443932002 **BASIS:** As Received **DATE COLLECTED** 15−FEB−18

CLIENT ID: B3H7Y6 **LEVEL:** Low **DATE RECEIVED** 16−FEB−18

MATRIX: WATER **%SOLIDS:** 0

CAS	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−47−3	Chromium	3	ug/L	U	3	10	10	1	MS	SKJ	02/20/18 13:11	180220−1	1739928
7439−96−5	Manganese	32	ug/L		1	5	5	1	MS	SKJ	02/20/18 13:11	180220−1	1739928
7440−61−1	Uranium	2.43	ug/L		0.067	0.2	0.2	1	MS	SKJ	02/20/18 13:11	180220−1	1739928

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1739928	1739927	SW846 3005A	50	mL	50	mL	02/16/18	JXM8

***Analytical Methods:**

MS **SW846 3005A/6020B**

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

Report Date: February 22, 2018

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

Contact: **Mr. Scot Fitzgerald**

Workorder: **443932**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time
Metals Analysis - ICPMS												
Batch 1739928												
QC1203973654 LCS												
Chromium	50.0				45.4	ug/L		90.8	(80%-120%)	SKJ	02/20/18	12:39
Manganese	50.0				45.7	ug/L		91.5	(80%-120%)			
Uranium	50.0				46.7	ug/L		93.4	(80%-120%)			
QC1203973653 MB												
Chromium				U	3.00	ug/L					02/20/18	12:35
Manganese				U	1.00	ug/L						
Uranium				U	0.067	ug/L						
QC1203973655 443932001 MS												
Chromium	50.0	U	3.00		49.9	ug/L		99.8	(75%-125%)		02/20/18	12:55
Manganese	50.0		33.0		82.5	ug/L		99	(75%-125%)			
Uranium	50.0		2.39		56.2	ug/L		108	(75%-125%)			
QC1203973656 443932001 MSD												
Chromium	50.0	U	3.00		55.1	ug/L	9.88	110	(0%-20%)		02/20/18	12:59
Manganese	50.0		33.0		87.3	ug/L	5.7	109	(0%-20%)			
Uranium	50.0		2.39		62.3	ug/L	10.4	120	(0%-20%)			

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QC Summary

Workorder: **443932**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1739928										
QC1203973657 443932001 SDILT										
Chromium	U	-0.228	DU	15.0	ug/L	N/A		(0%-20%)	SKJ	02/20/18 13:07
Manganese		33.0	D	6.87	ug/L	4.16		(0%-20%)		
Uranium		2.39	D	0.540	ug/L	12.8		(0%-20%)		

Notes:

The Qualifiers in this report are defined as follows:

- * Duplicate analysis not within control limits
- + Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.
- E Reported value is estimated due to interferences. See comment in narrative.
- M Duplicate precision not met.
- N Spike Sample recovery is outside control limits.
- S Reported value determined by the Method of Standard Additions (MSA)
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

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

General Chem Analysis

Case Narrative

General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL443932
Work Order #: 443932

Product: **Ion Chromatography**
Analytical Method: 300.0_ANIONS_IC
Analytical Procedure: GL-GC-E-086 REV# 25
Analytical Batch: 1739732

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

GEL Sample ID#	Client Sample Identification
443932005	B3H916
443932006	B3H917
1203973089	Method Blank (MB)
1203973090	Laboratory Control Sample (LCS)
1203973091	443931003(NonSDG) Sample Duplicate (DUP)
1203973092	443931003(NonSDG) Post Spike (PS)

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

Data Summary:

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

Technical Information

Sample Dilutions
The following samples 1203973091 (Non SDG 443931003DUP), 1203973092 (Non SDG 443931003PS), 443932005 (B3H916) and 443932006 (B3H917) were diluted because target analyte concentrations exceeded the calibration range. Dilutions may be required for many reasons, including to minimize matrix interferences or to bring over range target analyte concentrations into the linear calibration range.

Analyte	443932	
	005	006
Chloride	10X	20X
Nitrate	10X	20X
Sulfate	10X	20X

Certification Statement

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

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Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL443932 GEL Work Order: 443932

The Qualifiers in this report are defined as follows:

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

D Results are reported from a diluted aliquot of sample.

