GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
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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 I16-008
Work Order: 389524
SDG: GEL389524

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on January 16, 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 Appedix 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,

Heather Shaffer

Heather Shaffer
Project Manager

Purchase Order: 300071JDBA
Chain of Custody: I16-008-009
Enclosures

Table of Contents

SAMPLE ISSUE RESOLUTION

SIR NUM	SIR16-465
REV NUM	0
DATE INITIATED	7/7/2016

SAMPLE EVENT INFORMATION

SAF NUM(S)	I16-008
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	B33RK5
SAMPLE MATRIX	WATER
COLLECTION DATE	1/15/2016 - 1/15/2016
SDG NUM	GEL389524

ISSUE BACKGROUND

CLASS	Sample Management Issues
TYPE	Analyte Correction
DESCRIPTION	SMR discovered the 8260_VOA_GCMS_IX: COMMON service list for GEL inadvertetnly 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 I16-008
SDG: GEL389524

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 January 16, 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:

Laboratory Identification	Sample Description
389524001	B33RK5

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 30, 2016

Heather Shaffer

Heather Shaffer
Project Manager

Subject: Groundwater packages
From: "Waters-husted, Karen S" <Karen_S_Waters-husted@rl.gov>
Date: 11/10/2015 12:25 PM
To: "Awalt, Jayna" <Jayna.Awalt@testamericainc.com>, "Franks, Mike" <Mike.Franks@testamericainc.com>, "Heather Shaffer (heather.shaffer@gel.com)" <heather.shaffer@gel.com>, Julie Ellingson <Julie.Ellingson@ALSGlobal.com>, Nancy Mattern <Nancy.Mattern@gel.com>, "Ritari, Whitney" <Whitney.Ritari@testamericainc.com>, "Sandra Seger (Sandra.Seger@testamericainc.com)" <Sandra.Seger@testamericainc.com>, "Wagar, Rhonda" <Rhonda.Wagar@testamericainc.com>, "Waters-husted, Karen S" <Karen_S_Waters-husted@rl.gov>
CC: "Ayres, Doris E" <Doris_E_Ayres@rl.gov>, "Sumner, Laine C" <Laine_C_Sumner@rl.gov>, "Gibson, Gayelyn G" <Gayelyn_G_Gibson@rl.gov>, "Lynch, Sherry A" <Sherry_A_Lynch@rl.gov>, "Medley, Heather A" <Heather_A_Medley@rl.gov>, "Fitzgerald, Scot L" <Scot_L_Fitzgerald@rl.gov>, ^CPP Sample Management <CPP_Sample_Management@rl.gov>

The GW annual report is written for a calendar year. This means that we have requested all the samples collected through December 31 to be reported by January 31. However, this year our sampling work load is higher than normal for November and December. In order to meet the GW reporting needs and the large sampling events, CHPRC needs all GW (SAFs A, I, S, W, and some X) SDGs to be on 15 day TATs starting with samples received on 11-16-15 through 1-31-16. I will be adding the new TAT to the SAFs and re-sending them shortly.

Currently, all the November and December paperwork is out in the field, so we will not be recalling it all and making the changes on the chains due to the volume of paperwork impacted.

Please include this email in the data packages as the direction for the TAT change. A SIR will not be necessary.

Please let me know if you have any questions or any problems arise that will impact these packages.

Thank you,

Karen Waters-Husted
CH2M Plateau Remediation Company
Sample Management and Reporting
Groundwater Project Coordinator
200 East / MO-277 / 108
509-376-4650
Karen_S_Waters-husted@rl.gov

Chain of Custody and Supporting Documentation

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

389524

C.O.C. # **I16-008-009**

Page 1 of 1

Collector	D.L. Floyd/CHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	I16-008	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	200-ZP-1, JANUARY 2016	**Logbook No.**	HNF-N-506 85 / 1	**Ice Chest No.**	GLOS-388
Shipped To (Lab)	GEL Laboratories, LLC	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	7754 3150 4577
Protocol	CERCLA	**Priority:**	15 Days **PRIORITY**	**Offsite Property No.**	6283

POSSIBLE SAMPLE HAZARDS/REMARKS

** ** 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 **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B33RK5	N	W	JAN 15 2016	1211	4x40-mL aGs*	8260_VOA_GCMS_IX: COMMON	14 Days	HCl or H2SO4 to pH <2/Cool <=6C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
D.L. Floyd/CHPRC			JAN 15 2016 1245	L.D. Wall CHPRC			JAN 15 2016 1245
Relinquished By			Date/Time	Received By			Date/Time
L.D. Wall CHPRC			JAN 15 2016 1400				
Relinquished By			Date/Time	Received By			Date/Time
				FEDEX			1-16-16 0845
Relinquished By			Date/Time	Received By			Date/Time

