

May 11, 2018

Rev 0



gel.com

May 10, 2018

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

Re: CHPRC SAF F18-029  
Work Order: 449750  
SDG: GEL449750

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on May 09, 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,

A handwritten signature in cursive script that reads "Heather Shaffer".

Heather Shaffer  
Project Manager

Purchase Order: 302938 - C08  
Chain of Custody: F18-029-087, F18-029-094 and F18-029-096  
Enclosures



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# Case Narrative

**General Narrative  
for  
CH2MHill Plateau Remediation Company  
CHPRC SAF F18-029  
SDG: GEL449750**

**May 10, 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 May 09, 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:

<b>Laboratory Identification</b>	<b>Sample Description</b>
449750001	B3JJ33
449750002	B3JJ35
449750003	B3JJ26

**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.

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



Heather Shaffer  
Project Manager

**GC/MS Volatile  
Technical Case Narrative  
CH2MHill Plateau Remediation Company (CPRC)  
SDG #: GEL449750  
Work Order #: 449750**

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

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**

**Continuing Calibration Verification Requirements**

The calibration verification standard requirements were not all met for samples. The daily CCV analyzed on 5/4/18 was biased high for Carbon tetrachloride at 27.2%D. The daily CCV analyzed on 5/9/18 was biased high for Carbon tetrachloride at 24.1%D. The results are reported.

**Certification Statement**

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

# **Chain of Custody and Supporting Documentation**

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F18-029-094	PAGE 1 OF 1
COLLECTOR	Tim Callaway /CHPRC	COMPANY CONTACT	SUMNER, LC	TELEPHONE NO.	376-3922
SAMPLING LOCATION	C9880, I-004 DUP	PROJECT DESIGNATION	200-ZP-1 Injection Wells Sampling and Analysis - Water		
ICE CHEST NO.	GWS-671	FIELD LOGBOOK NO.	HNF-N-645 13-5	ACTUAL SAMPLE DEPTH	FT 255.3
SHIPPED TO	GEL Laboratories, LLC	OFFSITE PROPERTY NO.	9418	BILL OF LADING/AIR BILL NO.	772183537660
MATRIX*	A=Air DL=Drum 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	3Gs*		
		NO. OF CONTAINER(S)	5		
		VOLUME	40mL		
		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS		
SAMPLE NO.	B3JJ33	FILTERED	No	MATRIX*	WATER
		SAMPLE DATE	MAY 08 2018	SAMPLE TIME	1113

CHAIN OF POSSESSION	RELINQUISHED BY/REMOVED FROM	DATE/TIME	SIGN / PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME
Tim Callaway /CHPRC	Janelle Zunker /CHPRC	MAY 08 2018 1400	Janelle Zunker /CHPRC	Janelle Zunker /CHPRC	MAY 08 2018 1200
Janelle Zunker /CHPRC	Janelle Zunker /CHPRC	MAY 08 2018 1400	S BOONE	FEDEX	5/19/18 0900
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DISPOSED BY	DATE/TIME		
PRINTED ON 4/19/2018					

**SPECIAL INSTRUCTIONS**  
 TRVL-18-114; \*\* VOA analysis will be conducted with a 24 hour turnaround time on preliminary data. The VOA samples will be placed on a separate COC with a unique HEIS sample number.  
 (1) 8260\_VOA\_GCMS: COMMON {Carbon tetrachloride, Chloroform, Trichloroethene};

**CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST** **449750** **PAGE 1 OF 1**

**COLLECTOR** CH2MHill Plateau Remediation Company  
**COMPANY CONTACT** SUMNER, LC  
**TELEPHONE NO.** 376-3922  
**PROJECT COORDINATOR** SUMNER, LC

**SAMPLING LOCATION** C9880, I-004 FXR  
**PROJECT DESIGNATION** 200-ZP-1 Injection Wells Sampling and Analysis - Water  
**SAF NO.** F18-029  
**PRIORITY TAT** 24 Hours  
**REQUIRED TAT** 30 days

**ICE CHEST NO.** CWS-671  
**FIELD LOGBOOK NO.** HNF-N-645 13-5  
**ACTUAL SAMPLE DEPTH** 255.3 N/A  
**ORIGINAL**

**SHIPPED TO** GEL Laboratories, LLC  
**OFFSITE PROPERTY NO.** 9418  
**PURCHASE ORDER/CHARGE CODE** 302938  
**METHOD OF SHIPMENT** FEDERAL EXPRESS