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: Kristen Mizzell **Name: Kristen Mizzell**

Date: 21 FEB 2018 **Title: Team Leader**

Sample Data Summary

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

Certificate of Analysis

Report Date: February 21, 2018

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF F17-070

Client Sample ID: B3H916
Sample ID: 443932005
Matrix: WATER
Collect Date: 14-FEB-18 14:06
Receive Date: 16-FEB-18
Collector: Client

Project: CPRC0F17070
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
300.0_ANIONS_IC: COMMON "As Received"												
Chloride	D	20300	670	2000	ug/L		10	MAR1	02/16/18	1051	1739732	1
Nitrate-N	D	22600	330	1000	ug/L		10					
Sulfate	D	36900	1330	4000	ug/L		10					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	300.0_ANIONS_IC	

Notes:

Column headers are defined as follows:

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

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

Certificate of Analysis

Report Date: February 21, 2018

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF F17-070

Client Sample ID: B3H917
Sample ID: 443932006
Matrix: WATER
Collect Date: 15-FEB-18 13:17
Receive Date: 16-FEB-18
Collector: Client

Project: CPRC0F17070
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography												
300.0_ANIONS_IC: COMMON "As Received"												
Chloride	D	21400	1340	4000	ug/L		20	MAR1	02/16/18	1442	1739732	1
Nitrate-N	D	36600	660	2000	ug/L		20					
Sulfate	D	41400	2660	8000	ug/L		20					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	300.0_ANIONS_IC	

Notes:

Column headers are defined as follows:

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

Quality Control Summary

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

QC Summary

Report Date: February 21, 2018

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

Contact: **Mr. Scot Fitzgerald**

Workorder: **443932**

Parmname	NOM		Sample	Qual	QC	Units	RPD%		REC%	Range	Anlst	Date	Time
Ion Chromatography													
Batch 1739732													
QC1203973091 443931003 DUP													
Chloride		D	23400	D	23600	ug/L	0.588			(0%-20%)	MAR1	02/16/18	19:02
Nitrate-N			423		432	ug/L	2.25	^		(+/-250)		02/16/18	17:06
Sulfate		D	59300	D	59200	ug/L	0.179			(0%-20%)		02/16/18	19:02
QC1203973090 LCS													
Chloride	5000				4900	ug/L			98.1	(80%-120%)		02/16/18	16:37
Nitrate-N	2500				2510	ug/L			100	(80%-120%)			
Sulfate	10000				10000	ug/L			100	(80%-120%)			
QC1203973089 MB													
Chloride				U	67.0	ug/L						02/16/18	16:09
Nitrate-N				U	33.0	ug/L							
Sulfate				U	133	ug/L							
QC1203973092 443931003 PS													
Chloride	5.00	D	2.34	D	7.39	mg/L			101	(75%-125%)		02/16/18	19:31
Nitrate-N	2.50		0.423		2.79	mg/L			94.9	(75%-125%)		02/16/18	17:35
Sulfate	10.0	D	5.93	D	16.2	mg/L			102	(75%-125%)		02/16/18	19:31

Notes:

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

QC Summary

Workorder: **443932**

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

The Qualifiers in this report are defined as follows:

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

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

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

Radiological Analysis

Case Narrative

Radiochemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL443932
Work Order #: 443932

Product: **I129LL_SEP_LEPS_GS: COMMON (low level)**
Analytical Method: DOE EML HASL-300,I-01 Modified
Analytical Procedure: GL-RAD-A-006 REV# 21
Analytical Batch: 1741302

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

GEL Sample ID#	Client Sample Identification
443932001	B3H7Y1
443932002	B3H7Y6
1203976908	Method Blank (MB)
1203976909	443932001(B3H7Y1) Sample Duplicate (DUP)
1203976910	443932001(B3H7Y1) Matrix Spike (MS)
1203976911	Laboratory Control Sample (LCS)

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

Data Summary:

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

Technical Information

Sample Re-prep/Re-analysis
Samples were reprepped due to high recovery. The re-analysis is being reported.

