

The order of this data package is as follows:

1. Chain-of-Custody/Lab Request
2. Copies of field COCs
3. Validation Report
4. Laboratory analysis

Comments:

Revised data begins on page 123.

[illegible]

## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11258

EVENT NAME: Water/CdV (TA16 260) Q3 MY2017

SAMPLE ID: CAWA-17-134190

WORK ORDER:

	AS PLANNED	AS COLLECTED		AS PLANNED	AS COLLECTED
Date Collected (MM/DD/YYYY):	06-02-2017	OK	FIELD MATRIX:	WG	OK
TIME COLLECTED (HH:MM):	13:33		MEDIA:	UA	
PRS ID:	NA		SAMPLE TECH CODE:	GSP	
LOCATION ID:	R-68		FIELD PREP:	UF	
LOCATION TYPE:	NA		FIELD QC TYPE:	REG	
TOP DEPTH:			SAMPLE USAGE:	INV	
BOTTOM DEPTH:			EXCAVATED:		YES / NO / <input checked="" type="checkbox"/>

PRIORITY	ORDER	CONTAINER	#	PRESERVATIVE	COLLECTED Y/N	SPECIAL INSTRUCTIONS
NA	MSGP-Hg	1 LITER POLY	1	HNO3	Y	NA
	WSP-8082-PCB	1 LITER AMBER GLASS	3	ICE		NA
	WSP-8260B- VOA	40 ML SEPTUM AMBER GLASS	2	HCL		10-day Quick turn
	WSP-8270C- SVOA	1 LITER AMBER GLASS	2	ICE		NA
	WSP-8290-D/F	1 LITER AMBER GLASS	2	ICE		NA
	WSP-8330B-NMED HEXMOD	1 LITER AMBER GLASS	3	ICE		10-day Quick turn
	WSP-CN(T)	250 ML POLY	1	NAOH		NA
	WSP-GrossAB	1 LITER POLY	1	HNO3		
	WSP-LL-H-3	1 LITER POLY	1	NONE		
	WSP-RAD	1 GAL POLY	1	HNO3		
	WSP-TKN+TOC	500 ML AMBER GLASS	1	H2SO4		

## SAMPLE COMMENTS:

Sampled  $\approx$  40' ft. from running diesel generator.

## LOCATION COMMENTS:

None



## SAMPLE COLLECTION LOG/FIELD CHAIN OF CUSTODY

EVENT ID: 11258

EVENT NAME: Water/CdV (TA16 260) Q3 MY2017

SAMPLE ID: CAWA-17-134190

WORK ORDER:

## FIELD PARAMETERS:

Sample Time	<u>3:43</u>	HH:MM	Dissolved Oxygen	<u>6.21</u>	Flow (in gpm)	<u>5.76</u>
Oxidation-Reduction Potential	<u>161.5</u>		pH	<u>7.93</u>	Specific Conductance	<u>1285</u>
Temperature	<u>14.1</u>		Turbidity	<u>125.7</u>		

COLLECTED BY (PRINT): D. Jaramillo, A. Vigil

RELINQUISHED BY (Printed Name) <u>ANDREW VIGIL</u> (Signature) <u>Andrew Vigil</u>	Date/Time <u>6/2/2017</u> <u>1500</u>	RECEIVED BY (Printed Name) <u>K. C. Cane</u> (Signature) <u>[Signature]</u>	Date/Time <u>6/2/17</u> <u>15100</u>
RELINQUISHED BY (Printed Name) (Signature)	Date/Time	RECEIVED BY (Printed Name) (Signature)	Date/Time

Report Date: 05/30/2017

## DATA VALIDATION REPORT

Chain Of Custody No. 2017-1648

### 1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
424732	EPA:170.0	1				
424732	SW-846:8260B	1				
424732	SW-846:8330B	1				

SDG	Analytical Method	Analysis Lot ID	Prep Lot ID	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks	Method Blanks	Matrix Spikes	Matrix Spike Dups	Analytical Spikes	Post-Digestion Spikes	Lab Control Samples	Lab Control Sample Dups	Blank Spike	Blank Spike Dups	Lab Duplicates	Storage Blanks	Preparation Blanks	Reagent Blanks
424732	EPA:170.0	NA	NA	1																	
424732	SW-846:8260B	1671196	1671196	1					4					7							
424732	SW-846:8330B	1671746	1671745	1					1	1	1			1							

### 2. Distribution Of Analytes In EDD.

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
EPA:170.0	VOC	CAWA-17-134190	424732001	REG	1	0	0	0
SW-846:8260B	VOC	CAWA-17-134190	424732001	REG	80	3	0	0
SW-846:8260B	VOC	LCS	1203804344	LCS	0	3	70	0
SW-846:8260B	VOC	LCS	1203804345	LCS	0	3	10	0
SW-846:8260B	VOC	LCS	1203806304	LCS	0	3	70	0
SW-846:8260B	VOC	LCS	1203806305	LCS	0	3	10	0
SW-846:8260B	VOC	LCS	1203806750	LCS	0	3	70	0
SW-846:8260B	VOC	LCS	1203806751	LCS	0	3	10	0
SW-846:8260B	VOC	LCS	1203807986	LCS	0	3	10	0
SW-846:8260B	VOC	MB	1203804343	MB	80	3	0	0
SW-846:8260B	VOC	MB	1203806303	MB	80	3	0	0
SW-846:8260B	VOC	MB	1203806749	MB	80	3	0	0
SW-846:8260B	VOC	MB	1203807982	MB	80	3	0	0
SW-846:8330B	LCMS/MS HIGH	CAWA-17-133288	1203805559	MS	0	1	20	0
SW-846:8330B	LCMS/MS HIGH	CAWA-17-133288	1203805560	MSD	0	1	20	0
SW-846:8330B	LCMS/MS HIGH	CAWA-17-134190	424732001	REG	20	1	0	0

DATA VALIDATION REPORT

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
SW-846:8330B	LCMS/MS HIGH	LCS	1203805556	LCS	0	1	20	0
SW-846:8330B	LCMS/MS HIGH	MB	1203805555	MB	20	1	0	0

3. Are any analytes missing?

No.

4. Were any holding times exceeded?

No.

5. Any contaminants in blanks?

No.

6. Any surrogate recoveries outside the control limits?

No.

7. Any MS/MSD recoveries or RPDs outside the control limits?

No.

8. Any LCS/LCSD or BS/BSD recoveries or RPDs outside the control limits?

LCS Lab Sample	LCSD Lab	Analytical Method	Parameter Name	Lab Lot ID	Analysis	Sample Matrix	LCS Spike Recovery	LCSD Spike Recovery	Upper Limit	Lower Limit	Upper Rejection Limit	Lower Rejection Limit	RPD	RPD Limit
----------------	----------	-------------------	----------------	------------	----------	---------------	--------------------	---------------------	-------------	-------------	-----------------------	-----------------------	-----	-----------

## DATA VALIDATION REPORT

LCS Lab Sample	LCSD Lab	Analytical Method	Parameter Name	Lab Lot ID	Analysis	Sample Matrix	LCS Spike Recovery	LCSD Spike Recovery	Upper Limit	Lower Limit	Upper Rejection Limit	Lower Rejection Limit	RPD	RPD Limit
1203805556		SW-846:8330B	Dinitrotoluene[2,6-]	1671745	06-09-2017	W	106		105	72				
1203805556		SW-846:8330B	TATB	1671745	06-09-2017	W	150		135	47				

9. Any Field Duplicate RPDs outside the desired limits?

No.

10. Any Lab Duplicate RPDs outside the desired limits?

No.

11. Any required reporting limits exceeded?

No.

12. Additional Validator's Comments.

13. Display Flagged Data.

Location ID	COC Number	Field Sample ID	Sample Purpose	Analysis Type Code	Analytical Suite	Analytical Method	Parameter Name	Lab Qualifier	Validation Qualifier	Validation Reason Codes	Detect Flag	Lab Result	Lab Units	Report Result	Report Units	Report MDA	Report Uncertainty	Lab Matrix	Sample Date	Percent	Analysis Lot ID	Validation Status Code	Use Flag
R-68	2017-1648	CAWA-17-134190	REG	INIT	VOC	SW-846:8260B	Methylene Chloride	U	U	N4	N	1.83	ug/L	1.83	ug/L			W	06/02/2017		1671196	VAL	Y

### Reason Code

### Description

NQ

The analytical laboratory did not qualify the analyte as not detected and/or any other standard qualify. The analyte is detected in the sample.

U\_LAB

The analytical laboratory qualified the analyte as not detected.

DATA VALIDATION REPORT

Reason Code

Description

V4 The sample result is less than or equal to 5 times (10 times for acetone, methylene chloride, and 2-butanone) the concentration of the related analyte in the method blank, which indicates the reported detection is considered indistinguishable from contamination in the blank.

14. Usable Result Count.

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAWA-17-134190	R-68	REG	EPA:170.0	0	1
CAWA-17-134190	R-68	REG	SW-846:8260B	0	80
CAWA-17-134190	R-68	REG	SW-846:8330B	0	20



## DATA VALIDATION REPORT

Chain Of Custody No. 2017-1648 - Rev

### 1. Distribution Of Samples In EDD.

SDG	Analytical Method	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks
424732	SW-846:8330B	1				

SDG	Analytical Method	Analysis Lot ID	Prep Lot ID	Regular Samples	Field Duplicates	Trip Blanks	Field Blanks	Equipment Blanks	Method Blanks	Matrix Spikes	Matrix Spike Dups	Analytical Spikes	Post-Digestion Spikes	Lab Control Samples	Lab Control Sample Dups	Blank Spike	Blank Spike Dups	Lab Duplicates	Storage Blanks	Preparation Blanks	Reagent Blanks
424732	SW-846:8330B	1671746	1671745	1					1												

### 2. Distribution Of Analytes In EDD.

Analytical Method	Analytical Method Category	Field Sample ID	Lab Sample ID	Sample Purpose	Target Analytes	Surrogates	Spiked Compounds	TICS
SW-846:8330B	LCMS/MS HIGH	CAWA-17-134190	424732001	REG	3	0	0	0
SW-846:8330B	LCMS/MS HIGH	MB	1203805555	MB	3	0	0	0

### 3. Are any analytes missing?

No.

### 4. Were any holding times exceeded?

No.

### 5. Any contaminants in blanks?

No.

### 6. Any surrogate recoveries outside the control limits?

## DATA VALIDATION REPORT

No.

7. Any MS/MSD recoveries or RPDs outside the control limits?

No.

8. Any LCS/LCSD or BS/BSD recoveries or RPDs outside the control limits?

No.

9. Any Field Duplicate RPDs outside the desired limits?

No.

10. Any Lab Duplicate RPDs outside the desired limits?

No.

11. Any required reporting limits exceeded?

No.

12. Additional Validator's Comments.

13. Display Flagged Data.

None.

### **Reason Code**

### **Description**

U\_LAB                      The analytical laboratory qualified the analyte as not detected.

14. Usable Result Count.

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
-----------------	-------------	----------------	-------------------	-----------------------	---------------

## DATA VALIDATION REPORT

Field Sample ID	Location ID	Sample Purpose	Analytical Method	No. Unuseable Records	Total Records
CAWA-17-134190	R-68	REG	SW-846:8330B	0	3

June 12, 2017

Mr. Keith Greene  
Los Alamos National Laboratory  
TA-03, SM271, Drop Pt. 02U, Rm111  
Los Alamos, New Mexico 87545

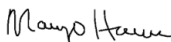
Re: LANL- WQH Water Samples  
Work Order: 424732  
SDG: 2017-1648

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on June 06, 2017, and analyzed for Explosives by LCMSMS and GC/MS Volatile. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4485.

Sincerely,

  
Margo Herron for  
Valerie Davis  
Project Manager

Chain of Custody: 2017-1648  
Enclosures



**ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)**  
**LANL- WQH Water Samples**  
**Work Order #: 424732**  
**SDG: 2017-1648**

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# Case Narrative

**Case Narrative for  
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)  
LANL- WQH Water Samples  
Workorder #: 424732  
SDG # : 2017-1648**

**June 12, 2017**

**Laboratory Identification:**

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

**Summary**

**Sample receipt** The sample arrived at GEL Laboratories LLC, Charleston, South Carolina on June 06, 2017 for analysis. The sample was delivered with proper chain of custody documentation and signatures. The samples were screened according to GEL Standard Operating Procedure. All sample containers arrived without any visible signs of tampering or breakage. Containers were checked for pH, where appropriate, and matched the preservative as documented on the accompanying chain of custody. Shipping container temperature was within specification (0 - 6C). Shipping container temperature was checked, documented, and within specifications. There are no additional comments concerning sample receipt.

**Sample Identification** The laboratory received the following sample:

<b><u>Laboratory ID</u></b>	<b><u>Client ID</u></b>
424732001	CAWA-17-134190

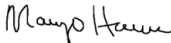
**Case Narrative**

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: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Explosives by LCMSMS and GC/MS Volatile.

I certify that this data report is in compliance with the terms and conditions of the subcontract and task order, both technically and for completeness, for other than the conditions detailed in the attached case narrative.

  
Margo Herron for  
Valerie Davis  
Project Manager

**List of current GEL Certifications as of 12 June 2017**

<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	LA170010
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122017-1
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	T104704235-17-12
Utah NELAP	SC000122017-22
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

# **Chain of Custody and Supporting Documentation**





Laboratories LLC

## SAMPLE RECEIPT &amp; REVIEW FORM

Client: <u>ESHL</u>		SDG/AR/COC/Work Order: <u>424732</u>	
Received By: <u>ZKW</u>		Date Received: <u>6/6/17</u>	
Carrier and Tracking Number		Circle Applicable: <input checked="" type="checkbox"/> FedEx Express <input type="checkbox"/> FedEx Ground <input type="checkbox"/> UPS <input type="checkbox"/> Field Services <input type="checkbox"/> Courier <input type="checkbox"/> Other <u>5908 1782 1683 - 4°C</u> <u>5908 1782 1650 - 3°C</u> <u>5908 1782 1709 - 5°C</u> <u>5908 1782 1661 - 5°C</u> <u>5908 1782 1672 - 4°C</u> <u>5908 1782 1694 - 4°C</u> <u>5908 1782 1640 - 5°C</u>	
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
Shipped as a DOT Hazardous?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____	
COC/Samples marked or classified as radioactive?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> <input checked="" type="checkbox"/> CPM / mR/Hr Classified as: Rad 1 Rad 2 Rad 3	
Is package, COC, and/or Samples marked HAZ?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:	

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Wet Ice <input checked="" type="checkbox"/> Ice Packs Dry ice None Other: *all temperatures are recorded in Celsius TEMP: <u>Above</u>
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>IR3-16</u> Secondary Temperature Device Serial # (If Applicable):
5 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)
6 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: If Preservation added, Lot#:
7 Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If Yes, Are Encores or Soil Kits present? Yes ___ No <input checked="" type="checkbox"/> (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes <input checked="" type="checkbox"/> No ___ N/A ___ (If unknown, select No) VOA vials free of headspace? Yes ___ No <input checked="" type="checkbox"/> N/A ___ Sample ID's and containers affected: <u>Both vials for 136838 and total for 17133364</u> <u>reduced headspace</u>
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected:
9 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:
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected:
11 Number of containers received match number indicated on COC?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sample ID's affected: <u>We received sample CAWA-17-134191 5/31/17 @ 8:54</u>
12 Are sample containers identifiable as GEL provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Comments (Use Continuation Form if needed):

\* We also rec'd 2 VOA vials for CAWA-17-13394 not indicated on the CoC.