**BILL OF LADING/AIR BILL NO.** 7721 83537660

<b>MATRIX*</b> 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	<b>POSSIBLE SAMPLE HAZARDS/ REMARKS</b> *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.	<b>PRESERVATION</b> HCl or H2SO4 to pH <2/Cool <=6C
	<b>HOLDING TIME</b> 14 Days	
	<b>TYPE OF CONTAINER</b> aGS*	
	<b>NO. OF CONTAINER(S)</b> 5	
	<b>VOLUME</b> 40mL	
	<b>SAMPLE ANALYSIS</b> SEE ITEM (1) IN SPECIAL INSTRUCTIONS	
<b>SAMPLE NO.</b> B3JJ35	<b>FILTERED</b> No	<b>SAMPLE DATE</b> MAY 08 2018
	<b>MATRIX*</b> WATER	<b>SAMPLE TIME</b> 1113
	<b>SPECIAL HANDLING AND/OR STORAGE</b> N/A	<input checked="" type="checkbox"/>

**CHAIN OF POSSESSION**

RELINQUISHED BY/REMOVED FROM  
 Tim Callaway CHPRC  
 DATE/TIME: MAY 08 2018 1205

SIGN/ PRINT NAMES RECEIVED BY/STORED IN  
 Janelle Zunker CHPRC  
 DATE/TIME: MAY 08 2018 1200

FEDEX

DISPOSED BY: S. BOONE / 5/18/18 0900

**FINAL SAMPLE DISPOSITION** PRINTED ON 4/5/2018

**DISPOSAL METHOD** FSR ID = FSR59704

**DATE/TIME** TRVL NUM = TRVL-18-114

**SPECIAL INSTRUCTIONS**  
 TRVL-18-114; \*\* VOA analysis will be conducted with a 24 hour turnaround time on preliminary data. The VOA samples will be placed on a separate COC with a unique HEIS sample number.  
 (-) 8260\_VOA\_GCMS: COMMON {Carbon tetrachloride, Chloroform, Trichloroethene};

A-6003-618 (REV 3)

CH2M Hill Plateau Remediation Company  
 COLLECTOR: Tim Callaway /CHPRC  
 CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST: 449750  
 F18-029-087  
 PAGE 1 OF 1  
 COMPANY CONTACT: SUMNER, LC  
 TELEPHONE NO.: 376-3922  
 PROJECT COORDINATOR: SUMNER, LC  
 PRIORITY TAT: 24 Hours  
 REQUIRED TAT: 30 days  
 PROJECT DESIGNATION: 200-ZP-1 Injection Wells Sampling and Analysis - Water  
 SAF NO.: F18-029  
 PROJECT ORDER/CHARGE CODE: 302938  
 METHOD OF SHIPMENT: ORIGINAL  
 FEDERAL EXPRESS  
 FIELD LOGBOOK NO.: HNF-N-645 13-5  
 ACTUAL SAMPLE DEPTH: 255.3 FT  
 PURCHASE ORDER/CHARGE CODE: 302938  
 BILL OF LADING/AIR BILL NO.: 7721 8353 7660  
 OFFSITE PROPERTY NO.: 9418

MATRIX*	POSSIBLE SAMPLE HAZARDS/ REMARKS	PRESERVATION	HCl or H2SO4 to pH <2/Cool <=6C
DL=Drum	*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.	HOLDING TIME	14 Days
DS=Drum		TYPE OF CONTAINER	agS*
L=Liquid		NO. OF CONTAINER(S)	5
O=Oil		VOLUME	40mL
S=Soil		SAMPLE ANALYSIS	SEE ITEM (1) IN SPECIAL INSTRUCTIONS
SE=Sediment		SAMPLE DATE	MAY 08 2018
T=Tissue		SAMPLE TIME	1113
V=Vegetation			
W=Water			
WI=Wipe			
X=Other			
SPECIAL HANDLING AND/OR STORAGE	N/A		
SAMPLE NO.	B3JJ26	FILTERED	No
		MATRIX*	WATER