Product: **9310_ALPHABETA_GPC: COMMON**
Analytical Method: 9310_ALPHABETA_GPC
Analytical Procedure: GL-RAD-A-001 REV# 19
Analytical Batch: 1739729

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

GEL Sample ID#	Client Sample Identification
443932001	B3H7Y1
443932002	B3H7Y6
1203973071	Method Blank (MB)
1203973072	443932001(B3H7Y1) Sample Duplicate (DUP)
1203973073	443932001(B3H7Y1) Matrix Spike (MS)
1203973074	443932001(B3H7Y1) Matrix Spike Duplicate (MSD)
1203973075	Laboratory Control Sample (LCS)

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

Data Summary:

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

Technical Information

Gross Alpha/Beta Preparation Information
High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating.

Miscellaneous Information

Additional Comments
The matrix spike and matrix spike duplicate, 1203973073 (B3H7Y1MS) and 1203973074 (B3H7Y1MSD), aliquots were reduced to conserve sample volume.

Product: **TC99_EIE_LSC: COMMON**
Analytical Method: TC99_EIE_LSC
Analytical Procedure: GL-RAD-A-059 REV# 5
Analytical Batch: 1739757

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

GEL Sample ID#	Client Sample Identification
443932001	B3H7Y1
443932002	B3H7Y6
1203973142	Method Blank (MB)
1203973143	443932001(B3H7Y1) Sample Duplicate (DUP)
1203973144	Laboratory Control Sample (LCS)

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

Data Summary:

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

Product: **TRITIUM_DIST_LSC: COMMON**
Analytical Method: TRITIUM_DIST_LSC

Analytical Procedure: GL-RAD-A-002 REV# 22
Analytical Batch: 1739760

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

GEL Sample ID#	Client Sample Identification
443932001	B3H7Y1
443932002	B3H7Y6
1203973171	Method Blank (MB)
1203973172	443932001(B3H7Y1) Sample Duplicate (DUP)
1203973173	443932001(B3H7Y1) Matrix Spike (MS)
1203973174	Laboratory Control Sample (LCS)

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

Data Summary:

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

Miscellaneous Information

Additional Comments
The matrix spike, 1203973173 (B3H7Y1MS), aliquot was reduced to conserve sample volume.

Certification Statement

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

GEL LABORATORIES LLC

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

Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL443932 GEL Work Order: 443932

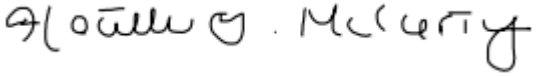
The Qualifiers in this report are defined as follows:

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:** **Heather McCarty**

Date: **22 FEB 2018** **Title:** **Analyst II**

Sample Data Summary

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL443932**	**Client:**	**CPRC001**	**Project:**	**CPRC0F17070**
Lab Sample ID:	**443932001**	**Date Collected:**	**02/14/2018 14:06**	**Matrix:**	**WATER**
		Date Received:	**02/16/2018 08:45**		
Client ID:	**B3H7Y1**			**Prep Basis:**	**"As Received"**
Batch ID:	**1739729**	**Method:**	**9310_ALPHABETA_GPC**	**SOP Ref:**	**GL-RAD-A-001**
Run Date:	**02/19/2018 12:11**	**Analyst:**	**AXH4**	**Instrument:**	**PIC13B**
Data File:	**AB1739729.xls**	**Aliquot:**	**150 mL**	**Count Time:**	**70 min**
Prep Batch:	**1739729**	**Prep Method:**	**EPA 900.0/SW846 9310**		
Prep Date:	**02/16/2018 12:59**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
12587-46-1	Alpha *ALPHA*		4.24	pCi/L	+/-2.61	2.72	2.92	3.00
12587-47-2	Beta *BETA*		234	pCi/L	+/-9.00	39.0	1.73	4.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

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

The MDC is a sample specific MDC.

Rad

Certificate of Analysis
Sample Summary

SDG Number:	**GEL443932**	**Client:**	**CPRC001**	**Project:**	**CPRC0F17070**
Lab Sample ID:	**443932001**	**Date Collected:**	**02/14/2018 14:06**	**Matrix:**	**WATER**
		Date Received:	**02/16/2018 08:45**		
Client ID:	**B3H7Y1**			**Prep Basis:**	**"As Received"**
Batch ID:	**1741302**	**Method:**	**DOE EML HASL-300,I-01 Mo**	**SOP Ref:**	**GL-RAD-A-006**
Run Date:	**02/21/2018 19:29**	**Analyst:**	**MJH1**	**Instrument:**	**GAM05**
Data File:	**I443932001.CNF;2**	**Aliquot:**	**0.8 L**	**Count Time:**	**600 min**
Prep Batch:	**1741302**	**Prep Method:**	**DOE EML HASL-300,I-01 M**		
Prep Date:	**02/21/2018 17:28**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129		0.910	pCi/L	+/-0.614	0.621	0.484	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

