

June 29, 2016

REV. 1



gel.com

June 27, 2016

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

Re: CHPRC SAF I16-019  
Work Order: 395372  
SDG: GEL395372

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on April 15, 2016. This revised data report has been prepared and reviewed in accordance with GEL's standard operating procedures. Per change order, this package was revised to correct the Appendix IX Volatiles reporting list.

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: 300071JDBA 7H  
Chain of Custody: I16-019-010  
Enclosures



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<b>SAMPLE ISSUE RESOLUTION</b>	<b>SIR NUM</b>	SIR16-482
	<b>REV NUM</b>	0
	<b>DATE INITIATED</b>	7/7/2016

**SAMPLE EVENT INFORMATION**

**SAF NUM(S)** 116-019  
**OPERABLE UNIT(S)** 200-ZP-1  
**PROJECT(S)** CERC16  
**SAMPLE EVENT TITLE(S)** CERC16  
**LABORATORY** GEL Laboratories, LLC

**SAMPLING INFORMATION**

**NUMBER OF SAMPLES** 1  
**SAMPLE NUMBERS** B34KF1  
**SAMPLE MATRIX** WATER  
**COLLECTION DATE** 4/13/2016 - 4/13/2016  
**SDG NUM** GEL395372

**ISSUE BACKGROUND**

**CLASS** Sample Management Issues  
**TYPE** Analyte Correction

**DESCRIPTION** SMR discovered the 8260\_VOA\_GCMS\_IX: COMMON service list for GEL inadvertently omitted several compounds. Omitted compounds were: Bromodichloromethane (75-27-4), bromomethane (74-83-9), ethyl cyanide (107-12-0), Methyl methacrylate (80-62-6), trichlorofluoromethane (75-69-4), cis-1,2-dichloroethene (156-59-2) and 1,4-dichlorobenzene (106-46-7).

**DISPOSITION**

**DESCRIPTION** Please add the omitted compounds.

**JUSTIFICATION** Final Disposition: Add the compounds and re-issue the report.

SUBMITTED BY: Doris Ayres DATE: 07/07/2016  
 ACCEPTED BY: Heather Shaffer DATE: 07/07/2016

# Case Narrative

Per change order, this package was revised to correct the Appedix IX Volatiles reporting list.

**General Narrative  
for  
CH2MHill Plateau Remediation Company  
CHPRC SAF I16-019  
SDG: GEL395372**

**June 27, 2016**

**Laboratory Identification:**

GEL Laboratories LLC  
2040 Savage Road  
Charleston, South Carolina 29407  
(843) 556-8171

**Summary**

**Sample receipt**

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on April 15, 2016, for analysis. The sample was delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

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

**Sample Identification**

The laboratory received the following sample:

<b>Laboratory Identification</b>	<b>Sample Description</b>
395372001	B34KF1

**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.

**June 29, 2016**

Revision #1 29-JUN-2016

**REV. 1**

*Heather Shaffer*

Heather Shaffer  
Project Manager

**GC/MS Volatile  
 Technical Case Narrative  
 CH2MHill Plateau Remediation Company (CPRC)  
 SDG #: GEL395372  
 Work Order #: 395372**

**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 1203531784 (MB), 1203531785 (LCS) and 395372001 (B34KF1). 2-Butanone was above the %D/drift at 20.2% on 4/19/16. There were no positive results for any of the analytes that were outside the calibration criteria. The results are reported.

**Quality Control (QC) Information**

**Matrix Spike/Matrix Spike Duplicate Recovery Statement**

The spike and/or spike duplicate (See Below) recoveries were not all within the acceptance limits. The recoveries were similar. It is believed possible matrix interference has been demonstrated.

Sample	Analyte	Value
1203529151 (Non SDG 395273002PS)	Acetone	60* (70.0%-130.0%)
1203529152 (Non SDG 395273002PSD)	Acetone	60* (70.0%-130.0%)

**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**

81102

C.O.C. # <b>II6-019-010</b>		Page 1 of 1	
<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>			
CH2M Hill Plateau Remediation Company	395372		
Collector Scott King CHPRC	Contact/Requester Karen Waters-Husted	Telephone No. 509-376-4650	
SAF No. II6-019	Sampling Origin Hanford Site	Purchase Order/Charge Code 300071	
Project Title 200ZP1, APRIL 2016	Logbook No. HNF-N-506 82-107	Ice Chest No. GWS-495	
Shipped To (Lab) GEL Laboratories, LLC	Method of Shipment Commercial Carrier	Bill of Lading/Air Bill No. 776108549550	
Protocol CERCLA	Priority: 30 Days	Offsite Property No. 6531	
<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b>		Hold Time	Total Activity Exemption: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
*** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1		SPECIAL INSTRUCTIONS N/A	
Sample No. B34KF1	No/Type Container 4x40-mL aGs*	Sample Analysis 8260_VOA_GCMS_IX: COMMON	Preservative HCl or H2SO4 to pH <=2/Cool <=6C
Filter N	Date W APR 13 7M 14DO	Holding Time 14 Days	