\* We only rec'd 1 VOA vial for WSTMD-17-136839

PM (or PMA) review: Initials

MCH

Date

6/7/17

Page

1 of 1

GL-CHL-SR-001 Rev 5



ORIGIN ID: SAFA (505) 665-9966  
KEITH GREENE  
LOS ALAMOS NATL LAB.  
TR00 BLDG 1237 DPU 03  
UNITED STATES US

SHIP DATE: 05 JUN 17  
ACTWGT: 51.0 LB MAN  
CAD: 0014176/CAFE2916

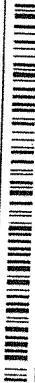
BILL SENDER

TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

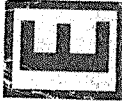
CHARLESTON SC 29407

(843) 566-8171

REF: 21PD0ASRGW04BAGWEO



FedEx  
Express



16131503130101

2 of 2  
TUE - 06 JUN 10:30A  
PRIORITY OVERNIGHT

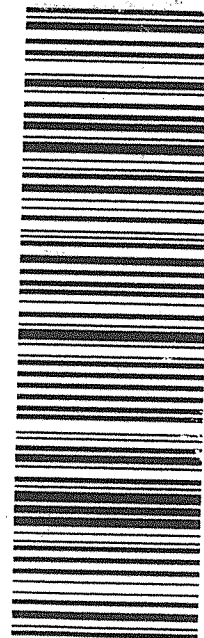
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Mstr# 5908 1782 1640

0201

X7 RBWA

29407  
SC-US CHS



Part # 156148V-434 RIT2 06/15 33

ORIGIN ID: SAFA (505) 665-9966  
KEITH GREENE  
LOS ALAMOS NATL LAB.  
TR00 BLDG 1237 DPU 03  
UNITED STATES US

SHIP DATE: 05 JUN 17  
ACTWGT: 50.0 LB MAN  
CAD: 0014176/CAFE2916

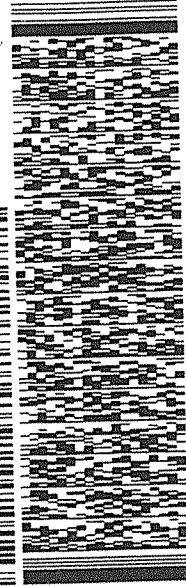
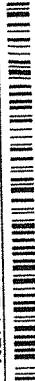
BILL SENDER

TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 566-8171

REF: 21PD0ASRGW04BAGWEO



FedEx  
Express



16131503130101

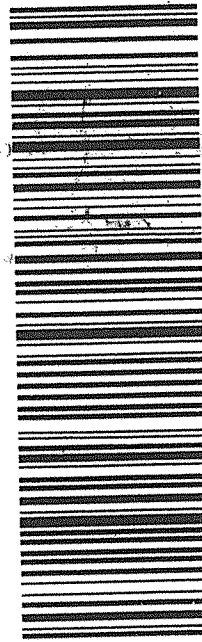
1 of 2  
TUE - 06 JUN 10:30A  
PRIORITY OVERNIGHT

TRK# 5908 1782 1683

## MASTER ##

X7 RBWA

29407  
SC-US CHS



Part # 156148V-434 RIT2 06/15 33

538C1/A502/329B

4c

ORIGIN ID:SAFA (505) 665-9966  
KEITH GREENE  
LOS ALAMOS NATL LAB.  
TA00 BLDG 1237 DPU 03  
LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 05JUN17  
ACTWGT: 52.0 LB MAN  
CAD: 0014176/CAFE2916

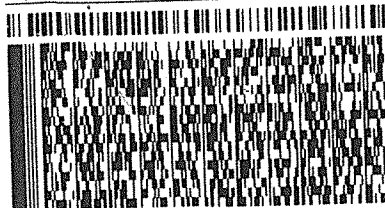
BILL SENDER

TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171

REF: 21PD0ASRGW04BAGWE0



FedEx  
Express



ORIGIN ID:SAFA (505) 665-9966  
KEITH GREENE  
LOS ALAMOS NATL LAB.  
TA00 BLDG 1237 DPU 03

LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 05JUN17  
ACTWGT: 53.0 LB MAN  
CAD: 0014176/CAFE2916

BILL SENDER

TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171

REF: 21PD0ASRGW04BAGWE0



FedE  
Expre



1 of 2  
TRK# 5908 1782 1640  
0201  
## MASTER ##

X7 RBWA

TUE - 06 JUN 10:30  
PRIORITY OVERNIGHT

2940  
SC-US CH

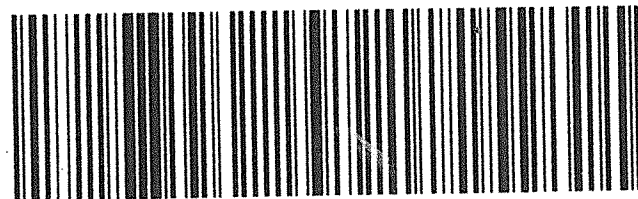


2 of 2  
MPS# 5908 1782 1672  
0263  
Mstr# 5908 1782 1661

X7 RBWA

TUE - 06 JUN 10:30  
PRIORITY OVERNIGHT

2940  
SC-US CH



SHIP DATE: 05JUN17  
ACTWGT: 62.0 LB MAN  
CAD: 0014176/CAFE2916

BILL SENDER

ORIGIN ID:SAFA (505) 665-9966  
KEITH GREENE  
LOS ALAMOS NATL LAB.  
TA00 BLDG 1237 DPU 03  
LOS ALAMOS, NM 87545  
UNITED STATES US

TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

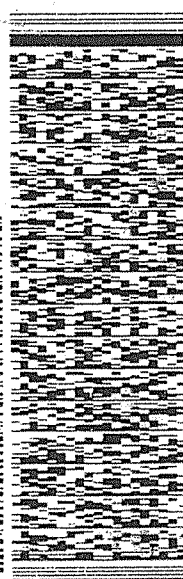
CHARLESTON SC 29407

(843) 556-8171

REF: 21PD0ASRGW04BAGWE0



FedEx  
Express



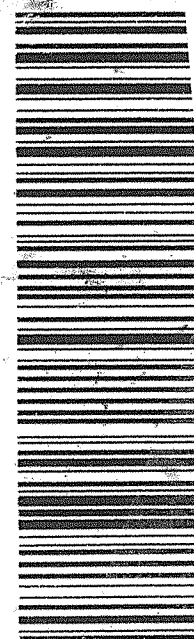
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PRIORITY OVERNIGHT

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Mstr# 5908 1782 1683

X7 RBWA

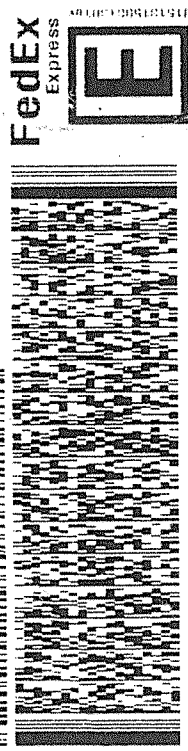
29407  
SC-US CHS



ORIGIN ID: SAFA (505) 665-9966  
SHIP DATE: 05JUN17  
ACTING: 56.0 LB. MAN  
LOS ALAMOS NATL LAB.  
TA00 BLDG 1237 DPU 03  
BILL SENDER  
LOS ALAMOS, NM 87545  
UNITED STATES US

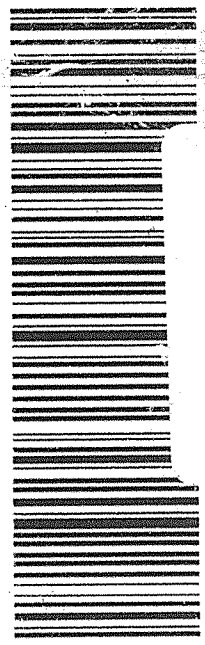
TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407  
(843) 566-8171  
REF: 21PD0ASRGW04BAGWE0



TUE - 06 JUN 10:30A  
PRIORITY OVERNIGHT

TRK# 5908 1782 1709  
0201  
X7 RBWA  
29407  
SC-US CHS



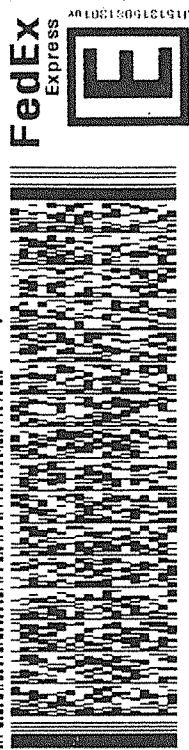
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5 10:30  
E 1709  
06.06

Part # 156148V-434 RTT2 06/15 33

ORIGIN ID: SAFA (505) 665-9966  
SHIP DATE: 05JUN17  
ACTING: 51.0 LB. MAN  
LOS ALAMOS NATL LAB.  
TA00 BLDG 1237 DPU 03  
BILL SENDER  
LOS ALAMOS, NM 87545  
UNITED STATES US

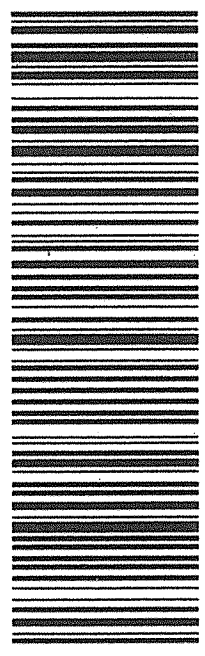
TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407  
(843) 566-8171  
REF: 21PD0ASRGW04BAGWE0



TUE - 06 JUN 10:30A  
PRIORITY OVERNIGHT

TRK# 5908 1782 1661  
0201  
X7 RBWA  
29407  
SC-US CHS



Part # 156148V-434 RTT2 06/15 33

# **Data Review Qualifier Flag Definition Sheet**

## Data Review Qualifier Definitions

Qualifier	Explanation
-----------	-------------

*	A quality control analyte recovery is outside of specified acceptance criteria
**	Analyte is a surrogate compound
<	Result is less than value reported
>	Result is greater than value reported
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
A	The TIC is a suspected aldol-condensation product
B	Target analyte was detected in the associated blank
B	Metals-Either presence of analyte detected in the associated blank, or MDL/IDL < sample value < PQL
BD	Results are either below the MDC or tracer recovery is low
C	Analyte has been confirmed by GC/MS analysis
D	Results are reported from a diluted aliquot of the sample
d	5-day BOD-The 2:1 depletion requirement was not met for this sample
E	Organics-Concentration of the target analyte exceeds the instrument calibration range
E	Metals-%difference of sample and SD is >10%. Sample concentration must meet flagging criteria
H	Analytical holding time was exceeded
h	Preparation or preservation holding time was exceeded
J	Value is estimated
N	Metals-The Matrix spike sample recovery is not within specified control limits
N	Organics-Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based on nearest internal standard response factor
N/A	Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
ND	Analyte concentration is not detected above the reporting limit
UI	Gamma Spectroscopy-Uncertain identification
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	QC Samples were not spiked with this compound
Z	Paint Filter Test-Particulates passed through the filter, however no free liquids were observed.

P Organics-The concentrations between the primary and confirmation columns/detectors is >40% difference.  
For HPLC, the difference is >70%.

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.



# **Volatile Analysis**

# Case Narrative

**GC/MS Volatile  
Technical Case Narrative  
ARS International, LLC (ARSL)  
SDG #: 2017-1648  
Work Order #: 424732**

**Method/Analysis Information**

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

Analytical Method: SW-846:8260B

Analytical Batch Number: 1671196

**Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
424732001	CAWA-17-134190
1203804346	424596006(CAWA-17-134191) Post Spike (PS)
1203804347	424596006(CAWA-17-134191) Post Spike (PS)
1203804348	424596006(CAWA-17-134191) Post Spike Duplicate (PSD)
1203804349	424596006(CAWA-17-134191) Post Spike Duplicate (PSD)
1203806749	Method Blank (MB)
1203806750	Laboratory Control Sample (LCS)
1203806751	Laboratory Control Sample (LCS)
1203807982	Method Blank (MB)
1203807986	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# 26.

**Calibration Information**

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

**Initial Calibration**

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

**Continuing Calibration Verification Requirements**

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

**Quality Control (QC) Information****Blank (MB) Statement**

Target analytes were detected in the blank 1203807982 (MB) below the reporting limit.

**Surrogate Recoveries**

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

**Laboratory Control Sample (LCS) Recovery**

The LCS spike recoveries met the acceptance limits.

**QC Sample Designation**

Sample 424596006 (CAWA-17-134191) was designated for spike analysis.

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

The matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within the required acceptance limits.

**Relative Percent Difference (RPD) Statement**

The RPDs between the matrix spike pair met the acceptance limits.

**Internal Standard (ISTD) Acceptance**

The internal standard responses in all client and quality control samples met the required acceptance criteria.

**Technical Information****Holding Time Specifications**

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 reports (DERs) was not generated to document procedural anomalies that may deviate from referenced SOP or contractual documents.

**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.

**Electronic Package Comment**

The following package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative of each electronic package will indicate the reviewer name associated with the generation of the data and package. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

**System Configuration**

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

<b>Instrument ID</b>	<b>Instrument</b>	<b>System Configuration</b>	<b>Column ID</b>	<b>Column Description</b>	<b>P &amp; T Trap</b>
VOA4.I	Hewlett Packard 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

ARSL004 ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)

Client SDG: 2017-1648 GEL Work Order: 424732

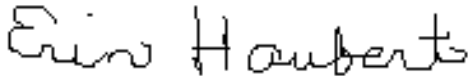
#### The Qualifiers in this report are defined as follows:

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- 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: 12 JUN 2017

Title: Data Validator

# **Sample Data Summary**

**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-1648

Lab Sample ID: 424732001

Date Collected: 06/02/2017 13:33

Date Received: 06/06/2017 09:05

Matrix: W

Client ID: CAWA-17-134190

Batch ID: 1671196

Run Date: 06/08/2017 14:13

Prep Date: 06/08/2017 14:13

Data File: 060817V4\4L413.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00



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

SDG Number: 2017-1648

Lab Sample ID: 424732001

Date Collected: 06/02/2017 13:33

Date Received: 06/06/2017 09:05

Matrix: W

Client ID: CAWA-17-134190

Batch ID: 1671196

Run Date: 06/08/2017 14:13

Prep Date: 06/08/2017 14:13

Data File: 060817V4\4L413.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	J	1.83	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

**SDG Number:** 2017-1648  
**Lab Sample ID:** 424732001  
  
**Client ID:** CAWA-17-134190  
**Batch ID:** 1671196  
**Run Date:** 06/08/2017 14:13  
**Prep Date:** 06/08/2017 14:13  
**Data File:** 060817V4\4L413.D

**Date Collected:** 06/02/2017 13:33  
**Date Received:** 06/06/2017 09:05  
**Client:** ARSL004  
**Method:** SW-846:8260B  
**Inst:** VOA4.I  
**Analyst:** VXY1  
  
**Column:** DB-624

**Matrix:** W  
  
**Project:** ESHL00114  
**SOP Ref:** GL-OA-E-038  
**Dilution:** 1  
**Purge Vol:** 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	50.7	50.0	ug/L 101	(71%-134%)
Bromofluorobenzene	54.4	50.0	ug/L 109	(70%-131%)
Toluene-d8	48.8	50.0	ug/L 98	(74%-124%)

**Tentatively Identified Compound Summary**

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	12.205	20	ug/L	0	J
	unknown siloxane	14.582	32.9	ug/L	0	J
	unknown	16.533	10.2	ug/L	0	J

# **Quality Control Summary**

---

**Volatile**  
**Surrogate Recovery Report**

Page 1 of 1

**SDG Number: 2017-1648****Matrix Type: LIQUID**

---

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203806750	LCS for batch 1671196	101	101	108
1203806751	LCS for batch 1671196	109	102	113
1203806749	MB for batch 1671196	106	101	111
424732001	CAWA-17-134190	101	98	109
1203804346	CAWA-17-134191PS	90	98	99
1203804348	CAWA-17-134191PSD	98	100	100
1203807986	LCS for batch 1671196	102	98	109
1203807982	MB for batch 1671196	97	98	109
1203804347	CAWA-17-134191PS	97	94	105
1203804349	CAWA-17-134191PSD	96	94	106

---

**Surrogate****Acceptance Limits**

DCED4 = 1,2-Dichloroethane-d4

(71%-134%)

TOL = Toluene-d8

(74%-124%)

BFB = Bromofluorobenzene

(70%-131%)

\* Recovery outside Acceptance Limits

# Column to be used to flag recovery values

D Sample Diluted

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 8

SDG Number: 2017-1648

Sample Type: Post Spike

Client ID: CAWA-17-134191PS

Matrix: W

Lab Sample ID 1203804346

Instrument: VOA4.I

Analysis Date: 06/08/2017 17:35

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
179601-23-1	PS m,p-Xylenes	100	0.00 U	87.0	87	59-132
75-05-8	PS Acetonitrile	1250	0.00 U	832	67	56-131
67-64-1	PS Acetone	250	0.00 U	96.3	39	25-155
74-88-4	PS Iodomethane	250	0.00 U	196	78	66-133
75-15-0	PS Carbon disulfide	250	0.00 U	201	80	61-141
108-05-4	PS Vinyl acetate	250	0.00 U	220	88	48-133
78-93-3	PS 2-Butanone	250	0.00 U	127	51	25-143
108-10-1	PS 4-Methyl-2-pentanone	250	0.00 U	175	70	61-127
591-78-6	PS 2-Hexanone	250	0.00 U	158	63	33-138
75-09-2	PS Methylene chloride	50.0	1.24 J	38.0	73	62-123
75-71-8	PS Dichlorodifluoromethane	50.0	0.00 U	38.6	77	33-164
74-87-3	PS Chloromethane	50.0	0.00 U	44.4	89	53-139
75-01-4	PS Vinyl chloride	50.0	0.00 U	48.2	96	58-140
74-83-9	PS Bromomethane	50.0	0.00 U	43.2	86	59-146
75-00-3	PS Chloroethane	50.0	0.00 U	46.1	92	65-129
75-69-4	PS Trichlorofluoromethane	50.0	0.00 U	46.0	92	65-141
60-29-7	PS Ethyl ether	50.0	0.00 U	47.5	95	69-127
75-35-4	PS 1,1-Dichloroethylene	50.0	0.00 U	38.9	78	59-130
1634-04-4	PS tert-Butyl methyl ether	50.0	0.00 U	37.6	75	69-132
156-60-5	PS trans-1,2-Dichloroethylene	50.0	0.00 U	41.5	83	65-127
75-34-3	PS 1,1-Dichloroethane	50.0	0.00 U	41.9	84	67-127
156-59-2	PS cis-1,2-Dichloroethylene	50.0	0.00 U	41.6	83	69-127