Matrix *

S	= Soil	DS	=	Drum Solids	
SE	= Sediment	DL	=	Drum Liquids	
SO	= Solid	T	=	Tissue	
SL	= Sludge	WI	=	Wipe	
W	= Water	L	=	Liquid	
O	= Oil	V	=	Vegetation	
A	= Air	X	=	Other	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: CPRC	SDG/AR/COC/Work Order: 384524
Received By: MK	Date Received: 1-16-16

Suspected Hazard Information	Yes	No
COC/Samples marked as radioactive?		✓
Classified Radioactive II or III by RSO?		✓
COC/Samples marked containing PCBs?		✓
Package, COC, and/or Samples marked as beryllium or asbestos containing?		✓
Shipped as a DOT Hazardous?		✓
Samples identified as Foreign Soil?		✓

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

Maximum Net Counts Observed* (Observed Counts - Area Background Counts): Cpm 0

If yes, Were swipes taken of sample containers < action levels?

If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.

Hazard Class Shipped: UN#:

	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	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	✓			Preservation Method: (Ice bags) Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius 1C 2C
2a	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: 130462062 Secondary Temperature Device Serial # (If Applicable):
3	Chain of custody documents included with shipment?	✓			
4	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?		✓		Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples have headspace as required?		✓		Sample ID's and containers affected:
7	VOA vials contain acid preservation?	✓			(If unknown, select No)
8	VOA vials free of headspace (defined as < 6mm bubble)?	✓			Sample ID's and containers affected:
9	Are Encore containers present?			✓	(If yes, immediately deliver to Volatiles laboratory)
10	Samples received within holding time?	✓			ID's and tests affected:
11	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
12	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
13	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
14	Are sample containers identifiable as GEL provided?			✓	
15	COC form is properly signed in relinquished/received sections?	✓			
16	Carrier and tracking number.	✓			Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other 7754 3064 3191 2C 7044 1C 2883 2C 3331 2C 7754 3150 4577 1C

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials DD Date 1/18/16 Page 1 of 1 GL-CHL-SR-001 Rev 2

Data Review Qualifier Definitions

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

Report Date: 26−JAN−16

Project Specific Qualifier Definitions for GEL Client Code: CPRC

Code	Status	Qualifier Definition	CofA	Department	Fraction	Additional Comments
U	Programmed	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.	Y			Includes MDA, TPU, count uncert.
J	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).Value is estimated	Y	Organics		Organics only
P	Programmed	Aroclor target analyte with greater than 25% difference between column analyses.	Y	Organics		PCB only
C	Manual	Analyte has been confirmed by GC/MS analysis	Y	Organics	Pesticide	IF GC/MS confirmation was attempted but unsuccessful do not qualify with C
B	Programmed	The analyte was detected in both the associated QC blank and in the sample.	Y	Organics		
E	Manual	Concentration exceeds the calibration range of the instrument	Y	Organics		Qualifier Uploaded
A	Manual	The TIC is a suspected aldol−condensation product	Y	Organics	Semi−Volatile	Uploaded with TIC
X	Programmed	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			Replaces H Hold Date In RAD replaces UI. Same usage as standard X as well.
N	Programmed	Spike Sample recovery is outside control limits.	Y			
*	Programmed	Duplicate analysis not within control limits	Y	Inorganics		
>	Programmed	Result greater than quantifiable range or greater than upper limit of the analysis range	Y	General Chemistry		
Z	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
B	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Y	Inorganics	Metals	Replaces J Estimated Value
D	Programmed	Results are reported from a diluted aliquot of sample.	Y			Dilution
E	Programmed	Reported value is estimated due to interferences. See comment in narrative.	Y	Inorganics	Metals	GEL E
M	Manual	Duplicate precision not met.	Y	Inorganics	Metals	Replaces *
o	Programmed	Analyte failed to recover within LCS limits (0rganics only)	Y	Organics		
S	Manual	Reported value determined by the Method of Standard Additions (MSA)	Y	Inorganics		Not coded B/C Rarely preformed
T	Programmed	Spike and/or spike duplicate sample recovery is outside control limits.	Y	Organics		GC/MS only
W	Manual	Post−digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Y	Inorganics		No GFAA in house.
B	Programmed	The associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample	Y	Radiological		
Y	Manual	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier	Y			
+	Manual	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Y	Inorganics		
B	Programmed	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Y	General Chemistry		Replaces J Estimated Value
C	Programmed	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Y	Inorganics	Metals	Replaces B Blank Detection
C	Programmed	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Y	General Chemistry		Replaces B Blank Detection
<	Programmed	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	Y	General Chemistry		for Reactive CN/S

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

Report Date: 26−JAN−16

Project Specific Qualifier Definitions for GEL Client Code: CPRC

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

Laboratory Certifications

List of current GEL Certifications as of 27 June 2016

State	Certification
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 #: GEL389524
Work Order #: 389524

Method/Analysis Information

Procedure:	**Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer**
Analytical Method:	SW846 8260C
Analytical Batch Number:	1538040

Sample Analysis

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

Sample ID	Client ID
389524001	B33RK5
1203470452	Method Blank (MB)
1203470453	Laboratory Control Sample (LCS)
1203470454	389273001(B33RK7) Post Spike (PS)
1203470455	389273001(B33RK7) Post Spike Duplicate (PSD)
1203470945	Method Blank (MB)
1203470946	Laboratory Control Sample (LCS)

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

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

SOP Reference
Procedure for preparation, analysis and reporting of analytical data are controlled by GEL Laboratories LLC as Standard Operating Procedure (SOP). The data discussed in this narrative has been analyzed in accordance with GL-OA-E-038 REV# 21.