CH2M Hill Plateau Remediation Company  
 COLLECTOR: Tim Callaway /CHPRC  
 CHAIN OF POSSESSION  
 RELINQUISHED BY/REMOVED FROM: Tim Callaway /CHPRC  
 DATE/TIME: MAY 08 2018 1205  
 RECEIVED BY/STORED IN: Janella Zunker /CHPRC  
 DATE/TIME: MAY 08 2018 1205  
 SIGN/PRINT NAMES: Janella Zunker /CHPRC  
 SPECIAL INSTRUCTIONS: TRVL-18-114; \*\* VOA analysis will be conducted with a 24 hour turnaround time on preliminary data. The VOA samples will be placed on a separate COC with a unique HEIS sample number.  
 (1) 8260\_VOA\_GCMS: COMMON {Carbon tetrachloride, Chloroform, Trichloroethene};  
 DISPOSED BY: SBOONE /FEBEX  
 DATE/TIME: 5/9/18 900  
 FINAL SAMPLE DISPOSITION: SBOONE /FEBEX  
 DISPOSAL METHOD: FEBEX  
 DATE/TIME: 5/9/18 900  
 PRINTED ON: 4/19/2018  
 FSR ID = FSR59702  
 TRVL NUM = TRVL-18-114  
 A-6003-618 (REV 3)

SAMPLE RECEIPT & REVIEW FORM

Client: CPRC  
Received By: STACY BOONE

SDG/AR/COC/Work Order: 449750  
Date Received: 5/9/18

Carrier and Tracking Number

Circle Applicable:  
FedEx Express      FedEx Ground      UPS      Field Services      Courier      Other     

7721 8353 7660 - ic    7721 8353 8049 - ic

Suspected Hazard Information

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

Shipped as a DOT Hazardous?

Hazard Class Shipped: \_\_\_\_\_ UN#: \_\_\_\_\_

COC/Samples marked or classified as radioactive?

Maximum Net Counts Observed\* (Observed Counts - Area Background Counts):      CPM / mR/Hr  
Classified as: Rad 1 Rad 2 Rad 3

Is package, COC, and/or Samples marked HAZ?

If yes, select Hazards below, and contact the GEL Safety Group.  
PCB's      Flammable      Foreign Soil      RCRA      Asbestos      Beryllium      Other: \_\_\_\_\_

Sample Receipt Criteria

Yes NA No Comments/Qualifiers (Required for Non-Conforming Items)

1 Shipping containers received intact and sealed?

Circle Applicable: Seals broken      Damaged container      Leaking container      Other (describe) \_\_\_\_\_

2 Chain of custody documents included with shipment?

3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?\*

Preservation Method: Wet Ice      Ice Packs      Dry Ice      None      Other: \_\_\_\_\_  
\*all temperatures are recorded in Celsius

4 Daily check performed and passed on IR temperature gun?

Temperature Device Serial #: IR3-17 TEMP: \_\_\_\_\_  
Secondary Temperature Device Serial # (If Applicable): \_\_\_\_\_

5 Sample containers intact and sealed?

Circle Applicable: Seals broken      Damaged container      Leaking container      Other (describe) \_\_\_\_\_

6 Samples requiring chemical preservation at proper pH?

Sample ID's and Containers Affected: \_\_\_\_\_

7 Do any samples require Volatile Analysis?

If Preservation added, Lot#: \_\_\_\_\_  
If Yes, Are Encores or Soil Kits present? Yes      No      (If yes, take to VOA Freezer)  
Do VOA vials contain acid preservation? Yes      No      N/A (If unknown, select No)  
VOA vials free of headspace? Yes      No      N/A  
Sample ID's and containers affected: \_\_\_\_\_

8 Samples received within holding time?

ID's and tests affected: \_\_\_\_\_

9 Sample ID's on COC match ID's on bottles?

Sample ID's and containers affected: \_\_\_\_\_

10 Date & time on COC match date & time on bottles?

Sample ID's affected: \_\_\_\_\_

11 Number of containers received match number indicated on COC?

Sample ID's affected: \_\_\_\_\_

12 Are sample containers identifiable as GEL provided?

13 COC form is properly signed in relinquished/received sections?

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials MEH Date 5/10/18 Page 1 of 1

# **Data Review Qualifier Definitions**

## Project Specific Qualifier Definitions for GEL Client Code: CPRC

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

# Laboratory Certifications

## List of current GEL Certifications as of 10 May 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 Radiochem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-18-13
Utah NELAP	SC000122018-26
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 #: GEL449750  
Work Order #: 449750**

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

**Analytical Method: SW846 8260C**

**Analytical Procedure: GL-OA-E-038 REV# 26**

**Analytical Batch: 1761712**

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

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
449750001	B3JJ33
449750002	B3JJ35
449750003	B3JJ26
1204022745	Method Blank (MB)
1204022746	Laboratory Control Sample (LCS)
1204022747	449417001(NonSDG) Post Spike (PS)
1204022748	449417001(NonSDG) Post Spike Duplicate (PSD)
1204025546	Method Blank (MB)
1204025547	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.