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-1648

Sample Type: Post Spike

Client ID: CAWA-17-134191PS

Matrix: W

Lab Sample ID 1203804346

Instrument: VOA4.I

Analysis Date: 06/08/2017 17:35

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
594-20-7	PS 2,2-Dichloropropane	50.0	0.00 U	39.9	80	66-137
74-97-5	PS Bromochloromethane	50.0	0.00 U	40.5	81	71-130
67-66-3	PS Chloroform	50.0	0.00 U	40.5	81	71-129
71-55-6	PS 1,1,1-Trichloroethane	50.0	0.00 U	39.8	80	69-139
563-58-6	PS 1,1-Dichloropropene	50.0	0.00 U	39.6	79	67-130
56-23-5	PS Carbon tetrachloride	50.0	0.00 U	41.8	84	66-143
107-06-2	PS 1,2-Dichloroethane	50.0	0.00 U	40.3	81	69-130
71-43-2	PS Benzene	50.0	0.00 U	40.0	80	66-125
79-01-6	PS Trichloroethylene	50.0	0.00 U	41.0	82	65-131
78-87-5	PS 1,2-Dichloropropane	50.0	0.00 U	41.5	83	67-127
74-95-3	PS Dibromomethane	50.0	0.00 U	39.8	80	72-129
75-27-4	PS Bromodichloromethane	50.0	0.00 U	42.2	84	70-138
10061-01-5	PS cis-1,3-Dichloropropylene	50.0	0.00 U	40.3	81	70-134
108-88-3	PS Toluene	50.0	0.00 U	41.0	82	60-126
10061-02-6	PS trans-1,3-Dichloropropylene	50.0	0.00 U	42.5	85	69-135
79-00-5	PS 1,1,2-Trichloroethane	50.0	0.00 U	39.3	79	66-125
142-28-9	PS 1,3-Dichloropropane	50.0	0.00 U	39.4	79	67-124
127-18-4	PS Tetrachloroethylene	50.0	0.00 U	40.8	82	60-130
124-48-1	PS Dibromochloromethane	50.0	0.00 U	37.6	75	68-143
106-93-4	PS 1,2-Dibromoethane	50.0	0.00 U	40.1	80	71-127
108-90-7	PS Chlorobenzene	50.0	0.00 U	41.0	82	64-124
100-41-4	PS Ethylbenzene	50.0	0.00 U	42.8	86	61-130

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-1648

Sample Type: Post Spike

Client ID: CAWA-17-134191PS

Matrix: W

Lab Sample ID 1203804346

Instrument: VOA4.I

Analysis Date: 06/08/2017 17:35

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
95-47-6	PS o-Xylene	50.0	0.00 U	44.4	89	62-131
100-42-5	PS Styrene	50.0	0.00 U	46.1	92	59-135
75-25-2	PS Bromoform	50.0	0.00 U	41.6	83	64-138
98-82-8	PS Isopropylbenzene	50.0	0.00 U	42.4	85	55-133
79-34-5	PS 1,1,2,2-Tetrachloroethane	50.0	0.00 U	37.1	74	62-129
96-18-4	PS 1,2,3-Trichloropropane	50.0	0.00 U	36.7	73	70-124
108-86-1	PS Bromobenzene	50.0	0.00 U	40.9	82	62-124
103-65-1	PS n-Propylbenzene	50.0	0.00 U	42.2	84	50-133
108-67-8	PS 1,3,5-Trimethylbenzene	50.0	0.00 U	44.2	88	53-135
95-49-8	PS 2-Chlorotoluene	50.0	0.00 U	42.3	85	56-128
106-43-4	PS 4-Chlorotoluene	50.0	0.00 U	41.4	83	53-130
98-06-6	PS tert-Butylbenzene	50.0	0.00 U	43.8	88	55-135
95-63-6	PS 1,2,4-Trimethylbenzene	50.0	0.00 U	43.3	87	53-132
135-98-8	PS sec-Butylbenzene	50.0	0.00 U	44.1	88	50-138
99-87-6	PS 4-Isopropyltoluene	50.0	0.00 U	44.6	89	49-138
541-73-1	PS 1,3-Dichlorobenzene	50.0	0.00 U	40.8	82	56-126
106-46-7	PS 1,4-Dichlorobenzene	50.0	0.00 U	40.2	80	55-125
104-51-8	PS n-Butylbenzene	50.0	0.00 U	43.0	86	43-142
96-12-8	PS 1,2-Dibromo-3-chloropropane	50.0	0.00 U	31.0	62	62-141
87-68-3	PS Hexachlorobutadiene	50.0	0.00 U	39.3	79	40-147
91-20-3	PS Naphthalene	50.0	0.00 U	38.0	76	62-134
87-61-6	PS 1,2,3-Trichlorobenzene	50.0	0.00 U	38.8	78	52-135

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-1648

Sample Type: Post Spike

Client ID: CAWA-17-134191PS

Matrix: W

Lab Sample ID 1203804346

Instrument: VOA4.I

Analysis Date: 06/08/2017 17:35

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
120-82-1	PS 1,2,4-Trichlorobenzene	50.0	0.00 U	37.3	75	50-133
630-20-6	PS 1,1,1,2-Tetrachloroethane	50.0	0.00 U	43.9	88	71-133
95-50-1	PS 1,2-Dichlorobenzene	50.0	0.00 U	40.4	81	60-125
71-36-3	PS n-Butyl alcohol	5000	0.00 U	3980	80	60-140



Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-1648

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-134191PSD

Matrix: W

Lab Sample ID 1203804348

Instrument: VOA4.I

Analysis Date: 06/08/2017 18:04

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
179601-23-1	PSD m,p-Xylenes	100	0.00 U	84.4	84	59-132	3	0-20
75-05-8	PSD Acetonitrile	1250	0.00 U	975	78	56-131	16	0-20
67-64-1	PSD Acetone	250	0.00 U	112	45	25-155	15	0-20
74-88-4	PSD Iodomethane	250	0.00 U	198	79	66-133	1	0-20
75-15-0	PSD Carbon disulfide	250	0.00 U	198	79	61-141	1	0-20
108-05-4	PSD Vinyl acetate	250	0.00 U	239	95	48-133	8	0-20
78-93-3	PSD 2-Butanone	250	0.00 U	148	59	25-143	15	0-20
108-10-1	PSD 4-Methyl-2-pentanone	250	0.00 U	201	81	61-127	14	0-20
591-78-6	PSD 2-Hexanone	250	0.00 U	178	71	33-138	12	0-20
75-09-2	PSD Methylene chloride	50.0	1.24 J	38.8	75	62-123	2	0-20
75-71-8	PSD Dichlorodifluoromethane	50.0	0.00 U	40.6	81	33-164	5	0-20
74-87-3	PSD Chloromethane	50.0	0.00 U	44.1	88	53-139	1	0-20
75-01-4	PSD Vinyl chloride	50.0	0.00 U	48.6	97	58-140	1	0-20
74-83-9	PSD Bromomethane	50.0	0.00 U	44.3	89	59-146	3	0-20
75-00-3	PSD Chloroethane	50.0	0.00 U	46.4	93	65-129	1	0-20
75-69-4	PSD Trichlorofluoromethane	50.0	0.00 U	45.2	90	65-141	2	0-20
60-29-7	PSD Ethyl ether	50.0	0.00 U	51.0	102	69-127	7	0-20
75-35-4	PSD 1,1-Dichloroethylene	50.0	0.00 U	38.8	78	59-130	0	0-20
1634-04-4	PSD tert-Butyl methyl ether	50.0	0.00 U	40.6	81	69-132	8	0-20
156-60-5	PSD trans-1,2-Dichloroethylene	50.0	0.00 U	41.6	83	65-127	0	0-20
75-34-3	PSD 1,1-Dichloroethane	50.0	0.00 U	41.9	84	67-127	0	0-20
156-59-2	PSD cis-1,2-Dichloroethylene	50.0	0.00 U	41.1	82	69-127	1	0-20

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-1648

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-134191PSD

Matrix: W

Lab Sample ID 1203804348

Instrument: VOA4.I

Analysis Date: 06/08/2017 18:04

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
594-20-7	PSD 2,2-Dichloropropane	50.0	0.00 U	39.2	78	66-137	2	0-20
74-97-5	PSD Bromochloromethane	50.0	0.00 U	40.9	82	71-130	1	0-20
67-66-3	PSD Chloroform	50.0	0.00 U	39.9	80	71-129	2	0-20
71-55-6	PSD 1,1,1-Trichloroethane	50.0	0.00 U	39.7	79	69-139	0	0-20
563-58-6	PSD 1,1-Dichloropropene	50.0	0.00 U	38.6	77	67-130	3	0-20
56-23-5	PSD Carbon tetrachloride	50.0	0.00 U	40.8	82	66-143	2	0-20
107-06-2	PSD 1,2-Dichloroethane	50.0	0.00 U	41.8	84	69-130	4	0-20
71-43-2	PSD Benzene	50.0	0.00 U	39.2	78	66-125	2	0-20
79-01-6	PSD Trichloroethylene	50.0	0.00 U	41.1	82	65-131	0	0-20
78-87-5	PSD 1,2-Dichloropropane	50.0	0.00 U	41.3	83	67-127	1	0-20
74-95-3	PSD Dibromomethane	50.0	0.00 U	42.2	84	72-129	6	0-20
75-27-4	PSD Bromodichloromethane	50.0	0.00 U	42.8	86	70-138	2	0-20
10061-01-5	PSD cis-1,3-Dichloropropylene	50.0	0.00 U	41.7	83	70-134	3	0-20
108-88-3	PSD Toluene	50.0	0.00 U	40.2	80	60-126	2	0-20
10061-02-6	PSD trans-1,3-Dichloropropylene	50.0	0.00 U	43.4	87	69-135	2	0-20
79-00-5	PSD 1,1,2-Trichloroethane	50.0	0.00 U	41.7	83	66-125	6	0-20
142-28-9	PSD 1,3-Dichloropropane	50.0	0.00 U	41.3	83	67-124	5	0-20
127-18-4	PSD Tetrachloroethylene	50.0	0.00 U	40.1	80	60-130	2	0-20
124-48-1	PSD Dibromochloromethane	50.0	0.00 U	38.7	77	68-143	3	0-20
106-93-4	PSD 1,2-Dibromoethane	50.0	0.00 U	42.1	84	71-127	5	0-20
108-90-7	PSD Chlorobenzene	50.0	0.00 U	40.5	81	64-124	1	0-20
100-41-4	PSD Ethylbenzene	50.0	0.00 U	41.5	83	61-130	3	0-20

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-1648

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-134191PSD

Matrix: W

Lab Sample ID 1203804348

Instrument: VOA4.I

Analysis Date: 06/08/2017 18:04

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
95-47-6	PSD o-Xylene	50.0	0.00 U	43.4	87	62-131	2	0-20
100-42-5	PSD Styrene	50.0	0.00 U	45.7	91	59-135	1	0-20
75-25-2	PSD Bromoform	50.0	0.00 U	43.8	88	64-138	5	0-20
98-82-8	PSD Isopropylbenzene	50.0	0.00 U	40.0	80	55-133	6	0-20
79-34-5	PSD 1,1,2,2-Tetrachloroethane	50.0	0.00 U	39.2	78	62-129	6	0-20
96-18-4	PSD 1,2,3-Trichloropropane	50.0	0.00 U	38.1	76	70-124	4	0-20
108-86-1	PSD Bromobenzene	50.0	0.00 U	40.3	81	62-124	1	0-20
103-65-1	PSD n-Propylbenzene	50.0	0.00 U	40.3	81	50-133	5	0-20
108-67-8	PSD 1,3,5-Trimethylbenzene	50.0	0.00 U	42.4	85	53-135	4	0-20
95-49-8	PSD 2-Chlorotoluene	50.0	0.00 U	40.8	82	56-128	4	0-20
106-43-4	PSD 4-Chlorotoluene	50.0	0.00 U	39.7	79	53-130	4	0-20
98-06-6	PSD tert-Butylbenzene	50.0	0.00 U	42.4	85	55-135	3	0-20
95-63-6	PSD 1,2,4-Trimethylbenzene	50.0	0.00 U	41.7	83	53-132	4	0-20
135-98-8	PSD sec-Butylbenzene	50.0	0.00 U	42.1	84	50-138	4	0-20
99-87-6	PSD 4-Isopropyltoluene	50.0	0.00 U	43.0	86	49-138	4	0-20
541-73-1	PSD 1,3-Dichlorobenzene	50.0	0.00 U	39.6	79	56-126	3	0-20
106-46-7	PSD 1,4-Dichlorobenzene	50.0	0.00 U	39.4	79	55-125	2	0-20
104-51-8	PSD n-Butylbenzene	50.0	0.00 U	41.3	83	43-142	4	0-20
96-12-8	PSD 1,2-Dibromo-3-chloropropane	50.0	0.00 U	36.4	73	62-141	16	0-20
87-68-3	PSD Hexachlorobutadiene	50.0	0.00 U	38.9	78	40-147	1	0-20
91-20-3	PSD Naphthalene	50.0	0.00 U	43.2	86	62-134	13	0-20
87-61-6	PSD 1,2,3-Trichlorobenzene	50.0	0.00 U	41.0	82	52-135	6	0-20

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-1648

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-134191PSD

Matrix: W

Lab Sample ID 1203804348

Instrument: VOA4.I

Analysis Date: 06/08/2017 18:04

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
120-82-1	PSD 1,2,4-Trichlorobenzene	50.0	0.00 U	39.1	78	50-133	5	0-20
630-20-6	PSD 1,1,1,2-Tetrachloroethane	50.0	0.00 U	44.2	88	71-133	1	0-20
95-50-1	PSD 1,2-Dichlorobenzene	50.0	0.00 U	40.0	80	60-125	1	0-20
71-36-3	PSD n-Butyl alcohol	5000	0.00 U	4640	93	60-140	15	0-20

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-1648

Sample Type: Post Spike

Client ID: CAWA-17-134191PS

Matrix: W

Lab Sample ID 1203804347

Instrument: VOA4.I

Analysis Date: 06/09/2017 22:30

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	U	Spike Conc. ug/L	Recovery %	Acceptance Limits
107-02-8	PS Acrolein	250	0.00	U	240	96	49-141
76-13-1	PS Trichlorotrifluoroethane	250	0.00	U	206	82	57-149
107-05-1	PS Allyl chloride	250	0.00	U	230	92	54-128
107-13-1	PS Acrylonitrile	250	0.00	U	242	97	59-129
107-12-0	PS Propionitrile	250	0.00	U	240	96	58-131
126-98-7	PS Methacrylonitrile	250	0.00	U	247	99	59-134
80-62-6	PS Methyl methacrylate	250	0.00	U	249	99	62-135
97-63-2	PS Ethyl methacrylate	250	0.00	U	244	98	60-136
78-83-1	PS Isobutyl alcohol	2500	0.00	U	2450	98	60-143
126-99-8	PS 2-Chloro-1,3-butadiene	50.0	0.00	U	35.4	71	63-146

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-1648

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-134191PSD

Matrix: W

Lab Sample ID 1203804349

Instrument: VOA4.I

Analysis Date: 06/09/2017 22:59

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
107-02-8	PSD Acrolein	250	0.00 U	240	96	49-141	0	0-20
76-13-1	PSD Trichlorotrifluoroethane	250	0.00 U	210	84	57-149	2	0-20
107-05-1	PSD Allyl chloride	250	0.00 U	235	94	54-128	2	0-20
107-13-1	PSD Acrylonitrile	250	0.00 U	242	97	59-129	0	0-20
107-12-0	PSD Propionitrile	250	0.00 U	234	94	58-131	3	0-20
126-98-7	PSD Methacrylonitrile	250	0.00 U	251	100	59-134	1	0-20
80-62-6	PSD Methyl methacrylate	250	0.00 U	252	101	62-135	1	0-20
97-63-2	PSD Ethyl methacrylate	250	0.00 U	251	100	60-136	3	0-20
78-83-1	PSD Isobutyl alcohol	2500	0.00 U	2450	98	60-143	0	0-20
126-99-8	PSD 2-Chloro-1,3-butadiene	50.0	0.00 U	37.2	74	63-146	5	0-20