Calibration Information

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

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

Continuing Calibration Verification Requirements
The calibration verification standard requirements were not all met for samples . There were no positive results for any of the analytes that were outside the calibration criteria. The results are reported.

Quality Control (QC) Information

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

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

Laboratory Control Sample (LCS) Recovery
The LCS/and or LCSD (See Below) recovery was not within the acceptance limits for all analytes. The unacceptable analyte was not detected in the samples associated with the laboratory control sample. Therefore, the data were reported.

Sample	Analyte	Value
1203470946 (LCS)	Dichlorodifluoromethane	132* (70%-130%)

QC Sample Designation
Sample 389273001 (B33RK7) was designated for spike analysis.

Matrix Spike/Matrix Spike Duplicate Recovery Statement
The spike and/or spike duplicate (See Below) recoveries were not all within the acceptance limits.

Sample	Analyte	Value
1203470454 (B33RK7PS)	Dichlorodifluoromethane	133* (70%-130%)

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
1203470454 (B33RK7PS)	2-Hexanone	63* (70%-130%)
	Acetone	56* (70%-130%)
1203470455 (B33RK7PSD)	2-Hexanone	66* (70%-130%)
	Acetone	55* (70%-130%)

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

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

Technical Information

Holding Time Specifications
All samples in this SDG met the specified holding time. GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection or sample receipt. Those holding times

expressed in hours are calculated in the ALPHALIMS system. Those holding times expressed as days expire at midnight on the day of expiration.

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

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

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

Miscellaneous Information

Data Exception (DER) Documentation
A data exception report (DER) 1485740 was generated for samples in this SDG/batch.

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

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

Additional Comments
Additional comments were not required for this SDG.

Residual Chlorine
Residual Chlorine was not detected in any of the samples in this SDG.

System Configuration

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

Instrument ID	Instrument	System Configuration	Column ID	Column Description	P & T Trap
VOA3.I	Agilent 6890/5973 GC/MS w/ OI 4560/Archon Autosampler	HP6890/HP5973	DB-624	J&W, 60m x 0.25mm x 1.4um	Trap 10

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all 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: GEL389524 GEL Work Order: 389524

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: Erin Haubert **Name: Erin Haubert**

Date: 26 JAN 2016 **Title: Data Validator**

Sample Data Summary

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**GEL389524**	**Date Collected:**	**01/15/2016 12:11**	**Matrix:**	**WATER**
Lab Sample ID:	**389524001**	**Date Received:**	**01/16/2016 08:45**		
		Client:	**CPRC001**	**Project:**	**CPRC0I16008**
Client ID:	**B33RK5**	**Method:**	**SW846 8260C**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1538040**	**Inst:**	**VOA3.I**	**Dilution:**	**1**
Run Date:	**01/19/2016 16:20**	**Analyst:**	**CDS1**	**Purge Vol:**	**5 mL**
Prep Date:	**01/19/2016 16:20**				
Data File:	**011916V3\3S219.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	2.00
79-34-5	1,1,2,2-Tetrachloroethane	U	0.300	ug/L	0.300	2.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	2.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	2.00
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	2.00
96-18-4	1,2,3-Trichloropropane	U	0.300	ug/L	0.300	2.00
96-12-8	1,2-Dibromo-3-chloropropane	U	0.500	ug/L	0.500	2.00
106-93-4	1,2-Dibromoethane	U	0.300	ug/L	0.300	2.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	2.00
78-87-5	1,2-Dichloropropane	U	0.300	ug/L	0.300	2.00
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	2.00
78-93-3	2-Butanone	U	3.00	ug/L	3.00	10.0
126-99-8	2-Chloro-1,3-butadiene	U	0.300	ug/L	0.300	2.00
591-78-6	2-Hexanone	TU	3.00	ug/L	3.00	10.0
108-10-1	4-Methyl-2-pentanone	U	3.00	ug/L	3.00	10.0
67-64-1	Acetone	TU	3.00	ug/L	3.00	10.0
75-05-8	Acetonitrile	U	16.7	ug/L	16.7	50.0
107-02-8	Acrolein	U	3.00	ug/L	3.00	10.0
107-13-1	Acrylonitrile	U	3.00	ug/L	3.00	10.0
107-05-1	Allyl chloride	U	3.00	ug/L	3.00	10.0
71-43-2	Benzene	U	0.300	ug/L	0.300	2.00
75-27-4	Bromodichloromethane	U	0.300	ug/L	0.300	2.00
75-25-2	Bromoform	U	0.300	ug/L	0.300	2.00
74-83-9	Bromomethane	U	0.300	ug/L	0.300	2.00
75-15-0	Carbon disulfide	U	1.60	ug/L	1.60	10.0
56-23-5	Carbon tetrachloride		98.3	ug/L	0.300	2.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	2.00
75-00-3	Chloroethane	U	0.300	ug/L	0.300	2.00
67-66-3	Chloroform		3.70	ug/L	0.300	2.00
74-87-3	Chloromethane	U	0.300	ug/L	0.300	2.00
124-48-1	Dibromochloromethane	U	0.300	ug/L	0.300	2.00
74-95-3	Dibromomethane	U	0.300	ug/L	0.300	2.00
75-71-8	Dichlorodifluoromethane	TU	0.300	ug/L	0.300	2.00
97-63-2	Ethyl methacrylate	U	3.00	ug/L	3.00	10.0
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	2.00
74-88-4	Iodomethane	U	3.00	ug/L	3.00	10.0
78-83-1	Isobutyl alcohol	U	33.0	ug/L	33.0	100