Relinquished By Scott King CHPRC	Print <i>[Signature]</i>	Sign	Date/Time APR 13 2016 1430	Matrix *
Received By SSU-1	Print	Sign	Date/Time APR 13 2016 1430	S = Soil SE = Sediment SO = Solid SL = Sludge W = Water O = Oil A = Air
Relinquished By Scott King CHPRC	Print <i>[Signature]</i>	Sign	Date/Time APR 14 2016 1040	DS = Drum Solids DL = Drum Liquids T = Tissue WI = Wipe L = Liquid V = Vegetation X = Other
Received By L.D. Wall CHPRC	Print <i>[Signature]</i>	Sign	Date/Time APR 14 2016 1040	
Relinquished By Scott King CHPRC	Print <i>[Signature]</i>	Sign	Date/Time APR 14 2016 1400	
Received By FEDEX	Print	Sign	Date/Time APR 14 2016 1400	
Relinquished By Scott King CHPRC	Print <i>[Signature]</i>	Sign	Date/Time APR 14 2016 1400	
Received By C. Seeger / Energy Systems	Print	Sign	Date/Time 04/15/16 0910	
<b>FINAL SAMPLE DISPOSITION</b>	Disposal Method (e.g., Return to customer, per lab procedure, used in process)			Date/Time

A-6004-842 (REV 2)

FSR ID = FSR25347

PRINTED ON 3/1/2016

**SAMPLE RECEIPT & REVIEW FORM**

Client: <u>CPLC</u>		SDG/AR/COC/Work Order: <u>395372</u>
Received By: <u>COY</u>		Date Received: <u>04/15/16</u>
Suspected Hazard Information	Yes <input type="checkbox"/> No <input type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?	<input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0cpm</u>
Classified Radioactive II or III by RSO?	<input checked="" type="checkbox"/>	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?	<input checked="" type="checkbox"/>	
Package, COC, and/or Samples marked as beryllium or asbestos containing?	<input checked="" type="checkbox"/>	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?	<input checked="" type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____
Samples identified as Foreign Soil?	<input checked="" type="checkbox"/>	

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: <u>Ice bags</u> Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius
2a Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>130A02902</u> Secondary Temperature Device Serial # (If Applicable):
3 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
4 Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6 Do Low Level Perchlorate samples have headspace as required?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
7 VOA vials contain acid preservation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If unknown, select No)
8 VOA vials free of headspace (defined as < 6mm bubble)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
9 Are Encore containers present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	(If yes, immediately deliver to Volatiles laboratory)
10 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
11 Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and containers affected:
12 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
13 Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
14 Are sample containers identifiable as GEL provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
15 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
16 Carrier and tracking number.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: <input checked="" type="checkbox"/> FedEx Air <input type="checkbox"/> FedEx Ground <input type="checkbox"/> UPS <input type="checkbox"/> Field Services <input type="checkbox"/> Courier <input type="checkbox"/> Other <u>7701 1200 9104 - 1.8°C</u> <u>7701 0854 9550 - 1.4°C</u>

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials NS Date 4/15/16 Page 1 of 1

# Data Review Qualifier Definitions

GEL LABORATORIES LLC

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

Report Date: 27-JUN-16

Project Specific Qualifier Definitions for GEL Client Code: CPRC

Revision #1 29-JUN-2016

Qualifier	Qualifier Definition	Department	Fraction
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.		
J	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate). Value is estimated	Organics	
P	Aroclor target analyte with greater than 25% difference between column analyses.	Organics	
C	Analyte has been confirmed by GC/MS analysis	Organics	Pesticide
B	The analyte was detected in both the associated QC blank and in the sample.	Organics	
E	Concentration exceeds the calibration range of the instrument	Organics	
A	The TIC is a suspected aldol-condensation product	Organics	Semi-Volatile
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
N	Spike Sample recovery is outside control limits.		
*	Duplicate analysis not within control limits	Inorganics	
>	Result greater than quantifiable range or greater than upper limit of the analysis range	General Chemistry	
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Inorganics	Metals
D	Results are reported from a diluted aliquot of sample.		
E	Reported value is estimated due to interferences. See comment in narrative.	Inorganics	Metals
M	Duplicate precision not met.	Inorganics	Metals
o	Analyte failed to recover within LCS limits (Organics only)	Organics	
S	Reported value determined by the Method of Standard Additions (MSA)	Inorganics	
T	Spike and/or spike duplicate sample recovery is outside control limits.	Organics	
W	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Inorganics	
B	The associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample	Radiological	
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
+	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Inorganics	
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	General Chemistry	
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= 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 27 June 2016**

<b>State</b>	<b>Certification</b>
Alaska	UST-0110
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA160006
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122016-1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	9904
Pennsylvania NELAP	68-00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-16-11
Utah NELAP	SC000122016-20
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

# Volatile Analysis

# Case Narrative

**GC/MS Volatile  
 Technical Case Narrative  
 CH2MHill Plateau Remediation Company (CPRC)  
 SDG #: GEL395372  
 Work Order #: 395372**

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

**Analytical Method:** SW846 8260C

**Analytical Procedure:** GL-OA-E-038 REV# 22

**Analytical Batch:** 1560128

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>
395372001	B34KF1
1203529149	Method Blank (MB)
1203529150	Laboratory Control Sample (LCS)
1203529151	395273002(NonSDG) Post Spike (PS)
1203529152	395273002(NonSDG) Post Spike Duplicate (PSD)
1203531784	Method Blank (MB)
1203531785	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 1203531784 (MB), 1203531785 (LCS) and 395372001 (B34KF1). 2-Butanone was above the %D/drift at 20.2% on 4/19/16. There were no positive results for any of the analytes that were outside the calibration criteria. The results are reported.