**Calibration Information**

**Continuing Calibration Verification Requirements**

The calibration verification standard requirements were not all met for samples . The daily CCV analyzed on 5/4/18 was biased high for Carbon tetrachloride at 27.2%D. The daily CCV analyzed on 5/9/18 was biased high for Carbon tetrachloride at 24.1%D. There were no positive results for any of the analytes that were outside the calibration criteria. The results are reported.

**Certification Statement**

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

**GEL LABORATORIES LLC**

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

**Qualifier Definition Report  
for**

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL449750 GEL Work Order: 449750

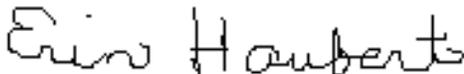
**The Qualifiers in this report are defined as follows:**

- 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:** 11 MAY 2018

**Title:** Data Validator

# Sample Data Summary

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

<b>SDG Number:</b> GEL449750	<b>Date Collected:</b> 05/08/2018 11:13	<b>Matrix:</b> WATER
<b>Lab Sample ID:</b> 449750001	<b>Date Received:</b> 05/09/2018 09:00	
<b>Client ID:</b> B3JJ33	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0F18029
<b>Batch ID:</b> 1761712	<b>Method:</b> SW846 8260C	<b>SOP Ref:</b> GL-OA-E-038
<b>Run Date:</b> 05/09/2018 19:20	<b>Inst:</b> VOA3.I	<b>Dilution:</b> 1
<b>Prep Date:</b> 05/09/2018 19:20	<b>Analyst:</b> JP1	<b>Purge Vol:</b> 5 mL
<b>Data File:</b> 050918V3\3H314.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
56-23-5	Carbon tetrachloride	J	1.82	ug/L	0.300	2.00	5.00
67-66-3	Chloroform	J	0.480	ug/L	0.300	2.00	5.00
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	2.00	5.00

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

<b>SDG Number:</b> GEL449750	<b>Date Collected:</b> 05/08/2018 11:13	<b>Matrix:</b> WATER
<b>Lab Sample ID:</b> 449750002	<b>Date Received:</b> 05/09/2018 09:00	
<b>Client ID:</b> B3JJ35	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0F18029
<b>Batch ID:</b> 1761712	<b>Method:</b> SW846 8260C	<b>SOP Ref:</b> GL-OA-E-038
<b>Run Date:</b> 05/09/2018 19:51	<b>Inst:</b> VOA3.I	<b>Dilution:</b> 1
<b>Prep Date:</b> 05/09/2018 19:51	<b>Analyst:</b> JP1	<b>Purge Vol:</b> 5 mL
<b>Data File:</b> 050918V3\3H315.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	2.00	5.00
67-66-3	Chloroform	U	0.300	ug/L	0.300	2.00	5.00
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	2.00	5.00

**Volatile**  
**Certificate of Analysis**  
**Sample Summary**

<b>SDG Number:</b> GEL449750	<b>Date Collected:</b> 05/08/2018 11:13	<b>Matrix:</b> WATER
<b>Lab Sample ID:</b> 449750003	<b>Date Received:</b> 05/09/2018 09:00	
<b>Client ID:</b> B3JJ26	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0F18029
<b>Batch ID:</b> 1761712	<b>Method:</b> SW846 8260C	<b>SOP Ref:</b> GL-OA-E-038
<b>Run Date:</b> 05/09/2018 20:22	<b>Inst:</b> VOA3.I	<b>Dilution:</b> 1
<b>Prep Date:</b> 05/09/2018 20:22	<b>Analyst:</b> JP1	<b>Purge Vol:</b> 5 mL
<b>Data File:</b> 050918V3\3H316.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
56-23-5	Carbon tetrachloride	J	1.91	ug/L	0.300	2.00	5.00
67-66-3	Chloroform	J	0.520	ug/L	0.300	2.00	5.00
79-01-6	Trichloroethylene	U	0.300	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: May 10, 2018