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

The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL443932**	**Client:**	**CPRC001**	**Project:**	**CPRC0F17070**
Lab Sample ID:	**443932001**	**Date Collected:**	**02/14/2018 14:06**	**Matrix:**	**WATER**
		Date Received:	**02/16/2018 08:45**		
Client ID:	**B3H7Y1**			**Prep Basis:**	**"As Received"**
Batch ID:	**1739757**	**Method:**	**TC99_EIE_LSC**	**SOP Ref:**	**GL-RAD-A-059**
Run Date:	**02/21/2018 16:07**	**Analyst:**	**CXS7**	**Instrument:**	**LSCGREEN**
Data File:	**E1739757.xls**	**Aliquot:**	**100 mL**	**Count Time:**	**30 min**
Prep Batch:	**1739757**	**Prep Method:**	**DOE EML HASL-300, Tc-02-**		
Prep Date:	**02/20/2018 09:12**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		362	pCi/L	+/-25.1	47.5	27.9	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	3040	3110	CPM	97.8	(30%-105%)

Comments:

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

The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL443932**	**Client:**	**CPRC001**	**Project:**	**CPRC0F17070**
Lab Sample ID:	**443932001**	**Date Collected:**	**02/14/2018 14:06**	**Matrix:**	**WATER**
		Date Received:	**02/16/2018 08:45**		
Client ID:	**B3H7Y1**			**Prep Basis:**	**"As Received"**
Batch ID:	**1739760**	**Method:**	**TRITIUM_DIST_LSC**	**SOP Ref:**	**GL-RAD-A-002**
Run Date:	**02/19/2018 14:57**	**Analyst:**	**MXH8**	**Instrument:**	**LSCRED**
Data File:	**T1739760.xls**	**Aliquot:**	**50 mL**	**Count Time:**	**50 min**
Prep Batch:	**1739760**	**Prep Method:**	**EPA 906.0 Modified**		
Prep Date:	**02/19/2018 08:43**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		7660	pCi/L	+/-391	1530	275	400

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

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

The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL443932**	**Client:**	**CPRC001**	**Project:**	**CPRC0F17070**
Lab Sample ID:	**443932002**	**Date Collected:**	**02/15/2018 13:17**	**Matrix:**	**WATER**
		Date Received:	**02/16/2018 08:45**		
Client ID:	**B3H7Y6**			**Prep Basis:**	**"As Received"**
Batch ID:	**1739729**	**Method:**	**9310_ALPHABETA_GPC**	**SOP Ref:**	**GL-RAD-A-001**
Run Date:	**02/19/2018 12:11**	**Analyst:**	**AXH4**	**Instrument:**	**PIC13A**
Data File:	**AB1739729.xls**	**Aliquot:**	**150 mL**	**Count Time:**	**60 min**
Prep Batch:	**1739729**	**Prep Method:**	**EPA 900.0/SW846 9310**		
Prep Date:	**02/16/2018 12:59**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
12587-46-1	Alpha *ALPHA*		4.32	pCi/L	+/-3.01	3.14	2.96	3.00
12587-47-2	Beta *BETA*		562	pCi/L	+/-15.1	92.1	2.15	4.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

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

The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL443932**	**Client:**	**CPRC001**	**Project:**	**CPRC0F17070**
Lab Sample ID:	**443932002**	**Date Collected:**	**02/15/2018 13:17**	**Matrix:**	**WATER**
		Date Received:	**02/16/2018 08:45**		
Client ID:	**B3H7Y6**			**Prep Basis:**	**"As Received"**
Batch ID:	**1741302**	**Method:**	**DOE EML HASL-300,I-01 Mo**	**SOP Ref:**	**GL-RAD-A-006**
Run Date:	**02/21/2018 19:29**	**Analyst:**	**MJH1**	**Instrument:**	**GAM21**
Data File:	**I443932002.CNF;2**	**Aliquot:**	**0.8 L**	**Count Time:**	**600 min**
Prep Batch:	**1741302**	**Prep Method:**	**DOE EML HASL-300,I-01 M**		
Prep Date:	**02/21/2018 17:28**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
15046-84-1	Iodine-129		1.41	pCi/L	+/-0.462	0.484	0.365	1.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