**Quality Control (QC) Information**

**Matrix Spike/Matrix Spike Duplicate Recovery Statement**

The spike and/or spike duplicate (See Below) recoveries were not all within the acceptance limits. The recoveries were similar. It is believed possible matrix interference has been demonstrated.

<b>Sample</b>	<b>Analyte</b>	<b>Value</b>
1203529151 (Non SDG 395273002PS)	Acetone	60* (70.0%-130.0%)
1203529152 (Non SDG 395273002PSD)	Acetone	60* (70.0%-130.0%)

**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: GEL395372 GEL Work Order: 395372

**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:** 10 MAY 2016

**Title:** Data Validator

# Sample Data Summary

Volatile  
Certificate of Analysis  
Sample Summary

Page 1 of 2

<b>SDG Number:</b> GEL395372	<b>Date Collected:</b> 04/13/2016 14:00	<b>Matrix:</b> WATER
<b>Lab Sample ID:</b> 395372001	<b>Date Received:</b> 04/15/2016 09:10	
<b>Client ID:</b> B34KF1	<b>Client:</b> CPRC001	<b>Project:</b> CPRC0116019
<b>Batch ID:</b> 1560128	<b>Method:</b> SW846 8260C	<b>SOP Ref:</b> GL-OA-E-038
<b>Run Date:</b> 04/19/2016 16:09	<b>Inst:</b> VOA3.I	<b>Dilution:</b> 1
<b>Prep Date:</b> 04/19/2016 16:09	<b>Analyst:</b> CDS1	<b>Purge Vol:</b> 5 mL
<b>Data File:</b> 041916V3\3F220.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00	5.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	2.00	5.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	2.00	5.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	2.00	5.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	2.00	5.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	2.00	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	2.00	5.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	2.00	5.00
75-15-0	Carbon disulfide	U	1.60	ug/L	1.60	10.0	5.00
56-23-5	Carbon tetrachloride	J	0.780	ug/L	0.300	2.00	5.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	2.00	5.00
67-66-3	Chloroform	J	0.690	ug/L	0.300	2.00	5.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	2.00	5.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	2.00	5.00
75-09-2	Methylene chloride	U	1.60	ug/L	1.60	5.00	5.00
100-42-5	Styrene	U	0.300	ug/L	0.300	2.00	5.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	2.00	5.00
108-88-3	Toluene	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
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00	5.00
156-60-5	trans-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
10061-02-6	trans-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00	5.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	2.00	10.0
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	2.00	10.0
78-93-3	2-Butanone	U	3.00	ug/L	3.00	10.0	10.0
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	2.00	10.0
108-10-1	4-Methyl-2-pentanone	U	3.00	ug/L	3.00	10.0	10.0
107-05-1	Allyl chloride	U	3.00	ug/L	3.00	10.0	10.0
75-00-3	Chloroethane	U	0.300	ug/L	0.300	2.00	10.0
74-87-3	Chloromethane	U	0.300	ug/L	0.300	2.00	10.0
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	2.00	10.0
75-71-8	Dichlorodifluoromethane	U	0.300	ug/L	0.300	2.00	10.0
97-63-2	Ethyl methacrylate	U	3.00	ug/L	3.00	10.0	10.0
74-88-4	Iodomethane	U	3.00	ug/L	3.00	10.0	10.0
126-98-7	Methacrylonitrile	U	3.00	ug/L	3.00	10.0	10.0

Volatile  
Certificate of Analysis  
Sample Summary

Page 2 of 2

SDG Number: GEL395372	Date Collected: 04/13/2016 14:00	Matrix: WATER
Lab Sample ID: 395372001	Date Received: 04/15/2016 09:10	
Client ID: B34KF1	Client: CPRC001	Project: CPRC0116019
Batch ID: 1560128	Method: SW846 8260C	SOP Ref: GL-OA-E-038
Run Date: 04/19/2016 16:09	Inst: VOA3.I	Dilution: 1
Prep Date: 04/19/2016 16:09	Analyst: CDS1	Purge Vol: 5 mL
Data File: 041916V3\3F220.D	Column: DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	2.00	10.0
1330-20-7	Xylenes (total)	U	0.300	ug/L	0.300	6.00	10.0
591-78-6	2-Hexanone	U	3.00	ug/L	3.00	10.0	20.0
67-64-1	Acetone	TU	3.00	ug/L	3.00	10.0	20.0
108-05-4	Vinyl acetate	U	1.60	ug/L	1.60	5.00	50.0
110-57-6	trans-1,4-Dichloro-2-butene	U	1.50	ug/L	1.50	10.0	50.0
75-05-8	Acetonitrile	U	16.7	ug/L	16.7	50.0	100
107-02-8	Acrolein	U	3.00	ug/L	3.00	10.0	100
107-13-1	Acrylonitrile	U	3.00	ug/L	3.00	10.0	100
78-83-1	Isobutyl alcohol	U	33.0	ug/L	33.0	100	500
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	2.00	4.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	2.00	5.00
74-83-9	Bromomethane	U	0.300	ug/L	0.300	2.00	10.0
80-62-6	Methyl methacrylate	U	3.00	ug/L	3.00	10.0	10.0
107-12-0	Propionitrile	U	3.00	ug/L	3.00	10.0	10.0
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	2.00	10.0
156-59-2	cis-1,2-Dichloroethylene	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: June 28, 2016