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-1648

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1671196

Matrix: WATER

Lab Sample ID 1203806750

Instrument: VOA4.I

Analysis Date: 06/08/2017 09:24

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
179601-23-1	LCS m,p-Xylenes	100	0.0	88.8	89	71-127
75-05-8	LCS Acetonitrile	1250	0.0	948	76	61-125
67-64-1	LCS Acetone	250	0.0	263	105	48-157
74-88-4	LCS Iodomethane	250	0.0	210	84	72-128
75-15-0	LCS Carbon disulfide	250	0.0	213	85	69-138
108-05-4	LCS Vinyl acetate	250	0.0	245	98	67-125
78-93-3	LCS 2-Butanone	250	0.0	226	90	55-138
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	208	83	66-124
591-78-6	LCS 2-Hexanone	250	0.0	246	98	56-140
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	45.6	91	40-160
74-87-3	LCS Chloromethane	50.0	0.0	39.4	79	58-135
75-01-4	LCS Vinyl chloride	50.0	0.0	44.0	88	65-137
74-83-9	LCS Bromomethane	50.0	0.0	46.6	93	63-137
75-00-3	LCS Chloroethane	50.0	0.0	50.4	101	69-129
75-69-4	LCS Trichlorofluoromethane	50.0	0.0	53.8	108	69-138
60-29-7	LCS Ethyl ether	50.0	0.0	51.4	103	72-125
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	43.8	88	66-126
75-09-2	LCS Methylene chloride	50.0	0.0	38.9	78	68-119
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	43.0	86	76-128
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	45.0	90	71-124
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	44.3	89	73-123
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	44.0	88	75-123

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-1648

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1671196

Matrix: WATER

Lab Sample ID 1203806750

Instrument: VOA4.I

Analysis Date: 06/08/2017 09:24

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
594-20-7	LCS 2,2-Dichloropropane	50.0	0.0	47.8	96	72-138
74-97-5	LCS Bromochloromethane	50.0	0.0	42.2	84	76-125
67-66-3	LCS Chloroform	50.0	0.0	43.9	88	76-123
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	46.1	92	74-136
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	44.0	88	72-129
56-23-5	LCS Carbon tetrachloride	50.0	0.0	47.3	95	72-140
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	44.4	89	74-122
71-43-2	LCS Benzene	50.0	0.0	42.7	85	72-121
79-01-6	LCS Trichloroethylene	50.0	0.0	45.9	92	74-125
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	42.6	85	73-121
74-95-3	LCS Dibromomethane	50.0	0.0	42.8	86	78-123
75-27-4	LCS Bromodichloromethane	50.0	0.0	46.0	92	77-131
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	45.2	90	78-131
108-88-3	LCS Toluene	50.0	0.0	43.1	86	71-121
10061-02-6	LCS trans-1,3-Dichloropropylene	50.0	0.0	47.1	94	78-131
79-00-5	LCS 1,1,2-Trichloroethane	50.0	0.0	42.9	86	74-118
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	42.0	84	74-118
127-18-4	LCS Tetrachloroethylene	50.0	0.0	42.5	85	69-129
124-48-1	LCS Dibromochloromethane	50.0	0.0	41.6	83	76-137
106-93-4	LCS 1,2-Dibromoethane	50.0	0.0	44.0	88	78-122
108-90-7	LCS Chlorobenzene	50.0	0.0	42.3	85	74-120
100-41-4	LCS Ethylbenzene	50.0	0.0	44.5	89	73-125



Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-1648

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1671196

Matrix: WATER

Lab Sample ID 1203806750

Instrument: VOA4.I

Analysis Date: 06/08/2017 09:24

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
95-47-6	LCS o-Xylene	50.0	0.0	44.3	89	74-126
100-42-5	LCS Styrene	50.0	0.0	46.2	92	72-130
75-25-2	LCS Bromoform	50.0	0.0	49.2	98	72-136
98-82-8	LCS Isopropylbenzene	50.0	0.0	46.3	93	70-130
79-34-5	LCS 1,1,2,2-Tetrachloroethane	50.0	0.0	41.7	83	70-126
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	41.5	83	74-122
108-86-1	LCS Bromobenzene	50.0	0.0	43.2	86	74-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	44.9	90	67-128
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	46.5	93	70-129
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	43.7	87	71-124
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	44.5	89	69-125
98-06-6	LCS tert-Butylbenzene	50.0	0.0	46.5	93	72-130
95-63-6	LCS 1,2,4-Trimethylbenzene	50.0	0.0	46.2	92	70-126
135-98-8	LCS sec-Butylbenzene	50.0	0.0	46.0	92	70-131
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	47.2	94	71-131
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	42.4	85	72-121
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	42.3	85	71-120
104-51-8	LCS n-Butylbenzene	50.0	0.0	45.5	91	68-134
96-12-8	LCS 1,2-Dibromo-3-chloropropane	50.0	0.0	39.5	79	68-141
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	43.5	87	72-136
91-20-3	LCS Naphthalene	50.0	0.0	45.7	91	72-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	43.7	87	70-130

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-1648

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1671196

Matrix: WATER

Lab Sample ID 1203806750

Instrument: VOA4.I

Analysis Date: 06/08/2017 09:24

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
120-82-1	LCS 1,2,4-Trichlorobenzene	50.0	0.0	42.5	85	71-129
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	46.3	93	79-127
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	42.7	85	74-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	4640	93	63-138

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 1

SDG Number: 2017-1648

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1671196

Matrix: WATER

Lab Sample ID 1203806751

Instrument: VOA4.I

Analysis Date: 06/08/2017 10:50

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
107-02-8	LCS Acrolein	250	0.0	291	116	60-140
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	248	99	61-148
107-05-1	LCS Allyl chloride	250	0.0	246	98	59-125
107-13-1	LCS Acrylonitrile	250	0.0	256	102	65-122
107-12-0	LCS Propionitrile	250	0.0	257	103	64-124
126-98-7	LCS Methacrylonitrile	250	0.0	259	104	64-126
80-62-6	LCS Methyl methacrylate	250	0.0	264	106	69-127
97-63-2	LCS Ethyl methacrylate	250	0.0	257	103	66-130
78-83-1	LCS Isobutyl alcohol	2500	0.0	2650	106	65-135
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	41.9	84	66-147

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-1648

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1671196

Matrix: WATER

Lab Sample ID 1203807986

Instrument: VOA4.I

Analysis Date: 06/09/2017 14:13

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
107-02-8	LCS Acrolein	250	0.0	279	112	60-140
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	238	95	61-148
107-05-1	LCS Allyl chloride	250	0.0	251	100	59-125
107-13-1	LCS Acrylonitrile	250	0.0	262	105	65-122
107-12-0	LCS Propionitrile	250	0.0	264	106	64-124
126-98-7	LCS Methacrylonitrile	250	0.0	266	106	64-126
80-62-6	LCS Methyl methacrylate	250	0.0	269	108	69-127
97-63-2	LCS Ethyl methacrylate	250	0.0	261	104	66-130
78-83-1	LCS Isobutyl alcohol	2500	0.0	2710	108	65-135
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	42.3	85	66-147

## Method Blank Summary

Page 1 of 1

SDG Number:	2017-1648	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1671196	Instrument ID:	VOA4.I	Data File:	060817V4\4L407.D
Lab Sample ID:	1203806749	Prep Date:	06/08/2017 11:19	Analyzed:	06/08/17 11:19
Column:	DB-624				

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 1671196	1203806750	060817V4\4L403A.D	06/08/17	0924
02 LCS for batch 1671196	1203806751	060817V4\4L406A.D	06/08/17	1050
03 CAWA-17-134190	424732001	060817V4\4L413.D	06/08/17	1413
04 CAWA-17-134191PS	1203804346	060817V4\4L420.D	06/08/17	1735
05 CAWA-17-134191PSD	1203804348	060817V4\4L421.D	06/08/17	1804

## Method Blank Summary

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SDG Number:	2017-1648	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1671196	Instrument ID:	VOA4.I	Data File:	060917V4\4L508.D
Lab Sample ID:	1203807982	Prep Date:	06/09/2017 14:42	Analyzed:	06/09/17 14:42
Column:	DB-624				

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
07 LCS for batch 1671196	1203807986	060917V4\4L507A.D	06/09/17	1413
08 CAWA-17-134191PS	1203804347	060917V4\4L524.D	06/09/17	2230
09 CAWA-17-134191PSD	1203804349	060917V4\4L525.D	06/09/17	2259

# Quality Control Data

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b>	<b>2017-1648</b>	<b>Date Collected:</b>	<b>05/31/2017 08:54</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203804346</b>	<b>Date Received:</b>	<b>06/02/2017 09:00</b>		
<b>Client Sample:</b>	<b>QC for batch 1671196</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAWA-17-134191PS</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1671196</b>	<b>Inst:</b>	<b>VOA4.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>06/08/2017 17:35</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>06/08/2017 17:35</b>				
<b>Data File:</b>	<b>060817V4\4L420.D</b>	<b>Column:</b>	<b>DB-624</b>		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		43.9	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		39.8	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		37.1	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		39.3	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		41.9	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		38.9	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		39.6	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		38.8	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		36.7	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		37.3	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		43.3	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		31.0	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		40.1	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		40.4	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		40.3	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		41.5	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		44.2	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		40.8	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		39.4	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		40.2	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		39.9	ug/L	0.300	1.00
78-93-3	2-Butanone		127	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		42.3	ug/L	0.300	1.00
591-78-6	2-Hexanone		158	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		41.4	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		44.6	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		175	ug/L	1.50	5.00
67-64-1	Acetone		96.3	ug/L	1.50	10.0
75-05-8	Acetonitrile		832	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		40.0	ug/L	0.300	1.00
108-86-1	Bromobenzene		40.9	ug/L	0.300	1.00
74-97-5	Bromochloromethane		40.5	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		42.2	ug/L	0.300	1.00
75-25-2	Bromoform		41.6	ug/L	0.300	1.00



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

<b>SDG Number:</b> 2017-1648	<b>Date Collected:</b> 05/31/2017 08:54	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203804346	<b>Date Received:</b> 06/02/2017 09:00	
<b>Client Sample:</b> QC for batch 1671196	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAWA-17-134191PS	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1671196	<b>Inst:</b> VOA4.I	<b>Dilution:</b> 1
<b>Run Date:</b> 06/08/2017 17:35	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 06/08/2017 17:35		
<b>Data File:</b> 060817V4\4L420.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		43.2	ug/L	0.300	1.00
75-15-0	Carbon disulfide		201	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		41.8	ug/L	0.300	1.00
108-90-7	Chlorobenzene		41.0	ug/L	0.300	1.00
75-00-3	Chloroethane		46.1	ug/L	0.300	1.00
67-66-3	Chloroform		40.5	ug/L	0.300	1.00
74-87-3	Chloromethane		44.4	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		37.6	ug/L	0.300	1.00
74-95-3	Dibromomethane		39.8	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		38.6	ug/L	0.300	1.00
60-29-7	Ethyl ether		47.5	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		42.8	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		39.3	ug/L	0.300	1.00
74-88-4	Iodomethane		196	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		42.4	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		38.0	ug/L	1.00	10.0
91-20-3	Naphthalene		38.0	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		46.1	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		40.8	ug/L	0.300	1.00
108-88-3	Toluene		41.0	ug/L	0.300	1.00
79-01-6	Trichloroethylene		41.0	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		46.0	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		220	ug/L	1.50	5.00
75-01-4	Vinyl chloride		48.2	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		41.6	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		40.3	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		87.0	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		3980	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		43.0	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		42.2	ug/L	0.300	1.00
95-47-6	o-Xylene		44.4	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		44.1	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> 2017-1648	<b>Date Collected:</b> 05/31/2017 08:54	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203804346	<b>Date Received:</b> 06/02/2017 09:00	
<b>Client Sample:</b> QC for batch 1671196	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAWA-17-134191PS	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1671196	<b>Inst:</b> VOA4.I	<b>Dilution:</b> 1
<b>Run Date:</b> 06/08/2017 17:35	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 06/08/2017 17:35		
<b>Data File:</b> 060817V4\4L420.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		37.6	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		43.8	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		41.5	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		42.5	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	44.9	50.0	90	(71%-134%)
Bromofluorobenzene	49.6	50.0	99	(70%-131%)
Toluene-d8	48.9	50.0	98	(74%-124%)

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

<b>SDG Number:</b> 2017-1648	<b>Date Collected:</b> 05/31/2017 08:54	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203804347	<b>Date Received:</b> 06/02/2017 09:00	
<b>Client Sample:</b> QC for batch 1671196	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAWA-17-134191PS	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1671196	<b>Inst:</b> VOA4.I	<b>Dilution:</b> 1
<b>Run Date:</b> 06/09/2017 22:30	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 06/09/2017 22:30		
<b>Data File:</b> 060917V4\4L524.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		35.4	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		240	ug/L	1.50	5.00
107-13-1	Acrylonitrile		242	ug/L	1.50	5.00
107-05-1	Allyl chloride		230	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

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

<b>SDG Number:</b> 2017-1648	<b>Date Collected:</b> 05/31/2017 08:54	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203804347	<b>Date Received:</b> 06/02/2017 09:00	
<b>Client Sample:</b> QC for batch 1671196	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAWA-17-134191PS	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1671196	<b>Inst:</b> VOA4.I	<b>Dilution:</b> 1
<b>Run Date:</b> 06/09/2017 22:30	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 06/09/2017 22:30		
<b>Data File:</b> 060917V4\4L524.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		244	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2450	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		247	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		249	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		240	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		206	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b>	<b>2017-1648</b>	<b>Date Collected:</b>	<b>05/31/2017 08:54</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203804347</b>	<b>Date Received:</b>	<b>06/02/2017 09:00</b>		
<b>Client Sample:</b>	<b>QC for batch 1671196</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAWA-17-134191PS</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1671196</b>	<b>Inst:</b>	<b>VOA4.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>06/09/2017 22:30</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>06/09/2017 22:30</b>				
<b>Data File:</b>	<b>060917V4\4L524.D</b>	<b>Column:</b>	<b>DB-624</b>		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	48.5	50.0	97	(71%-134%)
Bromofluorobenzene	52.5	50.0	105	(70%-131%)
Toluene-d8	46.8	50.0	94	(74%-124%)

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

<b>SDG Number:</b> 2017-1648	<b>Date Collected:</b> 05/31/2017 08:54	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203804348	<b>Date Received:</b> 06/02/2017 09:00	
<b>Client Sample:</b> QC for batch 1671196	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAWA-17-134191PSD	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1671196	<b>Inst:</b> VOA4.I	<b>Dilution:</b> 1
<b>Run Date:</b> 06/08/2017 18:04	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 06/08/2017 18:04		
<b>Data File:</b> 060817V4\4L421.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		44.2	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		39.7	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		39.2	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		41.7	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		41.9	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		38.8	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		38.6	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		41.0	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		38.1	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		39.1	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		41.7	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		36.4	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		42.1	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		40.0	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		41.8	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		41.3	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		42.4	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		39.6	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		41.3	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		39.4	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		39.2	ug/L	0.300	1.00
78-93-3	2-Butanone		148	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		40.8	ug/L	0.300	1.00
591-78-6	2-Hexanone		178	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		39.7	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		43.0	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		201	ug/L	1.50	5.00
67-64-1	Acetone		112	ug/L	1.50	10.0
75-05-8	Acetonitrile		975	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		39.2	ug/L	0.300	1.00
108-86-1	Bromobenzene		40.3	ug/L	0.300	1.00
74-97-5	Bromochloromethane		40.9	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		42.8	ug/L	0.300	1.00
75-25-2	Bromoform		43.8	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b>	<b>2017-1648</b>	<b>Date Collected:</b>	<b>05/31/2017 08:54</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203804348</b>	<b>Date Received:</b>	<b>06/02/2017 09:00</b>		
<b>Client Sample:</b>	<b>QC for batch 1671196</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAWA-17-134191PSD</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1671196</b>	<b>Inst:</b>	<b>VOA4.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>06/08/2017 18:04</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>06/08/2017 18:04</b>				
<b>Data File:</b>	<b>060817V4\4L421.D</b>	<b>Column:</b>	<b>DB-624</b>		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		44.3	ug/L	0.300	1.00
75-15-0	Carbon disulfide		198	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		40.8	ug/L	0.300	1.00
108-90-7	Chlorobenzene		40.5	ug/L	0.300	1.00
75-00-3	Chloroethane		46.4	ug/L	0.300	1.00
67-66-3	Chloroform		39.9	ug/L	0.300	1.00
74-87-3	Chloromethane		44.1	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		38.7	ug/L	0.300	1.00
74-95-3	Dibromomethane		42.2	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		40.6	ug/L	0.300	1.00
60-29-7	Ethyl ether		51.0	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		41.5	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		38.9	ug/L	0.300	1.00
74-88-4	Iodomethane		198	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		40.0	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		38.8	ug/L	1.00	10.0
91-20-3	Naphthalene		43.2	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		45.7	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		40.1	ug/L	0.300	1.00
108-88-3	Toluene		40.2	ug/L	0.300	1.00
79-01-6	Trichloroethylene		41.1	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		45.2	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		239	ug/L	1.50	5.00
75-01-4	Vinyl chloride		48.6	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		41.1	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		41.7	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		84.4	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4640	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		41.3	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		40.3	ug/L	0.300	1.00
95-47-6	o-Xylene		43.4	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		42.1	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b>	<b>2017-1648</b>	<b>Date Collected:</b>	<b>05/31/2017 08:54</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203804348</b>	<b>Date Received:</b>	<b>06/02/2017 09:00</b>		
<b>Client Sample:</b>	<b>QC for batch 1671196</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAWA-17-134191PSD</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1671196</b>	<b>Inst:</b>	<b>VOA4.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>06/08/2017 18:04</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>06/08/2017 18:04</b>				
<b>Data File:</b>	<b>060817V4\4L421.D</b>	<b>Column:</b>	<b>DB-624</b>		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		40.6	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		42.4	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		41.6	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		43.4	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	48.9	50.0	98	(71%-134%)
Bromofluorobenzene	49.9	50.0	100	(70%-131%)
Toluene-d8	49.8	50.0	100	(74%-124%)