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

The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL443932**	**Client:**	**CPRC001**	**Project:**	**CPRC0F17070**
Lab Sample ID:	**443932002**	**Date Collected:**	**02/15/2018 13:17**	**Matrix:**	**WATER**
		Date Received:	**02/16/2018 08:45**		
Client ID:	**B3H7Y6**			**Prep Basis:**	**"As Received"**
Batch ID:	**1739757**	**Method:**	**TC99_EIE_LSC**	**SOP Ref:**	**GL-RAD-A-059**
Run Date:	**02/21/2018 16:40**	**Analyst:**	**CXS7**	**Instrument:**	**LSCGREEN**
Data File:	**E1739757.xls**	**Aliquot:**	**100 mL**	**Count Time:**	**30 min**
Prep Batch:	**1739757**	**Prep Method:**	**DOE EML HASL-300, Tc-02-**		
Prep Date:	**02/20/2018 09:12**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		850	pCi/L	+/-33.5	100	27.9	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	3100	3110	CPM	99.5	(30%-105%)

Comments:

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

The MDC is a sample specific MDC.

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL443932**	**Client:**	**CPRC001**	**Project:**	**CPRC0F17070**
Lab Sample ID:	**443932002**	**Date Collected:**	**02/15/2018 13:17**	**Matrix:**	**WATER**
		Date Received:	**02/16/2018 08:45**		
Client ID:	**B3H7Y6**			**Prep Basis:**	**"As Received"**
Batch ID:	**1739760**	**Method:**	**TRITIUM_DIST_LSC**	**SOP Ref:**	**GL-RAD-A-002**
Run Date:	**02/19/2018 15:49**	**Analyst:**	**MXH8**	**Instrument:**	**LSCRED**
Data File:	**T1739760.xls**	**Aliquot:**	**50 mL**	**Count Time:**	**50 min**
Prep Batch:	**1739760**	**Prep Method:**	**EPA 906.0 Modified**		
Prep Date:	**02/19/2018 08:43**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		3770	pCi/L	+/-302	789	282	400

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

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

The MDC is a sample specific MDC.

Quality Control Summary

GEL LABORATORIES LLC

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

QC Summary

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

Workorder: 443932

Report Date: February 22, 2018

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gamma Spec									
Batch 1741302									
QC1203976908 MB									
Iodine-129			U	-0.17	pCi/L			MJH1	02/21/1819:30
Uncert:				+/-0.224					
TPU:				+/-0.237					
QC1203976909 443932001 DUP									
Iodine-129		0.910		0.861	pCi/L				02/21/1819:31
Uncert:		+/-0.614		+/-0.435		RPD: 6	(0% - 100%)		
TPU:		+/-0.621		+/-0.444		RER: 0.126	(0-2)		
QC1203976910 443932001 MS									
Iodine-129	52.0	0.910		56.1	pCi/L	REC: 106	(75%-125%)		02/21/1819:31
Uncert:		+/-0.614		+/-5.74					
TPU:		+/-0.621		+/-8.10					
QC1203976911 LCS									
Iodine-129	52.0			58.3	pCi/L	REC: 112	(80%-120%)		02/22/1805:35
Uncert:				+/-6.80					
TPU:				+/-9.03					
Rad Gas Flow									
Batch 1739729									
QC1203973071 MB									
Alpha			U	0.279	pCi/L			AXH4	02/19/1812:10
Uncert:				+/-0.903					
TPU:				+/-0.904					
Beta			U	-0.917	pCi/L				
Uncert:				+/-1.28					
TPU:				+/-1.28					
QC1203973072 443932001 DUP									
Alpha		4.24		3.05	pCi/L				02/19/1812:10
Uncert:		+/-2.61		+/-2.21		RPD: 33	(0% - 100%)		
TPU:		+/-2.72		+/-2.28		RER: 0.658	(0-2)		
Beta		234		211	pCi/L				
Uncert:		+/-9.00		+/-8.09		RPD: 10	(0%-20%)		
TPU:		+/-39.0		+/-35.7		RER: 0.86	(0-2)		
QC1203973073 443932001 MS									
Alpha	483	4.24		495	pCi/L	REC: 102	(75%-125%)		02/19/1812:10
Uncert:		+/-2.61		+/-49.2					
TPU:		+/-2.72		+/-95.9					
Beta	1880	234		2330	pCi/L	REC: 111	(75%-125%)		
Uncert:		+/-9.00		+/-75.5					
TPU:		+/-39.0		+/-397					
QC1203973074 443932001 MSD									
Alpha	483	4.24		433	pCi/L	REC: 89	(75%-125%)		02/19/1812:10
Uncert:		+/-2.61		+/-43.7		RPD: 13	(0%-20%)		
TPU:		+/-2.72		+/-85.2		RER: 0.947	(0-2)		
Beta	1880	234		2150	pCi/L	REC: 102	(75%-125%)		
Uncert:		+/-9.00		+/-71.8		RPD: 8	(0%-20%)		