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CH2M Hill Plateau Remediation Company

MSIN R3-50 CHPRC

PO Box 1600

Richland, Washington

Contact: Mr. Scot Fitzgerald

Workorder: 395372

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1560128										
QC1203529150	LCS										
1,1,1,2-Tetrachloroethane	50.0			50.8	ug/L		102	(70%-130%)	CDS1	04/15/16	07:52
1,1,1-Trichloroethane	50.0			54.7	ug/L		109	(70%-130%)			
1,1,2,2-Tetrachloroethane	50.0			53.4	ug/L		107	(70%-130%)			
1,1,2-Trichloroethane	50.0			49.2	ug/L		98	(70%-130%)			
1,1-Dichloroethane	50.0			52.5	ug/L		105	(70%-130%)			
1,1-Dichloroethylene	50.0			53.8	ug/L		108	(70%-130%)			
1,2,3-Trichloropropane	50.0			49.6	ug/L		99	(70%-130%)			
1,2-Dibromo-3-chloropropane	50.0			55.2	ug/L		110	(70%-130%)			
1,2-Dibromoethane	50.0			49.4	ug/L		99	(70%-130%)			
1,2-Dichloroethane	50.0			49.2	ug/L		98	(70%-130%)			
1,2-Dichloropropane	50.0			51.2	ug/L		102	(70%-130%)			
1,4-Dichlorobenzene	50.0			52.6	ug/L		105	(70%-130%)			
2-Butanone	250			265	ug/L		106	(70%-130%)			
2-Hexanone	250			264	ug/L		106	(70%-130%)			
4-Methyl-2-pentanone	250			224	ug/L		90	(70%-130%)			
Acetone	250			266	ug/L		107	(70%-130%)			
Acetonitrile	1250			1050	ug/L		84	(70%-130%)			
Benzene	50.0			53.5	ug/L		107	(70%-130%)			
Bromodichloromethane	50.0			52.5	ug/L		105	(70%-130%)			
Bromoform	50.0			56.5	ug/L		113	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1560128										
Bromomethane	50.0			39.6	ug/L		79	(70%-130%)	CDS1	04/15/16	07:52
Carbon disulfide	250			257	ug/L		103	(70%-130%)			
Carbon tetrachloride	50.0			52.3	ug/L		105	(70%-130%)			
Chlorobenzene	50.0			52.3	ug/L		105	(70%-130%)			
Chloroethane	50.0			38.1	ug/L		76	(70%-130%)			
Chloroform	50.0			51.1	ug/L		102	(70%-130%)			
Chloromethane	50.0			41.7	ug/L		83	(70%-130%)			
Dibromochloromethane	50.0			53.6	ug/L		107	(70%-130%)			
Dibromomethane	50.0			48.9	ug/L		98	(70%-130%)			
Dichlorodifluoromethane	50.0			42.8	ug/L		86	(70%-130%)			
Ethylbenzene	50.0			51.9	ug/L		104	(70%-130%)			
Iodomethane	250			248	ug/L		99	(70%-130%)			
Methylene chloride	50.0			48.4	ug/L		97	(70%-130%)			
Styrene	50.0			50.0	ug/L		100	(70%-130%)			
Tetrachloroethylene	50.0			52.9	ug/L		106	(70%-130%)			
Toluene	50.0			50.6	ug/L		101	(70%-130%)			
Trichloroethylene	50.0			53.0	ug/L		106	(70%-130%)			
Trichlorofluoromethane	50.0			41.6	ug/L		83	(70%-130%)			
Vinyl acetate	250			220	ug/L		88	(70%-130%)			
Vinyl chloride	50.0			42.0	ug/L		84	(70%-130%)			
Xylenes (total)	150			152	ug/L		101	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1560128										
cis-1,2-Dichloroethylene	50.0			50.6	ug/L		101	(70%-130%)			
cis-1,3-Dichloropropylene	50.0			53.0	ug/L		106	(70%-130%)	CDS1	04/15/16	07:52
trans-1,2-Dichloroethylene	50.0			52.2	ug/L		104	(70%-130%)			
trans-1,3-Dichloropropylene	50.0			53.9	ug/L		108	(70%-130%)			
**1,2-Dichloroethane-d4	50.0			47.1	ug/L		94	(70%-130%)			
**Bromofluorobenzene	50.0			52.8	ug/L		106	(70%-130%)			
**Toluene-d8	50.0			49.3	ug/L		99	(70%-130%)			
QC1203531785 LCS											
1,1,1,2-Tetrachloroethane	50.0			54.7	ug/L		109	(70%-130%)		04/19/16	07:33
1,1,1-Trichloroethane	50.0			60.6	ug/L		121	(70%-130%)			
1,1,2,2-Tetrachloroethane	50.0			55.9	ug/L		112	(70%-130%)			
1,1,2-Trichloroethane	50.0			53.1	ug/L		106	(70%-130%)			
1,1-Dichloroethane	50.0			56.5	ug/L		113	(70%-130%)			
1,1-Dichloroethylene	50.0			60.1	ug/L		120	(70%-130%)			
1,2,3-Trichloropropane	50.0			52.3	ug/L		105	(70%-130%)			
1,2-Dibromo-3-chloropropane	50.0			58.4	ug/L		117	(70%-130%)			
1,2-Dibromoethane	50.0			51.8	ug/L		104	(70%-130%)			
1,2-Dichloroethane	50.0			53.9	ug/L		108	(70%-130%)			
1,2-Dichloropropane	50.0			55.5	ug/L		111	(70%-130%)			
1,4-Dichlorobenzene	50.0			54.9	ug/L		110	(70%-130%)			
2-Butanone	250			308	ug/L		123	(70%-130%)			
2-Hexanone	250			297	ug/L		119	(70%-130%)			
4-Methyl-2-pentanone	250			256	ug/L		102	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1560128										
Acetone	250			310	ug/L		124	(70%-130%)	CDS1	04/19/16	07:33
Acetonitrile	1250			1250	ug/L		100	(70%-130%)			
Benzene	50.0			57.1	ug/L		114	(70%-130%)			
Bromodichloromethane	50.0			56.9	ug/L		114	(70%-130%)			
Bromoform	50.0			58.9	ug/L		118	(70%-130%)			
Bromomethane	50.0			40.5	ug/L		81	(70%-130%)			
Carbon disulfide	250			298	ug/L		119	(70%-130%)			
Carbon tetrachloride	50.0			56.5	ug/L		113	(70%-130%)			
Chlorobenzene	50.0			54.1	ug/L		108	(70%-130%)			
Chloroethane	50.0			45.0	ug/L		90	(70%-130%)			
Chloroform	50.0			55.4	ug/L		111	(70%-130%)			
Chloromethane	50.0			43.2	ug/L		86	(70%-130%)			
Dibromochloromethane	50.0			55.9	ug/L		112	(70%-130%)			
Dibromomethane	50.0			53.7	ug/L		107	(70%-130%)			
Dichlorodifluoromethane	50.0			42.6	ug/L		85	(70%-130%)			
Ethylbenzene	50.0			55.8	ug/L		112	(70%-130%)			
Iodomethane	250			279	ug/L		112	(70%-130%)			
Methylene chloride	50.0			56.2	ug/L		112	(70%-130%)			
Styrene	50.0			52.8	ug/L		106	(70%-130%)			