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

<b>SDG Number:</b> 2017-1648	<b>Date Collected:</b> 05/31/2017 08:54	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203804349	<b>Date Received:</b> 06/02/2017 09:00	
<b>Client Sample:</b> QC for batch 1671196	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAWA-17-134191PSD	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1671196	<b>Inst:</b> VOA4.I	<b>Dilution:</b> 1
<b>Run Date:</b> 06/09/2017 22:59	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 06/09/2017 22:59		
<b>Data File:</b> 060917V4\4L525.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		37.2	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		240	ug/L	1.50	5.00
107-13-1	Acrylonitrile		242	ug/L	1.50	5.00
107-05-1	Allyl chloride		235	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

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

<b>SDG Number:</b> 2017-1648	<b>Date Collected:</b> 05/31/2017 08:54	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203804349	<b>Date Received:</b> 06/02/2017 09:00	
<b>Client Sample:</b> QC for batch 1671196	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAWA-17-134191PSD	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1671196	<b>Inst:</b> VOA4.I	<b>Dilution:</b> 1
<b>Run Date:</b> 06/09/2017 22:59	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 06/09/2017 22:59		
<b>Data File:</b> 060917V4\4L525.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		251	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2450	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		251	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		252	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		234	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		210	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> 2017-1648	<b>Date Collected:</b> 05/31/2017 08:54	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203804349	<b>Date Received:</b> 06/02/2017 09:00	
<b>Client Sample:</b> QC for batch 1671196	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAWA-17-134191PSD	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1671196	<b>Inst:</b> VOA4.I	<b>Dilution:</b> 1
<b>Run Date:</b> 06/09/2017 22:59	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 06/09/2017 22:59		
<b>Data File:</b> 060917V4\4L525.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	47.9	50.0	96	(71%-134%)
Bromofluorobenzene	53.0	50.0	106	(70%-131%)
Toluene-d8	47.1	50.0	94	(74%-124%)

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

Page 1 of 3

SDG Number: 2017-1648

Lab Sample ID: 1203806749

Client Sample: QC for batch 1671196

Client ID: MB for batch 1671196

Batch ID: 1671196

Run Date: 06/08/2017 11:19

Prep Date: 06/08/2017 11:19

Data File: 060817V4\4L407.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

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

SDG Number: 2017-1648

Lab Sample ID: 1203806749

Client Sample: QC for batch 1671196

Client ID: MB for batch 1671196

Batch ID: 1671196

Run Date: 06/08/2017 11:19

Prep Date: 06/08/2017 11:19

Data File: 060817V4\4L407.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

Volatile  
Certificate of Analysis  
Sample Summary

Page 3 of 3

SDG Number:	2017-1648	Matrix:	WATER
Lab Sample ID:	1203806749		
Client Sample:	QC for batch 1671196	Client:	ARSL004
Client ID:	MB for batch 1671196	Method:	SW-846:8260B
Batch ID:	1671196	Inst:	VOA4.I
Run Date:	06/08/2017 11:19	Analyst:	VXY1
Prep Date:	06/08/2017 11:19		
Data File:	060817V4\4L407.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	53.1	50.0	ug/L 106	(71%-134%)
Bromofluorobenzene	55.5	50.0	ug/L 111	(70%-131%)
Toluene-d8	50.7	50.0	ug/L 101	(74%-124%)

## Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
No Tentatively Identified Compounds Found				ug/L		

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

Page 1 of 3

SDG Number: 2017-1648

Lab Sample ID: 1203806750

Client Sample: QC for batch 1671196

Client ID: LCS for batch 1671196

Batch ID: 1671196

Run Date: 06/08/2017 09:24

Prep Date: 06/08/2017 09:24

Data File: 060817V4\4L403A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		46.3	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		46.1	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		41.7	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		42.9	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		44.3	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		43.8	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		44.0	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		43.7	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		41.5	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		42.5	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		46.2	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		39.5	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		44.0	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		42.7	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		44.4	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		42.6	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		46.5	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		42.4	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		42.0	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		42.3	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		47.8	ug/L	0.300	1.00
78-93-3	2-Butanone		226	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		43.7	ug/L	0.300	1.00
591-78-6	2-Hexanone		246	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		44.5	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		47.2	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		208	ug/L	1.50	5.00
67-64-1	Acetone		263	ug/L	1.50	10.0
75-05-8	Acetonitrile		948	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		42.7	ug/L	0.300	1.00
108-86-1	Bromobenzene		43.2	ug/L	0.300	1.00
74-97-5	Bromochloromethane		42.2	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		46.0	ug/L	0.300	1.00
75-25-2	Bromoform		49.2	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-1648

Lab Sample ID: 1203806750

Client Sample: QC for batch 1671196

Client ID: LCS for batch 1671196

Batch ID: 1671196

Run Date: 06/08/2017 09:24

Prep Date: 06/08/2017 09:24

Data File: 060817V4\4L403A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		46.6	ug/L	0.300	1.00
75-15-0	Carbon disulfide		213	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		47.3	ug/L	0.300	1.00
108-90-7	Chlorobenzene		42.3	ug/L	0.300	1.00
75-00-3	Chloroethane		50.4	ug/L	0.300	1.00
67-66-3	Chloroform		43.9	ug/L	0.300	1.00
74-87-3	Chloromethane		39.4	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		41.6	ug/L	0.300	1.00
74-95-3	Dibromomethane		42.8	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		45.6	ug/L	0.300	1.00
60-29-7	Ethyl ether		51.4	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		44.5	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		43.5	ug/L	0.300	1.00
74-88-4	Iodomethane		210	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		46.3	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		38.9	ug/L	1.00	10.0
91-20-3	Naphthalene		45.7	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		46.2	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		42.5	ug/L	0.300	1.00
108-88-3	Toluene		43.1	ug/L	0.300	1.00
79-01-6	Trichloroethylene		45.9	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		53.8	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		245	ug/L	1.50	5.00
75-01-4	Vinyl chloride		44.0	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		44.0	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		45.2	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		88.8	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4640	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		45.5	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		44.9	ug/L	0.300	1.00
95-47-6	o-Xylene		44.3	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		46.0	ug/L	0.300	1.00



**Volatile  
Certificate of Analysis  
Sample Summary**

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<b>SDG Number:</b>	2017-1648	<b>Matrix:</b>	WATER
<b>Lab Sample ID:</b>	1203806750		
<b>Client Sample:</b>	QC for batch 1671196	<b>Client:</b>	ARSL004
<b>Client ID:</b>	LCS for batch 1671196	<b>Method:</b>	SW-846:8260B
<b>Batch ID:</b>	1671196	<b>Inst:</b>	VOA4.I
<b>Run Date:</b>	06/08/2017 09:24	<b>Analyst:</b>	VXY1
<b>Prep Date:</b>	06/08/2017 09:24		
<b>Data File:</b>	060817V4\4L403A.D	<b>Column:</b>	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		43.0	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		46.5	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		45.0	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		47.1	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	50.5	50.0	101	(71%-134%)
Bromofluorobenzene	54.1	50.0	108	(70%-131%)
Toluene-d8	50.5	50.0	101	(74%-124%)

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

SDG Number: 2017-1648

Lab Sample ID: 1203806751

Client Sample: QC for batch 1671196

Client ID: LCS for batch 1671196

Batch ID: 1671196

Run Date: 06/08/2017 10:50

Prep Date: 06/08/2017 10:50

Data File: 060817V4\4L406A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		41.9	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		291	ug/L	1.50	5.00
107-13-1	Acrylonitrile		256	ug/L	1.50	5.00
107-05-1	Allyl chloride		246	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

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

SDG Number: 2017-1648

Lab Sample ID: 1203806751

Client Sample: QC for batch 1671196

Client ID: LCS for batch 1671196

Batch ID: 1671196

Run Date: 06/08/2017 10:50

Prep Date: 06/08/2017 10:50

Data File: 060817V4\4L406A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		257	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2650	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		259	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		264	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		257	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		248	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

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<b>SDG Number:</b>	<b>2017-1648</b>	<b>Matrix:</b>	<b>WATER</b>
<b>Lab Sample ID:</b>	<b>1203806751</b>		
<b>Client Sample:</b>	<b>QC for batch 1671196</b>	<b>Client:</b>	<b>ARSL004</b>
<b>Client ID:</b>	<b>LCS for batch 1671196</b>	<b>Method:</b>	<b>SW-846:8260B</b>
<b>Batch ID:</b>	<b>1671196</b>	<b>Inst:</b>	<b>VOA4.I</b>
<b>Run Date:</b>	<b>06/08/2017 10:50</b>	<b>Analyst:</b>	<b>VXY1</b>
<b>Prep Date:</b>	<b>06/08/2017 10:50</b>		
<b>Data File:</b>	<b>060817V4\4L406A.D</b>	<b>Column:</b>	<b>DB-624</b>

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	54.4	50.0	ug/L 109	(71%-134%)
Bromofluorobenzene	56.6	50.0	ug/L 113	(70%-131%)
Toluene-d8	51.0	50.0	ug/L 102	(74%-124%)

**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-1648

Lab Sample ID: 1203807982

Client Sample: QC for batch 1671196

Client ID: MB for batch 1671196

Batch ID: 1671196

Run Date: 06/09/2017 14:42

Prep Date: 06/09/2017 14:42

Data File: 060917V4\4L508.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

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

SDG Number: 2017-1648

Lab Sample ID: 1203807982

Client Sample: QC for batch 1671196

Client ID: MB for batch 1671196

Batch ID: 1671196

Run Date: 06/09/2017 14:42

Prep Date: 06/09/2017 14:42

Data File: 060917V4\4L508.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	J	1.21	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

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<b>SDG Number:</b> 2017-1648	<b>Matrix:</b> WATER	
<b>Lab Sample ID:</b> 1203807982		
<b>Client Sample:</b> QC for batch 1671196	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> MB for batch 1671196	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1671196	<b>Inst:</b> VOA4.I	<b>Dilution:</b> 1
<b>Run Date:</b> 06/09/2017 14:42	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 06/09/2017 14:42		
<b>Data File:</b> 060917V4\4L508.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	48.4	50.0	97	(71%-134%)
Bromofluorobenzene	54.3	50.0	109	(70%-131%)
Toluene-d8	49.2	50.0	98	(74%-124%)

**Tentatively Identified Compound Summary**

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
No Tentatively Identified Compounds Found				ug/L		

**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-1648

Lab Sample ID: 1203807986

Client Sample: QC for batch 1671196

Client ID: LCS for batch 1671196

Batch ID: 1671196

Run Date: 06/09/2017 14:13

Prep Date: 06/09/2017 14:13

Data File: 060917V4\4L507A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		42.3	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		279	ug/L	1.50	5.00
107-13-1	Acrylonitrile		262	ug/L	1.50	5.00
107-05-1	Allyl chloride		251	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00



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

<b>SDG Number:</b> 2017-1648		<b>Matrix:</b>	WATER
<b>Lab Sample ID:</b> 1203807986			
<b>Client Sample:</b> QC for batch 1671196	<b>Client:</b> ARSL004	<b>Project:</b>	QC
<b>Client ID:</b> LCS for batch 1671196	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b>	GL-OA-E-038
<b>Batch ID:</b> 1671196	<b>Inst:</b> VOA4.I	<b>Dilution:</b>	1
<b>Run Date:</b> 06/09/2017 14:13	<b>Analyst:</b> VXY1	<b>Purge Vol:</b>	5 mL
<b>Prep Date:</b> 06/09/2017 14:13			
<b>Data File:</b> 060917V4\4L507A.D	<b>Column:</b> DB-624		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		261	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2710	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		266	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		269	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		264	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		238	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

Page 3 of 3

<b>SDG Number:</b>	2017-1648	<b>Matrix:</b>	WATER
<b>Lab Sample ID:</b>	1203807986		
<b>Client Sample:</b>	QC for batch 1671196	<b>Client:</b>	ARSL004
<b>Client ID:</b>	LCS for batch 1671196	<b>Method:</b>	SW-846:8260B
<b>Batch ID:</b>	1671196	<b>Inst:</b>	VOA4.I
<b>Run Date:</b>	06/09/2017 14:13	<b>Analyst:</b>	VXY1
<b>Prep Date:</b>	06/09/2017 14:13		
<b>Data File:</b>	060917V4\4L507A.D	<b>Column:</b>	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits	
1,2-Dichloroethane-d4	51.1	50.0	ug/L	102	(71%-134%)
Bromofluorobenzene	54.3	50.0	ug/L	109	(70%-131%)
Toluene-d8	48.9	50.0	ug/L	98	(74%-124%)

# **Explosives by LCMSMS Analysis**

# Case Narrative

**Explosives by LCMSMS  
Technical Case Narrative  
ARS International, LLC (ARSL)  
SDG #: 2017-1648  
Work Order #: 424732**

**Method/Analysis Information**

**Procedure:** The Processing, Extraction, and Analysis of Nitroaromatics, Nitroamines, and Nitrate Esters by SW-846 8330B

Analytical Method: SW846 3535A/8330B

Prep Method: SW846 3535A

Analytical Batch Number: 1671746

Prep Batch Number: 1671745

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in SW846 3535A/8330B:

<b>Sample ID</b>	<b>Client ID</b>
424732001	CAWA-17-134190
1203805555	Method Blank (MB)
1203805556	Laboratory Control Sample (LCS)
1203805559	424596009(CAWA-17-133288) Matrix Spike (MS)
1203805560	424596009(CAWA-17-133288) Matrix Spike Duplicate (MSD)

**Preparation/Analytical Method Verification**

**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-068 REV# 7.

**Calibration Information**

**Initial Calibration**

All initial calibration requirements for this analysis have been met for this SDG.

**Calibration Verification Standard Requirements**

All calibration verification standards (ICV or CCV) have not met requirements of 80-120% for 1203805555 (MB) in this SDG. Please refer to Form 7 of the data package for a list of recoveries. Since the recoveries are biased high and target analytes were not detected in the associated samples, the data are considered unaffected. The data are Q qualified and reported.

**Calibration Blank Requirements**

All initial and continuing calibration blanks (ICB and CCB) bracketing the analyses associated with this batch

for this analysis were within acceptance criteria. Due to software limitations, the CCBs and/or the ICBs may have a concentration for target analytes in the Found column. These values should be zero.

#### **CRI Requirements**

All low level calibration verification (CRI) requirements for this analysis were met by all bracketing CRI standards.

#### **Quality Control (QC) Information**

##### **Method Blank (MB) Statement**

The MB analyzed with this SDG for this analysis met the acceptance criteria.

##### **Surrogate Recoveries**

All the surrogate recoveries were within the established acceptance criteria in this SDG in this analytical batch for this analysis.

##### **Laboratory Control Sample (LCS) Recovery**

One or more of the required spiking analytes were not within the acceptance limits in the laboratory control sample (See Below). While the LCS exhibited a high bias, the analyte was/were not detected in the associated samples, the data are reported.

Sample	Analyte	Value
1203805556 (LCS)	2,6-Dinitrotoluene	106* (72%-105%)
	TATB	150* (47%-135%)

##### **QC Sample Designation**

Client sample 424596009 (CAWA-17-133288) was chosen for matrix spike and matrix spike duplicate analysis.

##### **Matrix Spike (MS) Recovery Statement**

The MS or MSD (See Below) recovered spiked analytes outside of the established acceptance limits. Because the recoveries were biased high and target analytes were not detected in the associated samples above the reporting limit, the data were reported.

Sample	Analyte	Value
1203805560 (CAWA-17-133288MSD)	TATB	152* (38%-149%)

##### **MS/MSD Relative Percent Difference (RPD) Statement**

The RPDs between the MS and MSD met the acceptance limits for this analysis.

##### **Internal Standard (ISTD) Acceptance**

The internal standard responses were within the required acceptance criteria for all samples and QC in this SDG.

#### **Technical Information**

##### **Holding Time Specifications**

All samples in this SDG in this analytical batch met the specified holding time. GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of 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.

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

In accordance with GEL SOP GL-OA-056, all sample and QC extracts are diluted 1:1 v/v with LC reagent grade Water. The samples in this SDG in this analytical batch for this analysis did not require any additional dilutions.

**Sample Re-extraction/Re-analysis**

1203805556 (LCS), 1203805559 (CAWA-17-133288MS) and 1203805560 (CAWA-17-133288MSD) were re-analyzed due to the bracketing CCV failing to meet the required acceptance criteria. The second analysis was bracketed by passing acceptance criteria. Sample 424732001 (CAWA-17-134190) was re-analyzed to confirm potential carryover from the previous sample analysis. The re-analysis data are reported.

**Miscellaneous Information****Data Exception (DER) Documentation**

Data exception report (DER) 1641799 was generated for samples 1203805556 (LCS) and 1203805560 (CAWA-17-133288MSD) in this SDG/batch.