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**GEL389524**	**Date Collected:**	**01/15/2016 12:11**	**Matrix:**	**WATER**
Lab Sample ID:	**389524001**	**Date Received:**	**01/16/2016 08:45**		
		Client:	**CPRC001**	**Project:**	**CPRC0I16008**
Client ID:	**B33RK5**	**Method:**	**SW846 8260C**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1538040**	**Inst:**	**VOA3.I**	**Dilution:**	**1**
Run Date:	**01/19/2016 16:20**	**Analyst:**	**CDS1**	**Purge Vol:**	**5 mL**
Prep Date:	**01/19/2016 16:20**				
Data File:	**011916V3\3S219.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
126-98-7	Methacrylonitrile	U	3.00	ug/L	3.00	10.0
80-62-6	Methyl methacrylate	U	3.00	ug/L	3.00	10.0
75-09-2	Methylene chloride	U	1.60	ug/L	1.60	5.00
107-12-0	Propionitrile	U	3.00	ug/L	3.00	10.0
100-42-5	Styrene	U	0.300	ug/L	0.300	2.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	2.00
108-88-3	Toluene	U	0.300	ug/L	0.300	2.00
79-01-6	Trichloroethylene	U	0.300	ug/L	0.300	2.00
75-69-4	Trichlorofluoromethane	U	0.300	ug/L	0.300	2.00
108-05-4	Vinyl acetate	U	1.60	ug/L	1.60	5.00
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	2.00
1330-20-7	Xylenes (total)	U	0.300	ug/L	0.300	6.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00
10061-01-5	cis-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00
156-60-5	trans-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00
10061-02-6	trans-1,3-Dichloropropylene	U	0.300	ug/L	0.300	2.00
110-57-6	trans-1,4-Dichloro-2-butene	U	1.50	ug/L	1.50	10.0

Quality Control Summary

GEL LABORATORIES LLC
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QC Summary

Report Date: June 24, 2016

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

Contact: **Mr. Scot Fitzgerald**

Workorder: **389524**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS										
Batch 1538040										
QC1203470453 LCS										
1,1,1,2-Tetrachloroethane	50.0			45.6	ug/L		91	(70%-130%)	CDS1	01/18/16 07:00
1,1,1-Trichloroethane	50.0			53.4	ug/L		107	(70%-130%)		
1,1,2,2-Tetrachloroethane	50.0			48.0	ug/L		96	(70%-130%)		
1,1,2-Trichloroethane	50.0			45.8	ug/L		92	(70%-130%)		
1,1-Dichloroethane	50.0			46.7	ug/L		93	(70%-130%)		
1,1-Dichloroethylene	50.0			47.1	ug/L		94	(70%-130%)		
1,2,3-Trichloropropane	50.0			45.8	ug/L		92	(70%-130%)		
1,2-Dibromo-3-chloropropane	50.0			50.2	ug/L		100	(70%-130%)		
1,2-Dibromoethane	50.0			45.7	ug/L		91	(70%-130%)		
1,2-Dichloroethane	50.0			43.9	ug/L		88	(70%-130%)		
1,2-Dichloropropane	50.0			46.4	ug/L		93	(70%-130%)		
1,4-Dichlorobenzene	50.0			45.5	ug/L		91	(70%-130%)		
2-Butanone	250			256	ug/L		102	(70%-130%)		
2-Hexanone	250			224	ug/L		90	(70%-130%)		
4-Methyl-2-pentanone	250			220	ug/L		88	(70%-130%)		
Acetone	250			263	ug/L		105	(70%-130%)		
Acetonitrile	1250			1170	ug/L		94	(70%-130%)		
Benzene	50.0			48.2	ug/L		96	(70%-130%)		
Bromodichloromethane	50.0			49.1	ug/L		98	(70%-130%)		
Bromoform	50.0			50.5	ug/L		101	(70%-130%)		