Tetrachloroethylene	50.0			53.4	ug/L		107	(70%-130%)			
Toluene	50.0			56.1	ug/L		112	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1560128										
Trichloroethylene	50.0			57.2	ug/L		114	(70%-130%)			
Trichlorofluoromethane	50.0			43.0	ug/L		86	(70%-130%)	CDS1	04/19/16	07:33
Vinyl acetate	250			223	ug/L		89	(70%-130%)			
Vinyl chloride	50.0			42.3	ug/L		85	(70%-130%)			
Xylenes (total)	150			159	ug/L		106	(70%-130%)			
cis-1,2-Dichloroethylene	50.0			53.8	ug/L		108	(70%-130%)			
cis-1,3-Dichloropropylene	50.0			59.4	ug/L		119	(70%-130%)			
trans-1,2-Dichloroethylene	50.0			56.5	ug/L		113	(70%-130%)			
trans-1,3-Dichloropropylene	50.0			58.7	ug/L		117	(70%-130%)			
**1,2-Dichloroethane-d4	50.0			47.5	ug/L		95	(70%-130%)			
**Bromofluorobenzene	50.0			51.5	ug/L		103	(70%-130%)			
**Toluene-d8	50.0			48.7	ug/L		97	(70%-130%)			
QC1203529149 MB											
1,1,1,2-Tetrachloroethane			U	0.300	ug/L					04/15/16	08:52
1,1,1-Trichloroethane			U	0.300	ug/L						
1,1,2,2-Tetrachloroethane			U	0.300	ug/L						
1,1,2-Trichloroethane			U	0.300	ug/L						
1,1-Dichloroethane			U	0.300	ug/L						
1,1-Dichloroethylene			U	0.300	ug/L						
1,2,3-Trichloropropane			U	0.300	ug/L						
1,2-Dibromo-3-chloropropane			U	0.500	ug/L						
1,2-Dibromoethane			U	0.300	ug/L						
1,2-Dichloroethane			U	0.300	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1560128										
1,2-Dichloropropane			U	0.300	ug/L				CDS1	04/15/16	08:52
1,4-Dichlorobenzene			U	0.300	ug/L						
2-Butanone			U	3.00	ug/L						
2-Chloro-1,3-butadiene			U	0.300	ug/L						
2-Hexanone			U	3.00	ug/L						
4-Methyl-2-pentanone			U	3.00	ug/L						
Acetone			U	3.00	ug/L						
Acetonitrile			U	16.7	ug/L						
Acrolein			U	3.00	ug/L						
Acrylonitrile			U	3.00	ug/L						
Allyl chloride			U	3.00	ug/L						
Benzene			U	0.300	ug/L						
Bromodichloromethane			U	0.300	ug/L						
Bromoform			U	0.300	ug/L						
Bromomethane			U	0.300	ug/L						
Carbon disulfide			U	1.60	ug/L						
Carbon tetrachloride			U	0.300	ug/L						
Chlorobenzene			U	0.300	ug/L						
Chloroethane			U	0.300	ug/L						
Chloroform			U	0.300	ug/L						
Chloromethane			U	0.300	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1560128										
Dibromochloromethane			U	0.300	ug/L						
Dibromomethane			U	0.300	ug/L				CDS1	04/15/16	08:52
Dichlorodifluoromethane			U	0.300	ug/L						
Ethyl methacrylate			U	3.00	ug/L						
Ethylbenzene			U	0.300	ug/L						
Iodomethane			U	3.00	ug/L						
Isobutyl alcohol			U	33.0	ug/L						
Methacrylonitrile			U	3.00	ug/L						
Methyl methacrylate			U	3.00	ug/L						
Methylene chloride			U	1.60	ug/L						
Propionitrile			U	3.00	ug/L						
Styrene			U	0.300	ug/L						
Tetrachloroethylene			U	0.300	ug/L						
Toluene			U	0.300	ug/L						
Trichloroethylene			U	0.300	ug/L						
Trichlorofluoromethane			U	0.300	ug/L						
Vinyl acetate			U	1.60	ug/L						
Vinyl chloride			U	0.300	ug/L						
Xylenes (total)			U	0.300	ug/L						
cis-1,2-Dichloroethylene			U	0.300	ug/L						
cis-1,3-Dichloropropylene			U	0.300	ug/L						
trans-1,2-Dichloroethylene			U	0.300	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1560128										
trans-1,3-Dichloropropylene			U	0.300	ug/L						
trans-1,4-Dichloro-2-butene			U	1.50	ug/L				CDS1	04/15/16	08:52
**1,2-Dichloroethane-d4	50.0			53.5	ug/L		107	(70%-130%)			
**Bromofluorobenzene	50.0			50.4	ug/L		101	(70%-130%)			
**Toluene-d8	50.0			53.8	ug/L		108	(70%-130%)			
QC1203531784 MB											
1,1,1,2-Tetrachloroethane			U	0.300	ug/L					04/19/16	08:34
1,1,1-Trichloroethane			U	0.300	ug/L						
1,1,2,2-Tetrachloroethane			U	0.300	ug/L						
1,1,2-Trichloroethane			U	0.300	ug/L						
1,1-Dichloroethane			U	0.300	ug/L						
1,1-Dichloroethylene			U	0.300	ug/L						
1,2,3-Trichloropropane			U	0.300	ug/L						
1,2-Dibromo-3-chloropropane			U	0.500	ug/L						
1,2-Dibromoethane			U	0.300	ug/L						
1,2-Dichloroethane			U	0.300	ug/L						
1,2-Dichloropropane			U	0.300	ug/L						
1,4-Dichlorobenzene			U	0.300	ug/L						
2-Butanone			U	3.00	ug/L						
2-Chloro-1,3-butadiene			U	0.300	ug/L						
2-Hexanone			U	3.00	ug/L						
4-Methyl-2-pentanone			U	3.00	ug/L						
Acetone			U	3.00	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1560128										
Acetonitrile			U	16.7	ug/L				CDS1	04/19/16	08:34
Acrolein			U	3.00	ug/L						
Acrylonitrile			U	3.00	ug/L						
Allyl chloride			U	3.00	ug/L						
Benzene			U	0.300	ug/L						
Bromodichloromethane			U	0.300	ug/L						
Bromoform			U	0.300	ug/L						
Bromomethane			U	0.300	ug/L						
Carbon disulfide			U	1.60	ug/L						
Carbon tetrachloride			U	0.300	ug/L						
Chlorobenzene			U	0.300	ug/L						
Chloroethane			U	0.300	ug/L						
Chloroform			U	0.300	ug/L						
Chloromethane			U	0.300	ug/L						
Dibromochloromethane			U	0.300	ug/L						
Dibromomethane			U	0.300	ug/L						
Dichlorodifluoromethane			U	0.300	ug/L						
Ethyl methacrylate			U	3.00	ug/L						
Ethylbenzene			U	0.300	ug/L						
Iodomethane			U	3.00	ug/L						
Isobutyl alcohol			U	33.0	ug/L						