**Manual Integrations**

Manual integrations were not required for any data file associated with this SDG.

**Additional Comments**

Due to software limitations, all initial calibration blanks must be designated as XIB001 in order for the forms to be correct. Due to software limitations, file extensions such as DL, RE, etc. may not appear on the generated forms and/or raw data. Relative Retention Time (RRT) is used by the laboratory to establish peak identity. The RRT of each target analyte is calculated using the retention time of the corresponding internal standard. The RRT of each analyte in a sample must be within 0.1 of the analyte's calculated RRT in the ICV.

**System Configuration**

The laboratory utilizes an Agilent 1100 liquid chromatography instrument for either Primary or Secondary analyte analysis. It is coupled with an Applied Biosystems 4000 Mass Spectrometer/ Mass Spectrometer, designated as either LC/MS/MS #3 or LC/MS/MS #4. The laboratory also utilizes a Shimadzu Nexera XC liquid chromatography instrument for Primary and/or Secondary analyte analysis. It is coupled with an Applied Biosystems 5500 Mass Spectrometer/ Mass Spectrometer, designated as LC/MS/MS #5. All are fitted with an APCI (Atmospheric Pressure Chemical Ionization) probe that is operated in the negative ionization mode for both the Primary and Secondary analyte analysis.

**Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

**Chromatographic Columns**

The LC-MS/MS Explosives analysis was performed on a ABSciex 5500 Qtrap LC/MS/MS.

The detection of the Primary and Secondary Nitroaromatic and Nitramine analytes is accomplished through analysis on the following reversed phase column:

Phenomenex: Ultracarb 5u ODS (20), 250 x 4.60 mm ID.

**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

ARSL004 ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)

Client SDG: 2017-1648 GEL Work Order: 424732

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

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a surrogate compound
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- 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: Michael Penny

Date: 14 JUN 2017

Title: Group Leader

# **Sample Data Summary**

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-134190

Lab Code: GEL

GEL Job No (SDG) 2017-1648

Matrix: WATER

GEL Sample ID: 424732001

Sample Amount 940 mL

Date Received: 06-JUN-17

Moisture: .

Extraction Batch ID: 1671745

Extraction Type Sol Exchange

Date Extracted: 07-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0608061.wiff

Date Analyzed: 10-JUN-17 04:18

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	.266	U	0.0851	0.266
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	.266	U	0.0851	0.266
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	.266	U	0.0851	0.266
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	.266	U	0.0851	0.266
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	.266	U	0.0851	0.266
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
606-20-2	2,6-Dinitrotoluene	.266	U	0.0851	0.266
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
88-72-2	o-Nitrotoluene	.266	U	0.0872	0.266
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
98-95-3	Nitrobenzene	.266	U	0.0851	0.266
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	.266	U	0.0851	0.266
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	.266	U	0.0851	0.266
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				
99-65-0	m-Dinitrobenzene	.266	U	0.0851	0.266
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
479-45-8	Tetryl	.532	U	0.0851	0.532
<i>479-45-8</i>	<i>Tetryl</i>				
78-11-5	PETN	.532	U	0.106	0.532
<i>78-11-5</i>	<i>PETN</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-134190

Lab Code: GEL

GEL Job No (SDG) 2017-1648

Matrix: WATER

GEL Sample ID: 424732001

Sample Amount 940 mL

Date Received: 06-JUN-17

Moisture: .

Extraction Batch ID: 1671745

Extraction Type Sol Exchange

Date Extracted: 07-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-99-0	p-Nitrotoluene	.532	U	0.160	0.532
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				
3058-38-6	TATB	1.06	U	0.319	1.06
<i>3058-38-6</i>	<i>TATB</i>				
618-87-1	3,5-Dinitroaniline	1.06	U	0.319	1.06
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
78-30-8	tris(o-cresyl) phosphate	1.06	U	0.319	1.06
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	2.66	U	0.532	2.66
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	2.66	U	0.532	2.66
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				
121-82-4	RDX	8.08		0.0851	0.266
<i>121-82-4</i>	<i>RDX</i>				

# **Quality Control Summary**

**High Explosives Surrogate Recovery Summary****Lab Name:** GEL Laboratories LLC**GEL Job No (SDG):** 2017-1648**Lab Code:** GEL**HPLC Column:** Ultracarb Phenomenex 5u ODS (20)

<b>Lab Sample ID</b>	<b>Client Sample ID</b>	<b>DNT</b>	<b>QC Limits</b>	<b>Flg</b>
424732001	CAWA-17-134190	100	55 - 115	
1203805555	MB for batch 1671745	102	55 - 115	
1203805556	LCS for batch 1671745	105	55 - 115	
1203805559	CAWA-17-133288MS	81	55 - 115	
1203805560	CAWA-17-133288MSD	93	55 - 115	

DNT = 3,4-Dinitrotoluene

**3B**  
**High Explosives LCS/LCS Duplicate Summary**

**Lab Name:** GEL Laboratories LLC

**Client ID:** LCS

**Lab Code:** GEL

**GEL Job No (SDG)** 2017-1648

**Extract Batch Code:** 1671745

**Date Extracted:** 07-JUN-17

**GEL LCS ID:** 1203805556

**GEL LCSDUP ID:** .

**Analysis Date/Time:** 09-JUN-17 23:37

**DUP Analysis Date/Time:**

**Reporting Units:** ug/L

**QC Type:** LCS/LCSD

Compound	Spike Added	LCS Conc	LCS Rec #	LCSD Conc	LCSD Rec #	RPD #	RPD	Recovery Limits
3,5-Dinitroaniline	5	6.02	120					70 - 121
4-Amino-2,6-dinitrotoluene	5	4.76	95					74 - 116
HMX	5	3.92	78					58 - 113
Nitrobenzene	5	4.52	90					64 - 115
PETN	5	4.8	96					57 - 126
RDX	5	4	80					64 - 117
TATB	2.5	3.76	150 *					47 - 135
Tetryl	5	4.01	80					64 - 122
m-Dinitrobenzene	5	4.66	93					74 - 117
m-Nitrotoluene	5	4.63	93					66 - 114
o-Nitrotoluene	5	4.49	90					64 - 115
p-Nitrotoluene	5	4.84	97					66 - 127
tris(o-cresyl) phosphate	5	3.64	73					43 - 104
1,3,5-Trinitrobenzene	5	4.19	84					70 - 110
2,4,6-Trinitrotoluene	5	4.89	98					69 - 113
2,4-Diamino-6-nitrotoluene	5	3.93	79					50 - 121
2,4-Dinitrotoluene	5	4.41	88					71 - 110
2,6-Diamino-4-nitrotoluene	5	4.21	84					53 - 127
2,6-Dinitrotoluene	5	5.31	106 *					72 - 105
2-Amino-4,6-dinitrotoluene	5	4.52	90					70 - 112

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

**3**  
**High Explosives MS/MSD Summary**

**Lab Name:** GEL Laboratories LLC

**Client ID:** CAWA-17-133288

**Lab Code:** GEL

**GEL Job No (SDG)** 2017-1648

**Extract Batch Code:** 1671745

**Date Extracted:** 07-JUN-17

**GEL Spike ID:** 1203805559

**GEL SpikeDup ID:** 1203805560

**Analysis Date/Time:** 10-JUN-17 02:32

**MSD Analysis Date/Time:** 10-JUN-17 03:07

**Reporting Units:** ug/L

**QC Type:** MS/MSD

Compound	Spike Added	Sample Conc	MS Conc	MS Rec #	MSD Conc	MSD Rec #	RPD #	RPD Limit	Rec Limits
2,6-Diamino-4-nitrotoluene	5.20833	0	5.42	104	5.58	107	3	30	53 - 127
2,6-Dinitrotoluene	5.20833	0	4.49	86	4.26	82	5	30	70 - 106
2-Amino-4,6-dinitrotoluene	5.20833	.342	4.46	79	4.7	84	5	30	67 - 115
3,5-Dinitroaniline	5.20833	.103	5.81	110	5.72	108	2	30	70 - 121
4-Amino-2,6-dinitrotoluene	5.20833	.446	4.76	83	5.32	94	11	30	65 - 120
HMX	5.20833	1.69	6.44	91	6.47	92	1	30	44 - 128
Nitrobenzene	5.20833	0	4.27	82	4	77	6	30	62 - 116
PETN	5.20833	0	4.52	87	4.21	81	7	30	51 - 131
RDX	5.20833	21.2	26.4	100	22.2	20 *	17	30	57 - 125
TATB	2.60417	0	3.88	149	3.97	152 *	2	30	38 - 149
Tetryl	5.20833	0	3.82	73	3.79	73	1	30	50 - 126
m-Dinitrobenzene	5.20833	0	4.93	95	4.53	87	8	30	74 - 117
m-Nitrotoluene	5.20833	0	4.09	78	3.95	76	3	30	59 - 120
1,3,5-Trinitrobenzene	5.20833	0	4.34	83	4.11	79	5	30	67 - 111
2,4,6-Trinitrotoluene	5.20833	.0975	4.56	86	4.59	86	0	30	66 - 112
2,4-Diamino-6-nitrotoluene	5.20833	0	5.74	110	6.16	118	7	30	50 - 121
2,4-Dinitrotoluene	5.20833	.0404	4.61	88	5.19	99	12	30	69 - 113
o-Nitrotoluene	5.20833	0	4.64	89	4.01	77	15	30	56 - 119
p-Nitrotoluene	5.20833	0	4.8	92	4.24	81	12	30	61 - 129
tris(o-cresyl) phosphate	5.20833	0	3.68	71	3.71	71	1	30	38 - 105

#Column to be used to flag recovery and RPD values with an asterisk



# Quality Control Data

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1671745

Lab Code: GEL

GEL Job No (SDG) 2017-1648

Matrix: WATER

GEL Sample ID: 1203805555

Sample Amount 1000 mL

Date Received: 06-JUN-17

Moisture: .

Extraction Batch ID: 1671745

Extraction Type Sol Exchange

Date Extracted: 07-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0608029.wiff

Date Analyzed: 09-JUN-17 09:35

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	.25	U	0.080	0.250
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	.25	U	0.080	0.250
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
121-82-4	RDX	.25	U	0.080	0.250
<i>121-82-4</i>	<i>RDX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	.25	U	0.080	0.250
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	.25	U	0.080	0.250
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	.25	U	0.080	0.250
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
606-20-2	2,6-Dinitrotoluene	.25	U	0.080	0.250
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
88-72-2	o-Nitrotoluene	.25	U	0.082	0.250
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
98-95-3	Nitrobenzene	.25	U	0.080	0.250
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	.25	U	0.080	0.250
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	.25	U	0.080	0.250
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				
99-65-0	m-Dinitrobenzene	.25	U	0.080	0.250
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
479-45-8	Tetryl	.5	U	0.080	0.500
<i>479-45-8</i>	<i>Tetryl</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1671745

Lab Code: GEL

GEL Job No (SDG) 2017-1648

Matrix: WATER

GEL Sample ID: 1203805555

Sample Amount 1000 mL

Date Received: 06-JUN-17

Moisture: .

Extraction Batch ID: 1671745

Extraction Type Sol Exchange

Date Extracted: 07-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-11-5	PETN	.5	U	0.100	0.500
<i>78-11-5</i>	<i>PETN</i>				
99-99-0	p-Nitrotoluene	.5	U	0.150	0.500
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				
3058-38-6	TATB	1	U	0.300	1.00
<i>3058-38-6</i>	<i>TATB</i>				
618-87-1	3,5-Dinitroaniline	1	QU	0.300	1.00
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
78-30-8	tris(o-cresyl) phosphate	1	U	0.300	1.00
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	2.5	U	0.500	2.50
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	2.5	U	0.500	2.50
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1671745

Lab Code: GEL

GEL Job No (SDG) 2017-1648

Matrix: WATER

GEL Sample ID: 1203805556

Sample Amount 1000 mL

Date Received: 06-JUN-17

Moisture: .

Extraction Batch ID: 1671745

Extraction Type Sol Exchange

Date Extracted: 07-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0608053.wiff

Date Analyzed: 09-JUN-17 23:37

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-30-8	tris(o-cresyl) phosphate	3.64		0.300	1.00
78-30-8	tris(o-cresyl) phosphate				
3058-38-6	TATB	3.76		0.300	1.00
3058-38-6	TATB				
2691-41-0	HMX	3.92		0.080	0.250
2691-41-0	HMX				
6629-29-4	2,4-Diamino-6-nitrotoluene	3.93		0.500	2.50
6629-29-4	2,4-Diamino-6-nitrotoluene				
121-82-4	RDX	4		0.080	0.250
121-82-4	RDX				
479-45-8	Tetryl	4.01		0.080	0.500
479-45-8	Tetryl				
99-35-4	1,3,5-Trinitrobenzene	4.19		0.080	0.250
99-35-4	1,3,5-Trinitrobenzene				
59229-75-3	2,6-Diamino-4-nitrotoluene	4.21		0.500	2.50
59229-75-3	2,6-Diamino-4-nitrotoluene				
121-14-2	2,4-Dinitrotoluene	4.41		0.080	0.250
121-14-2	2,4-Dinitrotoluene				
88-72-2	o-Nitrotoluene	4.49		0.082	0.250
88-72-2	o-Nitrotoluene				
35572-78-2	2-Amino-4,6-dinitrotoluene	4.52		0.080	0.250
35572-78-2	2-Amino-4,6-dinitrotoluene				
98-95-3	Nitrobenzene	4.52		0.080	0.250
98-95-3	Nitrobenzene				
99-08-1	m-Nitrotoluene	4.63		0.080	0.250
99-08-1	m-Nitrotoluene				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1671745

Lab Code: GEL

GEL Job No (SDG) 2017-1648

Matrix: WATER

GEL Sample ID: 1203805556

Sample Amount 1000 mL

Date Received: 06-JUN-17

Moisture: .

Extraction Batch ID: 1671745

Extraction Type Sol Exchange

Date Extracted: 07-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-65-0	m-Dinitrobenzene	4.66		0.080	0.250
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	4.76		0.080	0.250
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
78-11-5	PETN	4.8		0.100	0.500
<i>78-11-5</i>	<i>PETN</i>				
99-99-0	p-Nitrotoluene	4.84		0.150	0.500
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				
118-96-7	2,4,6-Trinitrotoluene	4.89		0.080	0.250
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
606-20-2	2,6-Dinitrotoluene	5.31		0.080	0.250
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	6.02		0.300	1.00
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133288(424596009MS)MS

Lab Code: GEL

GEL Job No (SDG) 2017-1648

Matrix: WATER

GEL Sample ID: 1203805559

Sample Amount 960 mL

Date Received: 06-JUN-17

Moisture: .

Extraction Batch ID: 1671745

Extraction Type Sol Exchange

Date Extracted: 07-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0608058.wiff

Date Analyzed: 10-JUN-17 02:32

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-30-8	tris(o-cresyl) phosphate	3.68		0.313	1.04
78-30-8	tris(o-cresyl) phosphate				
479-45-8	Tetryl	3.82		0.0833	0.521
479-45-8	Tetryl				
3058-38-6	TATB	3.88		0.313	1.04
3058-38-6	TATB				
99-08-1	m-Nitrotoluene	4.09		0.0833	0.260
99-08-1	m-Nitrotoluene				
98-95-3	Nitrobenzene	4.27		0.0833	0.260
98-95-3	Nitrobenzene				
99-35-4	1,3,5-Trinitrobenzene	4.34		0.0833	0.260
99-35-4	1,3,5-Trinitrobenzene				
35572-78-2	2-Amino-4,6-dinitrotoluene	4.46		0.0833	0.260
35572-78-2	2-Amino-4,6-dinitrotoluene				
606-20-2	2,6-Dinitrotoluene	4.49		0.0833	0.260
606-20-2	2,6-Dinitrotoluene				
78-11-5	PETN	4.52		0.104	0.521
78-11-5	PETN				
118-96-7	2,4,6-Trinitrotoluene	4.56		0.0833	0.260
118-96-7	2,4,6-Trinitrotoluene				
121-14-2	2,4-Dinitrotoluene	4.61		0.0833	0.260
121-14-2	2,4-Dinitrotoluene				
88-72-2	o-Nitrotoluene	4.64		0.0854	0.260
88-72-2	o-Nitrotoluene				
19406-51-0	4-Amino-2,6-dinitrotoluene	4.76		0.0833	0.260
19406-51-0	4-Amino-2,6-dinitrotoluene				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133288(424596009MS)MS

Lab Code: GEL

GEL Job No (SDG) 2017-1648

Matrix: WATER

GEL Sample ID: 1203805559

Sample Amount 960 mL

Date Received: 06-JUN-17

Moisture: .