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QC Summary

Workorder: 389524

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS										
Batch 1538040										
Bromomethane	50.0			55.3	ug/L		111	(70%-130%)	CDS1	01/18/16 07:00
Carbon disulfide	250			269	ug/L		107	(70%-130%)		
Carbon tetrachloride	50.0			49.4	ug/L		99	(70%-130%)		
Chlorobenzene	50.0			46.2	ug/L		92	(70%-130%)		
Chloroethane	50.0			54.6	ug/L		109	(70%-130%)		
Chloroform	50.0			46.8	ug/L		94	(70%-130%)		
Chloromethane	50.0			52.3	ug/L		105	(70%-130%)		
Dibromochloromethane	50.0			46.9	ug/L		94	(70%-130%)		
Dibromomethane	50.0			47.5	ug/L		95	(70%-130%)		
Dichlorodifluoromethane	50.0			63.5	ug/L		127	(70%-130%)		
Ethylbenzene	50.0			46.4	ug/L		93	(70%-130%)		
Iodomethane	250			243	ug/L		97	(70%-130%)		
Methylene chloride	50.0			46.1	ug/L		92	(70%-130%)		
Styrene	50.0			45.0	ug/L		90	(70%-130%)		
Tetrachloroethylene	50.0			48.3	ug/L		97	(70%-130%)		
Toluene	50.0			46.1	ug/L		92	(70%-130%)		
Trichloroethylene	50.0			48.8	ug/L		98	(70%-130%)		
Trichlorofluoromethane	50.0			58.3	ug/L		117	(70%-130%)		
Vinyl acetate	250			245	ug/L		98	(70%-130%)		
Vinyl chloride	50.0			46.6	ug/L		93	(70%-130%)		
Xylenes (total)	150			136	ug/L		91	(70%-130%)		

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QC Summary

Workorder: 389524

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS										
Batch 1538040										
cis-1,2-Dichloroethylene	50.0			46.6	ug/L		93	(70%-130%)		
cis-1,3-Dichloropropylene	50.0			51.3	ug/L		103	(70%-130%)	CDS1	01/18/16 07:00
trans-1,2-Dichloroethylene	50.0			45.4	ug/L		91	(70%-130%)		
trans-1,3-Dichloropropylene	50.0			49.3	ug/L		99	(70%-130%)		
**1,2-Dichloroethane-d4	50.0			46.3	ug/L		93	(70%-130%)		
**Bromofluorobenzene	50.0			49.5	ug/L		99	(70%-130%)		
**Toluene-d8	50.0			46.7	ug/L		93	(70%-130%)		
QC1203470946 LCS										
1,1,1,2-Tetrachloroethane	50.0			46.3	ug/L		93	(70%-130%)		01/19/16 07:13
1,1,1-Trichloroethane	50.0			59.1	ug/L		118	(70%-130%)		
1,1,2,2-Tetrachloroethane	50.0			51.8	ug/L		104	(70%-130%)		
1,1,2-Trichloroethane	50.0			48.1	ug/L		96	(70%-130%)		
1,1-Dichloroethane	50.0			52.1	ug/L		104	(70%-130%)		
1,1-Dichloroethylene	50.0			52.5	ug/L		105	(70%-130%)		
1,2,3-Trichloropropane	50.0			50.0	ug/L		100	(70%-130%)		
1,2-Dibromo-3-chloropropane	50.0			57.5	ug/L		115	(70%-130%)		
1,2-Dibromoethane	50.0			49.4	ug/L		99	(70%-130%)		
1,2-Dichloroethane	50.0			48.8	ug/L		98	(70%-130%)		
1,2-Dichloropropane	50.0			50.9	ug/L		102	(70%-130%)		
1,4-Dichlorobenzene	50.0			49.6	ug/L		99	(70%-130%)		
2-Butanone	250			264	ug/L		106	(70%-130%)		
2-Hexanone	250			231	ug/L		93	(70%-130%)		
4-Methyl-2-pentanone	250			231	ug/L		93	(70%-130%)		