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QC Summary

Workorder: **443932**

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gas Flow									
Batch 1739729									
	TPU:	+/-39.0		+/-363					
						RER: 0.65	(0-2)		
QC1203973075 LCS									
Alpha	80.6			70.8	pCi/L	REC: 88	(80%-120%)		02/19/1812:11
	Uncert:			+/-7.15					
	TPU:			+/-14.0					
Beta	314			318	pCi/L	REC: 101	(80%-120%)		
	Uncert:			+/-11.1					
	TPU:			+/-54.8					
Rad Liquid Scintillation									
Batch 1739757									
QC1203973142 MB									
Technetium-99			U	-2.17	pCi/L			CXS7	02/21/1817:13
	Uncert:			+/-16.5					
	TPU:			+/-16.5					
**Technetium-99m Tracer	3110			2970	CPM	REC: 96	(30%-105%)		
QC1203973143 443932001 DUP									
Technetium-99		362		342	pCi/L				02/21/1817:45
	Uncert:	+/-25.1		+/-24.8		RPD: 6	(0%-20%)		
	TPU:	+/-47.5		+/-45.4		RER: 0.596	(0-2)		
**Technetium-99m Tracer	3110	3040		3050	CPM	REC: 98	(30%-105%)		
QC1203973144 LCS									
Technetium-99	888			739	pCi/L	REC: 83	(80%-120%)		02/21/1818:18
	Uncert:			+/-32.4					
	TPU:			+/-88.4					
**Technetium-99m Tracer	3110			2970	CPM	REC: 96	(30%-105%)		
Batch 1739760									
QC1203973171 MB									
Tritium			U	-18.7	pCi/L			MXH8	02/19/1819:18
	Uncert:			+/-157					
	TPU:			+/-157					
QC1203973172 443932001 DUP									
Tritium		7660		7940	pCi/L				02/19/1820:11
	Uncert:	+/-391		+/-403		RPD: 4	(0%-20%)		
	TPU:	+/-1530		+/-1590		RER: 0.253	(0-2)		
QC1203973173 443932001 MS									
Tritium	5160	7660		12100	pCi/L	REC: 87	(75%-125%)		02/19/1821:03
	Uncert:	+/-391		+/-718					
	TPU:	+/-1530		+/-2460					
QC1203973174 LCS									
Tritium	2580			2200	pCi/L	REC: 85	(80%-120%)		02/19/1821:55
	Uncert:			+/-251					
	TPU:			+/-493					

Notes:

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

The Qualifiers in this report are defined as follows:

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QC Summary

Workorder: **443932**

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

*	Duplicate analysis not within control limits
+	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
<	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
>	Result greater than quantifiable range or greater than upper limit of the analysis range
A	The TIC is a suspected aldol-condensation product
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
B	The analyte was detected in both the associated QC blank and in the sample.
B	The analyte was detected in the associated method blank >/= MDC or >5% sample activity.
C	Analyte has been confirmed by GC/MS analysis
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
D	Results are reported from a diluted aliquot of sample.
E	Concentration exceeds the calibration range of the instrument
E	Reported value is estimated due to interferences. See comment in narrative.
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
M	Duplicate precision not met.
N	Spike Sample recovery is outside control limits.
P	Aroclor target analyte with greater than 25% difference between column analyses.
S	Reported value determined by the Method of Standard Additions (MSA)
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
W	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
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.