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1560128										
Methacrylonitrile			U	3.00	ug/L						
Methyl methacrylate			U	3.00	ug/L				CDS1	04/19/16	08:34
Methylene chloride			U	1.60	ug/L						
Propionitrile			U	3.00	ug/L						
Styrene			U	0.300	ug/L						
Tetrachloroethylene			U	0.300	ug/L						
Toluene			U	0.300	ug/L						
Trichloroethylene			U	0.300	ug/L						
Trichlorofluoromethane			U	0.300	ug/L						
Vinyl acetate			U	1.60	ug/L						
Vinyl chloride			U	0.300	ug/L						
Xylenes (total)			U	0.300	ug/L						
cis-1,2-Dichloroethylene			U	0.300	ug/L						
cis-1,3-Dichloropropylene			U	0.300	ug/L						
trans-1,2-Dichloroethylene			U	0.300	ug/L						
trans-1,3-Dichloropropylene			U	0.300	ug/L						
trans-1,4-Dichloro-2-butene			U	1.50	ug/L						
**1,2-Dichloroethane-d4	50.0			51.5	ug/L		103	(70%-130%)			
**Bromofluorobenzene	50.0			48.3	ug/L		97	(70%-130%)			
**Toluene-d8	50.0			51.2	ug/L		102	(70%-130%)			
QC1203529151 395273002 PS											
1,1,1,2-Tetrachloroethane	50.0	U	0.00	50.7	ug/L		101	(70%-130%)		04/15/16	18:00
1,1,1-Trichloroethane	50.0	J	0.350	54.3	ug/L		108	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1560128										
1,1,2,2-Tetrachloroethane	50.0	U	0.00	51.8	ug/L		104	(70%-130%)	CDS1	04/15/16	18:00
1,1,2-Trichloroethane	50.0	U	0.00	48.1	ug/L		96	(70%-130%)			
1,1-Dichloroethane	50.0	U	0.00	52.3	ug/L		105	(70%-130%)			
1,1-Dichloroethylene	50.0	U	0.00	51.6	ug/L		103	(70%-130%)			
1,2,3-Trichloropropane	50.0	U	0.00	49.0	ug/L		98	(70%-130%)			
1,2-Dibromo-3-chloropropane	50.0	U	0.00	52.7	ug/L		105	(70%-130%)			
1,2-Dibromoethane	50.0	U	0.00	46.0	ug/L		92	(70%-130%)			
1,2-Dichloroethane	50.0	U	0.00	49.5	ug/L		99	(70%-130%)			
1,2-Dichloropropane	50.0	U	0.00	50.7	ug/L		101	(70%-130%)			
1,4-Dichlorobenzene	50.0	U	0.00	50.9	ug/L		102	(70%-130%)			
2-Butanone	250	U	0.00	186	ug/L		74	(70%-130%)			
2-Hexanone	250	U	0.00	189	ug/L		76	(70%-130%)			
4-Methyl-2-pentanone	250	U	0.00	229	ug/L		92	(70%-130%)			
Acetone	250	TU	0.00	T 151	ug/L		60*	(70%-130%)			
Acetonitrile	1250	U	0.00	1160	ug/L		93	(70%-130%)			
Benzene	50.0	U	0.00	51.1	ug/L		102	(70%-130%)			
Bromodichloromethane	50.0	U	0.00	51.3	ug/L		103	(70%-130%)			
Bromoform	50.0	U	0.00	51.0	ug/L		102	(70%-130%)			
Bromomethane	50.0	U	0.00	46.4	ug/L		93	(70%-130%)			
Carbon disulfide	250	U	0.00	262	ug/L		105	(70%-130%)			
Carbon tetrachloride	50.0	U	0.00	52.2	ug/L		104	(70%-130%)			