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QC Summary

Workorder: 389524

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS										
Batch 1538040										
Acetone	250			265	ug/L		106	(70%-130%)	CDS1	01/19/16 07:13
Acetonitrile	1250			1220	ug/L		98	(70%-130%)		
Benzene	50.0			53.1	ug/L		106	(70%-130%)		
Bromodichloromethane	50.0			52.8	ug/L		106	(70%-130%)		
Bromoform	50.0			53.4	ug/L		107	(70%-130%)		
Bromomethane	50.0			55.9	ug/L		112	(70%-130%)		
Carbon disulfide	250			287	ug/L		115	(70%-130%)		
Carbon tetrachloride	50.0			56.3	ug/L		113	(70%-130%)		
Chlorobenzene	50.0			50.0	ug/L		100	(70%-130%)		
Chloroethane	50.0			56.3	ug/L		113	(70%-130%)		
Chloroform	50.0			51.4	ug/L		103	(70%-130%)		
Chloromethane	50.0			52.8	ug/L		106	(70%-130%)		
Dibromochloromethane	50.0			51.1	ug/L		102	(70%-130%)		
Dibromomethane	50.0			50.0	ug/L		100	(70%-130%)		
Dichlorodifluoromethane	50.0			65.9	ug/L		132*	(70%-130%)		
Ethylbenzene	50.0			47.8	ug/L		96	(70%-130%)		
Iodomethane	250			258	ug/L		103	(70%-130%)		
Methylene chloride	50.0			50.6	ug/L		101	(70%-130%)		
Styrene	50.0			48.0	ug/L		96	(70%-130%)		
Tetrachloroethylene	50.0			50.7	ug/L		101	(70%-130%)		
Toluene	50.0			50.0	ug/L		100	(70%-130%)		

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QC Summary

Workorder: 389524

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS										
Batch 1538040										
Trichloroethylene	50.0			54.4	ug/L		109	(70%-130%)		
Trichlorofluoromethane	50.0			60.9	ug/L		122	(70%-130%)	CDS1	01/19/16 07:13
Vinyl acetate	250			250	ug/L		100	(70%-130%)		
Vinyl chloride	50.0			49.3	ug/L		99	(70%-130%)		
Xylenes (total)	150			148	ug/L		99	(70%-130%)		
cis-1,2-Dichloroethylene	50.0			50.1	ug/L		100	(70%-130%)		
cis-1,3-Dichloropropylene	50.0			54.0	ug/L		108	(70%-130%)		
trans-1,2-Dichloroethylene	50.0			50.5	ug/L		101	(70%-130%)		
trans-1,3-Dichloropropylene	50.0			52.1	ug/L		104	(70%-130%)		
**1,2-Dichloroethane-d4	50.0			54.9	ug/L		110	(70%-130%)		
**Bromofluorobenzene	50.0			48.8	ug/L		98	(70%-130%)		
**Toluene-d8	50.0			50.7	ug/L		101	(70%-130%)		
QC1203470452 MB										
1,1,1,2-Tetrachloroethane			U	0.300	ug/L					01/18/16 08:12
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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QC Summary

Workorder: 389524

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch 1538040											
1,2-Dichloropropane			U	0.300	ug/L				CDS1	01/18/16	08:12
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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QC Summary

Workorder: 389524

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch 1538040											
Dibromochloromethane			U	0.300	ug/L						
Dibromomethane			U	0.300	ug/L				CDS1	01/18/16	08:12
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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QC Summary

Workorder: 389524

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS										
Batch 1538040										
trans-1,3-Dichloropropylene			U	0.300	ug/L					
trans-1,4-Dichloro-2-butene			U	1.50	ug/L				CDS1	01/18/16 08:12
**1,2-Dichloroethane-d4	50.0			49.9	ug/L		100	(70%-130%)		
**Bromofluorobenzene	50.0			46.7	ug/L		93	(70%-130%)		
**Toluene-d8	50.0			48.1	ug/L		96	(70%-130%)		
QC1203470945 MB										
1,1,1,2-Tetrachloroethane			U	0.300	ug/L					01/19/16 10:44
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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QC Summary

Workorder: 389524

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS											
Batch 1538040											
Acetonitrile			U	16.7	ug/L				CDS1	01/19/16	10:44
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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QC Summary

Workorder: 389524

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS										
Batch 1538040										
Methacrylonitrile			U	3.00	ug/L					
Methyl methacrylate			U	3.00	ug/L				CDS1	01/19/16 10:44
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			59.0	ug/L		118	(70%-130%)		
**Bromofluorobenzene	50.0			45.7	ug/L		91	(70%-130%)		
**Toluene-d8	50.0			53.6	ug/L		107	(70%-130%)		
QC1203470454 389273001 PS										
1,1,1,2-Tetrachloroethane	50.0	U	0.00	46.3	ug/L		93	(70%-130%)		01/18/16 17:54
1,1,1-Trichloroethane	50.0	U	0.00	59.6	ug/L		119	(70%-130%)		