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 449750

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1761712										
QC1204022746	LCS										
Carbon tetrachloride	50.0			63.6	ug/L		127	(70%-130%)	JP1	05/04/18	09:45
Chloroform	50.0			58.1	ug/L		116	(70%-130%)			
Trichloroethylene	50.0			56.1	ug/L		112	(70%-130%)			
**1,2-Dichloroethane-d4	50.0			52.5	ug/L		105	(70%-130%)			
**Bromofluorobenzene	50.0			47.5	ug/L		95	(70%-130%)			
**Toluene-d8	50.0			45.8	ug/L		92	(70%-130%)			
QC1204025547	LCS										
Carbon tetrachloride	50.0			62.0	ug/L		124	(70%-130%)		05/09/18	13:39
Chloroform	50.0			56.1	ug/L		112	(70%-130%)			
Trichloroethylene	50.0			53.9	ug/L		108	(70%-130%)			
**1,2-Dichloroethane-d4	50.0			52.1	ug/L		104	(70%-130%)			
**Bromofluorobenzene	50.0			47.8	ug/L		96	(70%-130%)			
**Toluene-d8	50.0			43.2	ug/L		86	(70%-130%)			
QC1204022745	MB										
Carbon tetrachloride			U	0.300	ug/L					05/04/18	11:18

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**QC Summary**

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1761712										
Chloroform			U	0.300	ug/L				JP1	05/04/18	11:18
Trichloroethylene			U	0.300	ug/L						
**1,2-Dichloroethane-d4	50.0			54.0	ug/L		108	(70%-130%)			
**Bromofluorobenzene	50.0			48.0	ug/L		96	(70%-130%)			
**Toluene-d8	50.0			43.4	ug/L		87	(70%-130%)			
QC1204025546 MB											
Carbon tetrachloride			U	0.300	ug/L					05/09/18	15:43
Chloroform			U	0.300	ug/L						
Trichloroethylene			U	0.300	ug/L						
**1,2-Dichloroethane-d4	50.0			55.0	ug/L		110	(70%-130%)			
**Bromofluorobenzene	50.0			47.3	ug/L		95	(70%-130%)			
**Toluene-d8	50.0			47.0	ug/L		94	(70%-130%)			
QC1204022747 449417001 PS											
Carbon tetrachloride	50.0	J	0.530	61.6	ug/L		122	(70%-130%)		05/04/18	17:00
Chloroform	50.0	J	0.410	57.2	ug/L		114	(70%-130%)			
Trichloroethylene	50.0	U	0.00	52.1	ug/L		104	(70%-130%)			
**1,2-Dichloroethane-d4	50.0		56.3	58.1	ug/L		116	(70%-130%)			

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**QC Summary**

Workorder: 449750

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1761712										
**Bromofluorobenzene	50.0	47.0		46.4	ug/L		93	(70%-130%)	JP1	05/04/18	17:00
**Toluene-d8	50.0	42.4		43.1	ug/L		86	(70%-130%)			
QC1204022748 449417001 PSD											
Carbon tetrachloride	50.0	J	0.530	58.5	ug/L	5	116	(0%-20%)		05/04/18	17:31
Chloroform	50.0	J	0.410	55.4	ug/L	3	110	(0%-20%)			
Trichloroethylene	50.0	U	0.00	50.8	ug/L	3	102	(0%-20%)			
**1,2-Dichloroethane-d4	50.0		56.3	51.6	ug/L		103	(70%-130%)			
**Bromofluorobenzene	50.0		47.0	46.3	ug/L		93	(70%-130%)			
**Toluene-d8	50.0		42.4	43.2	ug/L		86	(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

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**QC Summary**

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
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- o Analyte failed to recover within LCS limits (Organics 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.

## Volatile

## Surrogate Recovery Report

SDG Number: GEL449750

Matrix Type: LIQUID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1204022746	LCS for batch 1761712	105	92	95
1204022745	MB for batch 1761712	108	87	96
1204022747	B3J3C0PS	116	86	93
1204022748	B3J3C0PSD	103	86	93
1204025547	LCS for batch 1761712	104	86	96
1204025546	MB for batch 1761712	110	94	95
449750001	B3JJ33	103	88	94
449750002	B3JJ35	106	92	95
449750003	B3JJ26	107	91	89

**Surrogate**

DCED4 = 1,2-Dichloroethane-d4

TOL = Toluene-d8

BFB = Bromofluorobenzene

**Acceptance Limits**

(70%-130%)

(70%-130%)

(70%-130%)

\* Recovery outside Acceptance Limits

# Column to be used to flag recovery values

D Sample Diluted