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**QC Summary**

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1560128										
Chlorobenzene	50.0	U	0.00	50.0	ug/L		100	(70%-130%)			
Chloroethane	50.0	U	0.00	50.3	ug/L		101	(70%-130%)	CDS1	04/15/16	18:00
Chloroform	50.0	U	0.00	49.2	ug/L		98	(70%-130%)			
Chloromethane	50.0	U	0.00	48.5	ug/L		97	(70%-130%)			
Dibromochloromethane	50.0	U	0.00	50.5	ug/L		101	(70%-130%)			
Dibromomethane	50.0	U	0.00	48.3	ug/L		97	(70%-130%)			
Dichlorodifluoromethane	50.0	U	0.00	49.6	ug/L		99	(70%-130%)			
Ethylbenzene	50.0	U	0.00	52.1	ug/L		104	(70%-130%)			
Iodomethane	250	U	0.00	242	ug/L		97	(70%-130%)			
Methylene chloride	50.0	U	0.00	49.6	ug/L		99	(70%-130%)			
Styrene	50.0	U	0.00	49.3	ug/L		99	(70%-130%)			
Tetrachloroethylene	50.0	J	0.840	49.5	ug/L		97	(70%-130%)			
Toluene	50.0	U	0.00	50.8	ug/L		102	(70%-130%)			
Trichloroethylene	50.0	J	0.340	51.6	ug/L		103	(70%-130%)			
Trichlorofluoromethane	50.0	J	0.810	49.3	ug/L		97	(70%-130%)			
Vinyl acetate	250	U	0.00	241	ug/L		97	(70%-130%)			
Vinyl chloride	50.0	U	0.00	48.1	ug/L		96	(70%-130%)			
Xylenes (total)	150	U	0.00	149	ug/L		100	(70%-130%)			
cis-1,2-Dichloroethylene	50.0	U	0.00	48.6	ug/L		97	(70%-130%)			
cis-1,3-Dichloropropylene	50.0	U	0.00	52.2	ug/L		104	(70%-130%)			
trans-1,2-Dichloroethylene	50.0	U	0.00	51.2	ug/L		102	(70%-130%)			
trans-1,3-Dichloropropylene	50.0	U	0.00	52.0	ug/L		104	(70%-130%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1560128										
**1,2-Dichloroethane-d4	50.0	50.6		49.3	ug/L		99	(70%-130%)			
**Bromofluorobenzene	50.0	46.2		49.3	ug/L		99	(70%-130%)	CDS1	04/15/16	18:00
**Toluene-d8	50.0	50.5		50.4	ug/L		101	(70%-130%)			
QC1203529152 395273002 PSD											
1,1,1,2-Tetrachloroethane	50.0	U	0.00	49.4	ug/L	3	99	(0%-20%)		04/15/16	18:30
1,1,1-Trichloroethane	50.0	J	0.350	54.3	ug/L	0	108	(0%-20%)			
1,1,2,2-Tetrachloroethane	50.0	U	0.00	50.3	ug/L	3	101	(0%-20%)			
1,1,2-Trichloroethane	50.0	U	0.00	46.0	ug/L	4	92	(0%-20%)			
1,1-Dichloroethane	50.0	U	0.00	51.9	ug/L	1	104	(0%-20%)			
1,1-Dichloroethylene	50.0	U	0.00	51.1	ug/L	1	102	(0%-20%)			
1,2,3-Trichloropropane	50.0	U	0.00	44.9	ug/L	9	90	(0%-20%)			
1,2-Dibromo-3-chloropropane	50.0	U	0.00	50.8	ug/L	4	102	(0%-20%)			
1,2-Dibromoethane	50.0	U	0.00	47.2	ug/L	2	94	(0%-20%)			
1,2-Dichloroethane	50.0	U	0.00	48.4	ug/L	2	97	(0%-20%)			
1,2-Dichloropropane	50.0	U	0.00	50.7	ug/L	0	101	(0%-20%)			
1,4-Dichlorobenzene	50.0	U	0.00	48.4	ug/L	5	97	(0%-20%)			
2-Butanone	250	U	0.00	179	ug/L	4	72	(0%-20%)			
2-Hexanone	250	U	0.00	188	ug/L	1	75	(0%-20%)			
4-Methyl-2-pentanone	250	U	0.00	223	ug/L	3	89	(0%-20%)			
Acetone	250	TU	0.00	T 151	ug/L	0	60*	(0%-20%)			
Acetonitrile	1250	U	0.00	1130	ug/L	3	90	(0%-20%)			
Benzene	50.0	U	0.00	51.0	ug/L	0	102	(0%-20%)			
Bromodichloromethane	50.0	U	0.00	50.9	ug/L	1	102	(0%-20%)			