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QC Summary

Workorder: 389524

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS												
Batch 1538040												
1,1,2,2-Tetrachloroethane	50.0	U	0.00		47.4	ug/L		95	(70%-130%)	CDS1	01/18/16	17:54
1,1,2-Trichloroethane	50.0	U	0.00		45.9	ug/L		92	(70%-130%)			
1,1-Dichloroethane	50.0	U	0.00		51.7	ug/L		103	(70%-130%)			
1,1-Dichloroethylene	50.0	U	0.00		51.9	ug/L		104	(70%-130%)			
1,2,3-Trichloropropane	50.0	U	0.00		43.9	ug/L		88	(70%-130%)			
1,2-Dibromo-3-chloropropane	50.0	U	0.00		51.2	ug/L		102	(70%-130%)			
1,2-Dibromoethane	50.0	U	0.00		47.1	ug/L		94	(70%-130%)			
1,2-Dichloroethane	50.0	U	0.00		48.2	ug/L		96	(70%-130%)			
1,2-Dichloropropane	50.0	U	0.00		49.9	ug/L		100	(70%-130%)			
1,4-Dichlorobenzene	50.0	U	0.00		46.1	ug/L		92	(70%-130%)			
2-Butanone	250	U	0.00		177	ug/L		71	(70%-130%)			
2-Hexanone	250	TU	0.00	T	158	ug/L		63*	(70%-130%)			
4-Methyl-2-pentanone	250	U	0.00		211	ug/L		84	(70%-130%)			
Acetone	250	TU	0.00	T	141	ug/L		56*	(70%-130%)			
Acetonitrile	1250	U	0.00		1200	ug/L		96	(70%-130%)			
Benzene	50.0	U	0.00		51.7	ug/L		103	(70%-130%)			
Bromodichloromethane	50.0	U	0.00		52.0	ug/L		104	(70%-130%)			
Bromoform	50.0	U	0.00		49.4	ug/L		99	(70%-130%)			
Bromomethane	50.0	U	0.00		60.6	ug/L		121	(70%-130%)			
Carbon disulfide	250	U	0.00		295	ug/L		118	(70%-130%)			
Carbon tetrachloride	50.0	U	0.00		53.9	ug/L		108	(70%-130%)			

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QC Summary

Workorder: 389524

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS												
Batch 1538040												
Chlorobenzene	50.0	U	0.00		48.8	ug/L		98	(70%-130%)			
Chloroethane	50.0	U	0.00		57.5	ug/L		115	(70%-130%)	CDS1	01/18/16	17:54
Chloroform	50.0	U	0.00		51.8	ug/L		104	(70%-130%)			
Chloromethane	50.0	U	0.00		54.8	ug/L		110	(70%-130%)			
Dibromochloromethane	50.0	U	0.00		47.5	ug/L		95	(70%-130%)			
Dibromomethane	50.0	U	0.00		50.7	ug/L		101	(70%-130%)			
Dichlorodifluoromethane	50.0	TU	0.00	T	66.5	ug/L		133*	(70%-130%)			
Ethylbenzene	50.0	U	0.00		48.7	ug/L		97	(70%-130%)			
Iodomethane	250	U	0.00		264	ug/L		106	(70%-130%)			
Methylene chloride	50.0	U	0.00		50.6	ug/L		101	(70%-130%)			
Styrene	50.0	U	0.00		47.1	ug/L		94	(70%-130%)			
Tetrachloroethylene	50.0	U	0.00		50.9	ug/L		102	(70%-130%)			
Toluene	50.0	U	0.00		43.0	ug/L		86	(70%-130%)			
Trichloroethylene	50.0	U	0.00		53.5	ug/L		107	(70%-130%)			
Trichlorofluoromethane	50.0	U	0.00		62.6	ug/L		125	(70%-130%)			
Vinyl acetate	250	U	0.00		259	ug/L		104	(70%-130%)			
Vinyl chloride	50.0	U	0.00		51.9	ug/L		104	(70%-130%)			
Xylenes (total)	150	U	0.00		143	ug/L		95	(70%-130%)			
cis-1,2-Dichloroethylene	50.0	U	0.00		51.0	ug/L		102	(70%-130%)			
cis-1,3-Dichloropropylene	50.0	U	0.00		55.6	ug/L		111	(70%-130%)			
trans-1,2-Dichloroethylene	50.0	U	0.00		49.7	ug/L		99	(70%-130%)			
trans-1,3-Dichloropropylene	50.0	U	0.00		45.4	ug/L		91	(70%-130%)			

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QC Summary

Workorder: 389524

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS											
Batch 1538040											
**1,2-Dichloroethane-d4	50.0		57.3		56.4	ug/L		113	(70%-130%)		
**Bromofluorobenzene	50.0		41.6		45.0	ug/L		90	(70%-130%)	CDS1	01/18/16 17:54
**Toluene-d8	50.0		50.6		46.0	ug/L		92	(70%-130%)		
QC1203470455 389273001 PSD											
1,1,1,2-Tetrachloroethane	50.0	U	0.00		45.8	ug/L	1	92	(0%-20%)		01/18/16 18:25
1,1,1-Trichloroethane	50.0	U	0.00		58.2	ug/L	2	116	(0%-20%)		
1,1,2,2-Tetrachloroethane	50.0	U	0.00		48.5	ug/L	2	97	(0%-20%)		
1,1,2-Trichloroethane	50.0	U	0.00		46.0	ug/L	0	92	(0%-20%)		
1,1-Dichloroethane	50.0	U	0.00		51.2	ug/L	1	102	(0%-20%)		
1,1-Dichloroethylene	50.0	U	0.00		52.0	ug/L	0	104	(0%-20%)		
1,2,3-Trichloropropane	50.0	U	0.00		45.9	ug/L	4	92	(0%-20%)		
1,2-Dibromo-3-chloropropane	50.0	U	0.00		51.2	ug/L	0	102	(0%-20%)		
1,2-Dibromoethane	50.0	U	0.00		49.0	ug/L	4	98	(0%-20%)		
1,2-Dichloroethane	50.0	U	0.00		47.1	ug/L	2	94	(0%-20%)		
1,2-Dichloropropane	50.0	U	0.00		49.6	ug/L	1	99	(0%-20%)		
1,4-Dichlorobenzene	50.0	U	0.00		46.2	ug/L	0	92	(0%-20%)		
2-Butanone	250	U	0.00		175	ug/L	1	70	(0%-20%)		
2-Hexanone	250	TU	0.00	T	164	ug/L	4	66*	(0%-20%)		
4-Methyl-2-pentanone	250	U	0.00		219	ug/L	4	88	(0%-20%)		
Acetone	250	TU	0.00	T	138	ug/L	3	55*	(0%-20%)		
Acetonitrile	1250	U	0.00		1190	ug/L	1	95	(0%-20%)		
Benzene	50.0	U	0.00		50.9	ug/L	2	102	(0%-20%)		
Bromodichloromethane	50.0	U	0.00		50.4	ug/L	3	101	(0%-20%)		

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QC Summary

Workorder: 389524

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS												
Batch 1538040												
Bromoform	50.0	U	0.00		50.1	ug/L	1	100	(0%-20%)	CDS1	01/18/16	18:25
Bromomethane	50.0	U	0.00		58.3	ug/L	4	117	(0%-20%)			
Carbon disulfide	250	U	0.00		281	ug/L	5	112	(0%-20%)			
Carbon tetrachloride	50.0	U	0.00		51.8	ug/L	4	104	(0%-20%)			
Chlorobenzene	50.0	U	0.00		48.5	ug/L	1	97	(0%-20%)			
Chloroethane	50.0	U	0.00		55.0	ug/L	4	110	(0%-20%)			
Chloroform	50.0	U	0.00		49.3	ug/L	5	99	(0%-20%)			
Chloromethane	50.0	U	0.00		51.4	ug/L	6	103	(0%-20%)			
Dibromochloromethane	50.0	U	0.00		49.9	ug/L	5	100	(0%-20%)			
Dibromomethane	50.0	U	0.00		49.1	ug/L	3	98	(0%-20%)			
Dichlorodifluoromethane	50.0	TU	0.00		63.6	ug/L	5	127	(0%-20%)			
Ethylbenzene	50.0	U	0.00		47.2	ug/L	3	94	(0%-20%)			
Iodomethane	250	U	0.00		251	ug/L	5	100	(0%-20%)			
Methylene chloride	50.0	U	0.00		49.2	ug/L	3	98	(0%-20%)			
Styrene	50.0	U	0.00		46.1	ug/L	2	92	(0%-20%)			
Tetrachloroethylene	50.0	U	0.00		50.5	ug/L	1	101	(0%-20%)			
Toluene	50.0	U	0.00		44.1	ug/L	2	88	(0%-20%)			
Trichloroethylene	50.0	U	0.00		52.2	ug/L	2	104	(0%-20%)			
Trichlorofluoromethane	50.0	U	0.00		61.2	ug/L	2	122	(0%-20%)			
Vinyl acetate	250	U	0.00		256	ug/L	1	102	(0%-20%)			
Vinyl chloride	50.0	U	0.00		49.4	ug/L	5	99	(0%-20%)			

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QC Summary

Workorder: 389524

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
Volatile-GC/MS												
Batch 1538040												
Xylenes (total)	150	U	0.00		145	ug/L	1	96	(0%-20%)			
cis-1,2-Dichloroethylene	50.0	U	0.00		49.7	ug/L	3	99	(0%-20%)	CDS1	01/18/16	18:25
cis-1,3-Dichloropropylene	50.0	U	0.00		53.1	ug/L	5	106	(0%-20%)			
trans-1,2-Dichloroethylene	50.0	U	0.00		48.5	ug/L	2	97	(0%-20%)			
trans-1,3-Dichloropropylene	50.0	U	0.00		47.2	ug/L	4	94	(0%-20%)			
**1,2-Dichloroethane-d4	50.0		57.3		54.4	ug/L		109	(70%-130%)			
**Bromofluorobenzene	50.0		41.6		46.1	ug/L		92	(70%-130%)			
**Toluene-d8	50.0		50.6		45.9	ug/L		92	(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: **389524**

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.

Volatile

Surrogate Recovery Report

SDG Number: GEL389524

Matrix Type: LIQUID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203470453	LCS for batch 1538040	93	93	99
1203470452	MB for batch 1538040	100	96	93
1203470454	B33RK7PS	113	92	90
1203470455	B33RK7PSD	109	92	92
1203470946	LCS for batch 1538040	110	101	98
1203470945	MB for batch 1538040	118	107	91
389524001	B33RK5	106	105	84

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