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Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1560128										
Bromoform	50.0	U	0.00	51.1	ug/L	0	102	(0%-20%)	CDS1	04/15/16	18:30
Bromomethane	50.0	U	0.00	45.9	ug/L	1	92	(0%-20%)			
Carbon disulfide	250	U	0.00	252	ug/L	4	101	(0%-20%)			
Carbon tetrachloride	50.0	U	0.00	51.7	ug/L	1	103	(0%-20%)			
Chlorobenzene	50.0	U	0.00	49.6	ug/L	1	99	(0%-20%)			
Chloroethane	50.0	U	0.00	50.9	ug/L	1	102	(0%-20%)			
Chloroform	50.0	U	0.00	49.8	ug/L	1	100	(0%-20%)			
Chloromethane	50.0	U	0.00	49.4	ug/L	2	99	(0%-20%)			
Dibromochloromethane	50.0	U	0.00	50.6	ug/L	0	101	(0%-20%)			
Dibromomethane	50.0	U	0.00	48.0	ug/L	1	96	(0%-20%)			
Dichlorodifluoromethane	50.0	U	0.00	53.3	ug/L	7	107	(0%-20%)			
Ethylbenzene	50.0	U	0.00	49.8	ug/L	5	100	(0%-20%)			
Iodomethane	250	U	0.00	235	ug/L	3	94	(0%-20%)			
Methylene chloride	50.0	U	0.00	48.1	ug/L	3	96	(0%-20%)			
Styrene	50.0	U	0.00	48.8	ug/L	1	98	(0%-20%)			
Tetrachloroethylene	50.0	J	0.840	50.2	ug/L	1	99	(0%-20%)			
Toluene	50.0	U	0.00	49.0	ug/L	4	98	(0%-20%)			
Trichloroethylene	50.0	J	0.340	52.1	ug/L	1	103	(0%-20%)			
Trichlorofluoromethane	50.0	J	0.810	51.1	ug/L	4	101	(0%-20%)			
Vinyl acetate	250	U	0.00	237	ug/L	2	95	(0%-20%)			
Vinyl chloride	50.0	U	0.00	50.1	ug/L	4	100	(0%-20%)			

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Parname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Volatile-GC/MS</b>											
Batch	1560128										
Xylenes (total)	150	U	0.00	142	ug/L	5	95	(0%-20%)			
cis-1,2-Dichloroethylene	50.0	U	0.00	48.2	ug/L	1	96	(0%-20%)	CDS1	04/15/16	18:30
cis-1,3-Dichloropropylene	50.0	U	0.00	52.2	ug/L	0	104	(0%-20%)			
trans-1,2-Dichloroethylene	50.0	U	0.00	50.5	ug/L	1	101	(0%-20%)			
trans-1,3-Dichloropropylene	50.0	U	0.00	50.8	ug/L	2	102	(0%-20%)			
**1,2-Dichloroethane-d4	50.0		50.6	49.1	ug/L		98	(70%-130%)			
**Bromofluorobenzene	50.0		46.2	50.4	ug/L		101	(70%-130%)			
**Toluene-d8	50.0		50.5	49.0	ug/L		98	(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 (Organics only)

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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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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

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## Surrogate Recovery Report

SDG Number: GEL395372

Matrix Type: LIQUID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203529150	LCS for batch 1560128	94	99	106
1203529149	MB for batch 1560128	107	108	101
1203529151	B34NM8PS	99	101	99
1203529152	B34NM8PSD	98	98	101
1203531785	LCS for batch 1560128	95	97	103
1203531784	MB for batch 1560128	103	102	97
395372001	B34KF1	99	99	91

**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