Extraction Batch ID: 1671745

Extraction Type Sol Exchange

Date Extracted: 07-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-99-0	p-Nitrotoluene	4.8		0.156	0.521
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				
99-65-0	m-Dinitrobenzene	4.93		0.0833	0.260
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	5.42		0.521	2.60
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	5.74		0.521	2.60
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	5.81		0.313	1.04
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
2691-41-0	HMX	6.44		0.0833	0.260
<i>2691-41-0</i>	<i>HMX</i>				
121-82-4	RDX	26.4		0.0833	0.260
<i>121-82-4</i>	<i>RDX</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133288(424596009MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2017-1648

Matrix: WATER

GEL Sample ID: 1203805560

Sample Amount 960 mL

Date Received: 06-JUN-17

Moisture: .

Extraction Batch ID: 1671745

Extraction Type Sol Exchange

Date Extracted: 07-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0608059.wiff

Date Analyzed: 10-JUN-17 03:07

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
78-30-8	tris(o-cresyl) phosphate	3.71		0.313	1.04
78-30-8	tris(o-cresyl) phosphate				
479-45-8	Tetryl	3.79		0.0833	0.521
479-45-8	Tetryl				
99-08-1	m-Nitrotoluene	3.95		0.0833	0.260
99-08-1	m-Nitrotoluene				
3058-38-6	TATB	3.97		0.313	1.04
3058-38-6	TATB				
98-95-3	Nitrobenzene	4		0.0833	0.260
98-95-3	Nitrobenzene				
88-72-2	o-Nitrotoluene	4.01		0.0854	0.260
88-72-2	o-Nitrotoluene				
99-35-4	1,3,5-Trinitrobenzene	4.11		0.0833	0.260
99-35-4	1,3,5-Trinitrobenzene				
78-11-5	PETN	4.21		0.104	0.521
78-11-5	PETN				
99-99-0	p-Nitrotoluene	4.24		0.156	0.521
99-99-0	p-Nitrotoluene				
606-20-2	2,6-Dinitrotoluene	4.26		0.0833	0.260
606-20-2	2,6-Dinitrotoluene				
99-65-0	m-Dinitrobenzene	4.53		0.0833	0.260
99-65-0	m-Dinitrobenzene				
118-96-7	2,4,6-Trinitrotoluene	4.59		0.0833	0.260
118-96-7	2,4,6-Trinitrotoluene				
35572-78-2	2-Amino-4,6-dinitrotoluene	4.7		0.0833	0.260
35572-78-2	2-Amino-4,6-dinitrotoluene				



1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133288(424596009MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2017-1648

Matrix: WATER

GEL Sample ID: 1203805560

Sample Amount 960 mL

Date Received: 06-JUN-17

Moisture: .

Extraction Batch ID: 1671745

Extraction Type Sol Exchange

Date Extracted: 07-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
121-14-2	2,4-Dinitrotoluene	5.19		0.0833	0.260
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	5.32		0.0833	0.260
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	5.58		0.521	2.60
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	5.72		0.313	1.04
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	6.16		0.521	2.60
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				
2691-41-0	HMX	6.47		0.0833	0.260
<i>2691-41-0</i>	<i>HMX</i>				
121-82-4	RDX	22.2		0.0833	0.260
<i>121-82-4</i>	<i>RDX</i>				

## Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-1648Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 08-JUN-17 17:13GEL Data File: EXP0608001.wiffInstrument ID: LCMSMS5Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0

## Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-1648Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 08-JUN-17 17:48GEL Data File: EXP0608002.wiffInstrument ID: LCMSMS5Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0

**4A**  
**Explosives Continuing Calibration Blank**

**Lab Name:** GEL Laboratories LLC

**GEL Job No(SDG):** 2017-1648

**Lab Code:** GEL

**Lab Sample ID:** XIBLK02

**Analysis Date:** 08-JUN-17 22:28

**GEL Data File:** EXP0608010.wiff

**Instrument ID:** LCMSMS5

**Column:** Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	3.64
tris(o-cresyl) phosphate	0	4.72
TATB	0	0
3,5-Dinitroaniline	0	3.86
2,4-Diamino-6-nitrotoluene	0	4.19
2,6-Diamino-4-nitrotoluene	0	4.27
DNX	0	0
MNX	0	0
TNX	0	3.53
1,3,5-Trinitrobenzene	0	3.75
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	4
2-Amino-4,6-dinitrotoluene	0	3.41
4-Amino-2,6-dinitrotoluene	0	3.74
HMX	0	0
Nitrobenzene	0	1.42
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	7.06

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1648

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 09-JUN-17 00:49

GEL Data File: EXP0608014.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	3.17
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1648

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 09-JUN-17 04:54

GEL Data File: EXP0608021.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1648

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 09-JUN-17 07:15

GEL Data File: EXP0608025.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0

**4A**  
**Explosives Continuing Calibration Blank**

**Lab Name:** GEL Laboratories LLC

**GEL Job No(SDG):** 2017-1648

**Lab Code:** GEL

**Lab Sample ID:** XIBLK06

**Analysis Date:** 09-JUN-17 08:25

**GEL Data File:** EXP0608027.wiff

**Instrument ID:** LCMSMS5

**Column:** Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0



**4A**  
**Explosives Continuing Calibration Blank**

**Lab Name:** GEL Laboratories LLC

**GEL Job No(SDG):** 2017-1648

**Lab Code:** GEL

**Lab Sample ID:** XIBLK07

**Analysis Date:** 09-JUN-17 14:51

**GEL Data File:** EXP0608038.wiff

**Instrument ID:** LCMSMS5

**Column:** Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	2.44
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1648

Lab Code: GEL

Lab Sample ID: XIBLK08

Analysis Date: 09-JUN-17 16:01

GEL Data File: EXP0608040.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1648

Lab Code: GEL

Lab Sample ID: XIBLK09

Analysis Date: 09-JUN-17 21:16

GEL Data File: EXP0608049.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1648

Lab Code: GEL

Lab Sample ID: XIBLK10

Analysis Date: 09-JUN-17 22:27

GEL Data File: EXP0608051.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
Tetryl	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0

**4A**  
**Explosives Continuing Calibration Blank**

**Lab Name:** GEL Laboratories LLC

**GEL Job No(SDG):** 2017-1648

**Lab Code:** GEL

**Lab Sample ID:** XIBLK11

**Analysis Date:** 10-JUN-17 03:42

**GEL Data File:** EXP0608060.wiff

**Instrument ID:** LCMSMS5

**Column:** Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	2.54
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1648

Lab Code: GEL

Lab Sample ID: XIBLK12

Analysis Date: 10-JUN-17 05:28

GEL Data File: EXP0608063.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
HMX	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0

# Miscellaneous

### DATA EXCEPTION REPORT

<b>Mo.Day Yr.</b> 14-JUN-17	<b>Division:</b> Industrial	<b>Quality Criteria:</b> Specifications	<b>Type:</b> Process
<b>Instrument Type:</b> LC-MS/MS	<b>Test / Method:</b> SW846 3535A/8330B	<b>Matrix Type:</b> Liquid	<b>Client Code:</b> ESHL
<b>Batch ID:</b> 1671746	<b>Sample Numbers:</b> See Below		
<b>Potentially affected work order(s)(SDG): 424596(2017-1633),424732(2017-1648),424735(2017-1647),424739(2017-1645),424741(2017-1644)</b> <b>Application Issues:</b> Failed Recovery for MS/MSD, or PS/PSD Failed Recovery for LCS/LCSD			
<b>Specification and Requirements Exception Description:</b>		<b>DER Disposition:</b>	
1. Two high recoveries were observed for 1203805556 (LCS). The recovery for 2,6-Dinitrotoluene was 106% (72%-105%) and for TATB, the recovery was 150% (47-135%).  2. A high recovery was observed for 1203805559 (MS). The recovery for TATB was 152% (38%-149%).		1. The high recoveries may be the result of vagaries in the extraction process and would suggest bias high detections. No reportable detections were observed in the associated samples.  2. The high recovery may be the result of vagaries in the extraction process. The high recovery was also observed in the batch LCS. No reportable detections were observed in the associated samples.	

**Originator's Name:**

Charles Wilson 14-JUN-17

**Data Validator/Group Leader:**

Michael Penny 14-JUN-17



July 19, 2017

[gel.com](http://gel.com)

Mr. Keith Greene  
Los Alamos National Laboratory  
TA-03, SM271, Drop Pt. 02U, Rm111  
Los Alamos, New Mexico 87545

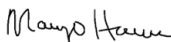
Re: LANL- WQH Water Samples  
Work Order: 424732  
SDG: 2017-1648

Dear Mr. Greene:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the following analytical results for the sample(s) we received on June 06, 2017, and analyzed for Explosives by LCMSMS and GC/MS Volatile. This revised data report has been prepared and reviewed in accordance with GEL's standard operating procedures. This package has been revised to include the results for HMX, DNX, and TNX on the HE Form 1s.

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. 4485.

Sincerely,

  
Margo Herron for  
Valerie Davis  
Project Manager

Chain of Custody: 2017-1648  
Enclosures



**ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)**  
**LANL- WQH Water Samples**  
**Work Order #: 424732**  
**SDG: 2017-1648**

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# Case Narrative

**Case Narrative for  
ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)  
LANL- WQH Water Samples  
Workorder #: 424732  
SDG # : 2017-1648**

**June 14, 2017**

**Laboratory Identification:**

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

**Summary**

**Sample receipt** The sample arrived at GEL Laboratories LLC, Charleston, South Carolina on June 06, 2017 for analysis. The sample was delivered with proper chain of custody documentation and signatures. The samples were screened according to GEL Standard Operating Procedure. All sample containers arrived without any visible signs of tampering or breakage. Containers were checked for pH, where appropriate, and matched the preservative as documented on the accompanying chain of custody. Shipping container temperature was within specification (0 - 6C). Shipping container temperature was checked, documented, and within specifications. There are no additional comments concerning sample receipt.

**Sample Identification** The laboratory received the following sample:

<b><u>Laboratory ID</u></b>	<b><u>Client ID</u></b>
424732001	CAWA-17-134190

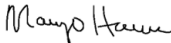
**Case Narrative**

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: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Explosives by LCMSMS and GC/MS Volatile.

I certify that this data report is in compliance with the terms and conditions of the subcontract and task order, both technically and for completeness, for other than the conditions detailed in the attached case narrative.

  
Margo Herron for  
Valerie Davis  
Project Manager

**List of current GEL Certifications as of 14 June 2017**

<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	LA170010
Maryland	270
Massachusetts	M-SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122017-1
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	T104704235-17-12
Utah NELAP	SC000122017-22
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

# **Chain of Custody and Supporting Documentation**







Laboratories LLC

## SAMPLE RECEIPT &amp; REVIEW FORM

Client: <u>ESHL</u>		SDG/AR/COC/Work Order: <u>424732</u>	
Received By: <u>ZKW</u>		Date Received: <u>6/6/17</u>	
Carrier and Tracking Number		Circle Applicable: <input checked="" type="checkbox"/> FedEx Express <input type="checkbox"/> FedEx Ground <input type="checkbox"/> UPS <input type="checkbox"/> Field Services <input type="checkbox"/> Courier <input type="checkbox"/> Other <u>5908 1782 1683 - 4c</u> <u>5908 1782 1672 - 4c</u> <u>5908 1782 1650 - 3c</u> <u>5908 1782 1694 - 4c</u> <u>5908 1782 1709 - 5c</u> <u>5908 1782 1640 - 5c</u> <u>5908 1782 1661 - 5c</u>	
Suspected Hazard Information	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.	
Shipped as a DOT Hazardous?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____	
COC/Samples marked or classified as radioactive?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>0</u> <input checked="" type="checkbox"/> CPM / mR/HR Classified as: Rad 1 Rad 2 Rad 3	
Is package, COC, and/or Samples marked HAZ?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	If yes, select Hazards below, and contact the GEL Safety Group. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other: _____	

Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1 Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2 Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3 Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Preservation Method: Wet Ice <input checked="" type="checkbox"/> Ice Packs Dry ice None Other: <u>See Above</u> *all temperatures are recorded in Celsius
4 Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Temperature Device Serial #: <u>IR3-16</u> Secondary Temperature Device Serial # (If Applicable): _____
5 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)
6 Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's and Containers Affected: If Preservation added, Lot#: _____
7 Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	If Yes, Are Encores or Soil Kits present? Yes ___ No <input checked="" type="checkbox"/> (If yes, take to VOA Freezer) Do VOA vials contain acid preservation? Yes <input checked="" type="checkbox"/> No ___ N/A ___ (If unknown, select No) VOA vials free of headspace? Yes ___ No <input checked="" type="checkbox"/> N/A ___ Sample ID's and containers affected: <u>Both vials for 136838 and total for 17133364</u> <u>reduced headspace</u>
8 Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ID's and tests affected: _____
9 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: _____
10 Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Sample ID's affected: _____
11 Number of containers received match number indicated on COC?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sample ID's affected: <u>We received sample CAWA-17-134191 5/31/17 08:54</u>
12 Are sample containers identifiable as GEL provided?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
13 COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Comments (Use Continuation Form if needed):

\* We also rec'd 2 VOA vials for CAWA-17-13394 not indicated on the CoC.  
 \* We only rec'd 1 VOA vial for WSTMD-17-136839

PM (or PMA) review: Initials

MCH

Date

6/7/17

Page

1 of 1

GL-CHL-SR-001 Rev 5

ORIGIN ID: SAFA (505) 665-9966  
KEITH GREENE  
LOS ALAMOS NATL LAB.  
TR00 BLDG 1237 DPU 03  
UNITED STATES US

SHIP DATE: 05 JUN 17  
ACTWGT: 51.0 LB MAN  
CAD: 0014178/CAFE2916

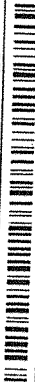
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TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

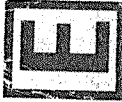
CHARLESTON SC 29407

(843) 566-8171

REF: 21PD0ASRGW04BAGWEO



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Express



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PRIORITY OVERNIGHT

2 of 2

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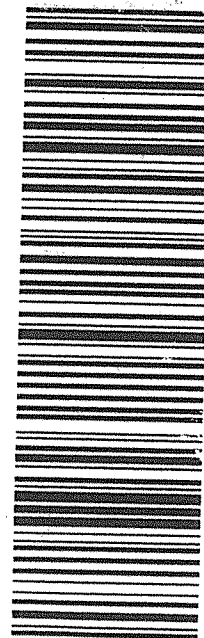
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X7 RBWA

29407  
SC-US CHS



Part # 156148V-434 RIT2 06/15 33

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KEITH GREENE  
LOS ALAMOS NATL LAB.  
TR00 BLDG 1237 DPU 03  
UNITED STATES US

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CAD: 0014178/CAFE2916

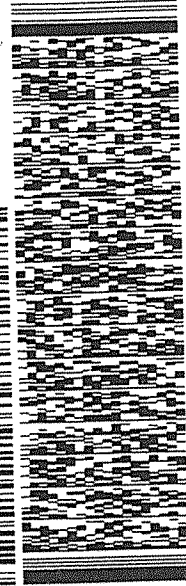
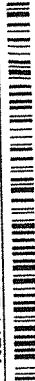
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CHARLESTON SC 29407

(843) 566-8171

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1 of 2

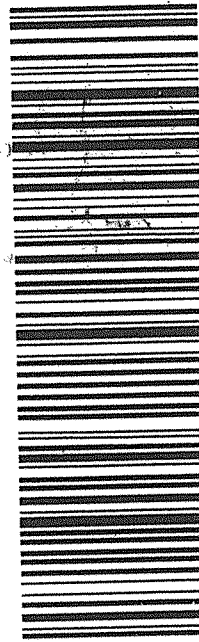
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## MASTER ##

X7 RBWA

29407  
SC-US CHS



Part # 156148V-434 RIT2 06/15 33

538C1/A502/329B

4c

ORIGIN ID:SAFA (505) 665-9966  
KEITH GREENE  
LOS ALAMOS NATL LAB.  
TA00 BLDG 1237 DPU 03  
LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 05JUN17  
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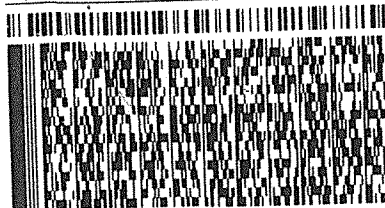
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TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171

REF: 21PD0ASRGW04BAGWE0



FedEx  
Express



ORIGIN ID:SAFA (505) 665-9966  
KEITH GREENE  
LOS ALAMOS NATL LAB.  
TA00 BLDG 1237 DPU 03

LOS ALAMOS, NM 87545  
UNITED STATES US

SHIP DATE: 05JUN17  
ACTWGT: 53.0 LB MAN  
CAD: 0014176/CAFE2916

BILL SENDER

TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

CHARLESTON SC 29407

(843) 556-8171

REF: 21PD0ASRGW04BAGWE0



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Express



1 of 2  
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## MASTER ##

X7 RBWA

TUE - 06 JUN 10:30  
PRIORITY OVERNIGHT

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SC-US CH

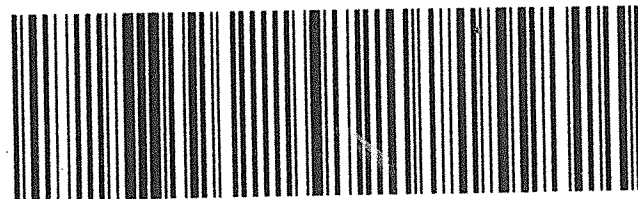


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X7 RBWA

TUE - 06 JUN 10:30  
PRIORITY OVERNIGHT

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SC-US CH



SHIP DATE: 05JUN17  
ACTWGT: 62.0 LB MAN  
CAD: 0014176/CAFE2916

BILL SENDER

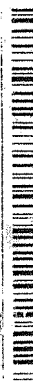
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KEITH GREENE  
LOS ALAMOS NATL LAB.  
TA00 BLDG 1237 DPU 03  
LOS ALAMOS, NM 87545  
UNITED STATES US

TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD

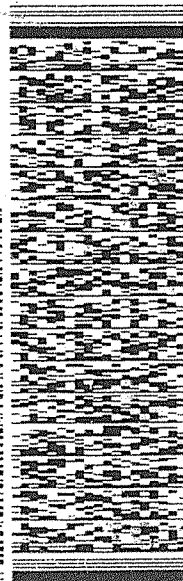
CHARLESTON SC 29407

(843) 556-8171

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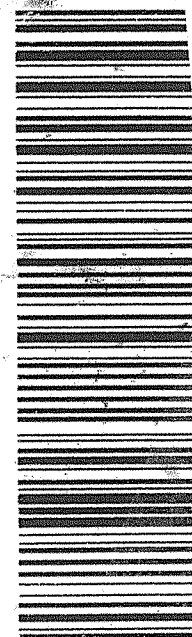
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X7 RBWA

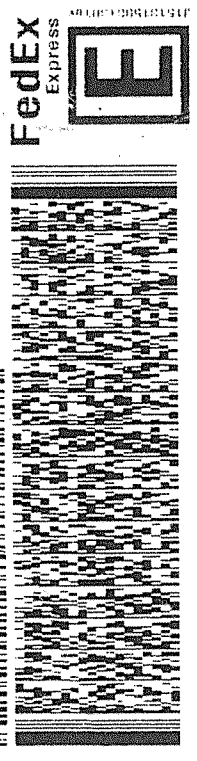
29407  
SC-US CHS



ORIGIN ID: SAFA (505) 665-9966  
SHIP DATE: 05JUN17  
ACTING: 56.0 LB. MAN  
LOS ALAMOS NATL LAB.  
TA00 BLDG 1237 DPU 03  
BILL SENDER  
LOS ALAMOS, NM 87545  
UNITED STATES US

TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD  
CHARLESTON SC 29407

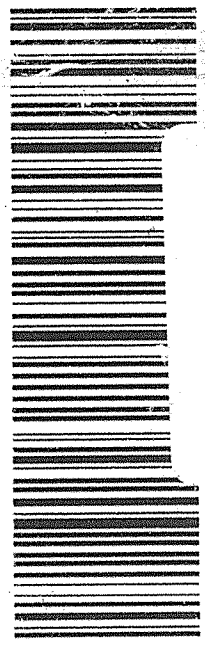
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PRIORITY OVERNIGHT

**X7 RBWA**

29407  
SC-US CHS

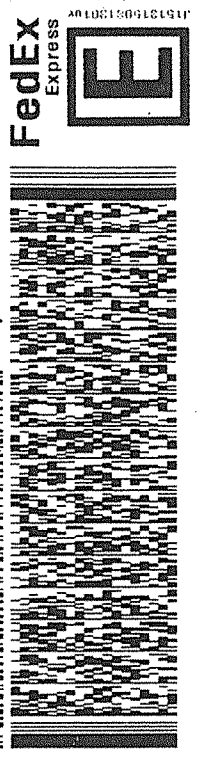


RT 257  
ST F1  
5 10:30  
E 1709  
06.06

ORIGIN ID: SAFA (505) 665-9966  
SHIP DATE: 05JUN17  
ACTING: 51.0 LB. MAN  
LOS ALAMOS NATL LAB.  
TA00 BLDG 1237 DPU 03  
BILL SENDER  
LOS ALAMOS, NM 87545  
UNITED STATES US

TO VALERIE DAVIS  
GENERAL ENGINEERING LAB  
2040 SAVAGE RD  
CHARLESTON SC 29407

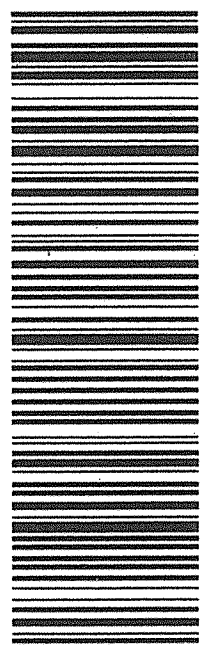
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TRK# 5908 1782 1661  
TUE - 06 JUN 10:30A  
PRIORITY OVERNIGHT

**X7 RBWA**

29407  
SC-US CHS



Part # 156148V-434 RTT2 06/15

# **Data Review Qualifier Flag Definition Sheet**

## Data Review Qualifier Definitions

Qualifier	Explanation
-----------	-------------

*	A quality control analyte recovery is outside of specified acceptance criteria
**	Analyte is a surrogate compound
<	Result is less than value reported
>	Result is greater than value reported
^	RPD of sample and duplicate evaluated using +/-RL. Concentrations are <5X the RL
A	The TIC is a suspected aldol-condensation product
B	Target analyte was detected in the associated blank
B	Metals-Either presence of analyte detected in the associated blank, or MDL/IDL < sample value < PQL
BD	Results are either below the MDC or tracer recovery is low
C	Analyte has been confirmed by GC/MS analysis
D	Results are reported from a diluted aliquot of the sample
d	5-day BOD-The 2:1 depletion requirement was not met for this sample
E	Organics-Concentration of the target analyte exceeds the instrument calibration range
E	Metals-%difference of sample and SD is >10%. Sample concentration must meet flagging criteria
H	Analytical holding time was exceeded
h	Preparation or preservation holding time was exceeded
J	Value is estimated
N	Metals-The Matrix spike sample recovery is not within specified control limits
N	Organics-Presumptive evidence based on mass spectral library search to make a tentative identification of the analyte (TIC). Quantitation is based on nearest internal standard response factor
N/A	Spike recovery limits do not apply. Sample concentration exceeds spike concentration by 4X or more
ND	Analyte concentration is not detected above the reporting limit
UI	Gamma Spectroscopy-Uncertain identification
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	QC Samples were not spiked with this compound
Z	Paint Filter Test-Particulates passed through the filter, however no free liquids were observed.

P Organics-The concentrations between the primary and confirmation columns/detectors is >40% difference.  
For HPLC, the difference is >70%.

U Analyte was analyzed for, but not detected above the MDL, MDA, or LOD.

# **Volatile Analysis**



# Case Narrative

**GC/MS Volatile  
Technical Case Narrative  
ARS International, LLC (ARSL)  
SDG #: 2017-1648  
Work Order #: 424732**

**Method/Analysis Information**

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

Analytical Method: SW-846:8260B

Analytical Batch Number: 1671196

**Sample Analysis**

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

<b>Sample ID</b>	<b>Client ID</b>
424732001	CAWA-17-134190
1203804346	424596006(CAWA-17-134191) Post Spike (PS)
1203804347	424596006(CAWA-17-134191) Post Spike (PS)
1203804348	424596006(CAWA-17-134191) Post Spike Duplicate (PSD)
1203804349	424596006(CAWA-17-134191) Post Spike Duplicate (PSD)
1203806749	Method Blank (MB)
1203806750	Laboratory Control Sample (LCS)
1203806751	Laboratory Control Sample (LCS)
1203807982	Method Blank (MB)
1203807986	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# 26.

**Calibration Information**

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

**Initial Calibration**

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

**Continuing Calibration Verification Requirements**

All associated calibration verification standard(s) (CCV) met the acceptance criteria.

**Quality Control (QC) Information****Blank (MB) Statement**

Target analytes were detected in the blank 1203807982 (MB) below the reporting limit.

**Surrogate Recoveries**

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

**Laboratory Control Sample (LCS) Recovery**

The LCS spike recoveries met the acceptance limits.

**QC Sample Designation**

Sample 424596006 (CAWA-17-134191) was designated for spike analysis.

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

The matrix spike (MS) and matrix spike duplicate (MSD) recoveries were within the required acceptance limits.

**Relative Percent Difference (RPD) Statement**

The RPDs between the matrix spike pair met the acceptance limits.

**Internal Standard (ISTD) Acceptance**

The internal standard responses in all client and quality control samples met the required acceptance criteria.

**Technical Information****Holding Time Specifications**

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 reports (DERs) was not generated to document procedural anomalies that may deviate from referenced SOP or contractual documents.

**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.

**Electronic Package Comment**

The following package was generated using an electronic data processing program referred to as "virtual packaging". In an effort to increase quality and efficiency, the laboratory is developing systems to eventually generate all data packages electronically. The following change from "traditional" packages should be noted: Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative of each electronic package will indicate the reviewer name associated with the generation of the data and package. The data validator will always sign and date the case narrative. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

**System Configuration**

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

<b>Instrument ID</b>	<b>Instrument</b>	<b>System Configuration</b>	<b>Column ID</b>	<b>Column Description</b>	<b>P &amp; T Trap</b>
VOA4.I	Hewlett Packard 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

ARSL004 ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)

Client SDG: 2017-1648 GEL Work Order: 424732

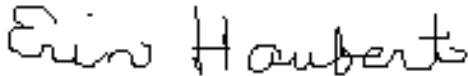
#### The Qualifiers in this report are defined as follows:

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a surrogate compound
- J Value is estimated
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- 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: 12 JUN 2017

Title: Data Validator

# **Sample Data Summary**

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

SDG Number: 2017-1648

Lab Sample ID: 424732001

Date Collected: 06/02/2017 13:33

Date Received: 06/06/2017 09:05

Matrix: W

Client ID: CAWA-17-134190

Batch ID: 1671196

Run Date: 06/08/2017 14:13

Prep Date: 06/08/2017 14:13

Data File: 060817V4\4L413.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-1648

Lab Sample ID: 424732001

Date Collected: 06/02/2017 13:33

Date Received: 06/06/2017 09:05

Matrix: W

Client ID: CAWA-17-134190

Batch ID: 1671196

Run Date: 06/08/2017 14:13

Prep Date: 06/08/2017 14:13

Data File: 060817V4\4L413.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	J	1.83	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00



**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-1648

Lab Sample ID: 424732001

Date Collected: 06/02/2017 13:33

Date Received: 06/06/2017 09:05

Matrix: W

Client ID: CAWA-17-134190

Batch ID: 1671196

Run Date: 06/08/2017 14:13

Prep Date: 06/08/2017 14:13

Data File: 060817V4\4L413.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Project: ESHL00114

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	50.7	50.0	ug/L 101	(71%-134%)
Bromofluorobenzene	54.4	50.0	ug/L 109	(70%-131%)
Toluene-d8	48.8	50.0	ug/L 98	(74%-124%)

**Tentatively Identified Compound Summary**

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
	unknown siloxane	12.205	20	ug/L	0	J
	unknown siloxane	14.582	32.9	ug/L	0	J
	unknown	16.533	10.2	ug/L	0	J

# **Quality Control Summary**

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**Volatile**  
**Surrogate Recovery Report**

Page 1 of 1

**SDG Number: 2017-1648****Matrix Type: LIQUID**

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Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203806750	LCS for batch 1671196	101	101	108
1203806751	LCS for batch 1671196	109	102	113
1203806749	MB for batch 1671196	106	101	111
424732001	CAWA-17-134190	101	98	109
1203804346	CAWA-17-134191PS	90	98	99
1203804348	CAWA-17-134191PSD	98	100	100
1203807986	LCS for batch 1671196	102	98	109
1203807982	MB for batch 1671196	97	98	109
1203804347	CAWA-17-134191PS	97	94	105
1203804349	CAWA-17-134191PSD	96	94	106

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**Surrogate****Acceptance Limits**

DCED4 = 1,2-Dichloroethane-d4

(71%-134%)

TOL = Toluene-d8

(74%-124%)

BFB = Bromofluorobenzene

(70%-131%)

\* Recovery outside Acceptance Limits

# Column to be used to flag recovery values

D Sample Diluted

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 8

SDG Number: 2017-1648

Sample Type: Post Spike

Client ID: CAWA-17-134191PS

Matrix: W

Lab Sample ID 1203804346

Instrument: VOA4.I

Analysis Date: 06/08/2017 17:35

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
179601-23-1	PS m,p-Xylenes	100	0.00 U	87.0	87	59-132
75-05-8	PS Acetonitrile	1250	0.00 U	832	67	56-131
67-64-1	PS Acetone	250	0.00 U	96.3	39	25-155
74-88-4	PS Iodomethane	250	0.00 U	196	78	66-133
75-15-0	PS Carbon disulfide	250	0.00 U	201	80	61-141
108-05-4	PS Vinyl acetate	250	0.00 U	220	88	48-133
78-93-3	PS 2-Butanone	250	0.00 U	127	51	25-143
108-10-1	PS 4-Methyl-2-pentanone	250	0.00 U	175	70	61-127
591-78-6	PS 2-Hexanone	250	0.00 U	158	63	33-138
75-09-2	PS Methylene chloride	50.0	1.24 J	38.0	73	62-123
75-71-8	PS Dichlorodifluoromethane	50.0	0.00 U	38.6	77	33-164
74-87-3	PS Chloromethane	50.0	0.00 U	44.4	89	53-139
75-01-4	PS Vinyl chloride	50.0	0.00 U	48.2	96	58-140
74-83-9	PS Bromomethane	50.0	0.00 U	43.2	86	59-146
75-00-3	PS Chloroethane	50.0	0.00 U	46.1	92	65-129
75-69-4	PS Trichlorofluoromethane	50.0	0.00 U	46.0	92	65-141
60-29-7	PS Ethyl ether	50.0	0.00 U	47.5	95	69-127
75-35-4	PS 1,1-Dichloroethylene	50.0	0.00 U	38.9	78	59-130
1634-04-4	PS tert-Butyl methyl ether	50.0	0.00 U	37.6	75	69-132
156-60-5	PS trans-1,2-Dichloroethylene	50.0	0.00 U	41.5	83	65-127
75-34-3	PS 1,1-Dichloroethane	50.0	0.00 U	41.9	84	67-127
156-59-2	PS cis-1,2-Dichloroethylene	50.0	0.00 U	41.6	83	69-127

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 2 of 8

SDG Number: 2017-1648

Sample Type: Post Spike

Client ID: CAWA-17-134191PS

Matrix: W

Lab Sample ID 1203804346

Instrument: VOA4.I

Analysis Date: 06/08/2017 17:35

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
594-20-7	PS 2,2-Dichloropropane	50.0	0.00 U	39.9	80	66-137
74-97-5	PS Bromochloromethane	50.0	0.00 U	40.5	81	71-130
67-66-3	PS Chloroform	50.0	0.00 U	40.5	81	71-129
71-55-6	PS 1,1,1-Trichloroethane	50.0	0.00 U	39.8	80	69-139
563-58-6	PS 1,1-Dichloropropene	50.0	0.00 U	39.6	79	67-130
56-23-5	PS Carbon tetrachloride	50.0	0.00 U	41.8	84	66-143
107-06-2	PS 1,2-Dichloroethane	50.0	0.00 U	40.3	81	69-130
71-43-2	PS Benzene	50.0	0.00 U	40.0	80	66-125
79-01-6	PS Trichloroethylene	50.0	0.00 U	41.0	82	65-131
78-87-5	PS 1,2-Dichloropropane	50.0	0.00 U	41.5	83	67-127
74-95-3	PS Dibromomethane	50.0	0.00 U	39.8	80	72-129
75-27-4	PS Bromodichloromethane	50.0	0.00 U	42.2	84	70-138
10061-01-5	PS cis-1,3-Dichloropropylene	50.0	0.00 U	40.3	81	70-134
108-88-3	PS Toluene	50.0	0.00 U	41.0	82	60-126
10061-02-6	PS trans-1,3-Dichloropropylene	50.0	0.00 U	42.5	85	69-135
79-00-5	PS 1,1,2-Trichloroethane	50.0	0.00 U	39.3	79	66-125
142-28-9	PS 1,3-Dichloropropane	50.0	0.00 U	39.4	79	67-124
127-18-4	PS Tetrachloroethylene	50.0	0.00 U	40.8	82	60-130
124-48-1	PS Dibromochloromethane	50.0	0.00 U	37.6	75	68-143
106-93-4	PS 1,2-Dibromoethane	50.0	0.00 U	40.1	80	71-127
108-90-7	PS Chlorobenzene	50.0	0.00 U	41.0	82	64-124
100-41-4	PS Ethylbenzene	50.0	0.00 U	42.8	86	61-130

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 3 of 8

SDG Number: 2017-1648

Sample Type: Post Spike

Client ID: CAWA-17-134191PS

Matrix: W

Lab Sample ID 1203804346

Instrument: VOA4.I

Analysis Date: 06/08/2017 17:35

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
95-47-6	PS o-Xylene	50.0	0.00 U	44.4	89	62-131
100-42-5	PS Styrene	50.0	0.00 U	46.1	92	59-135
75-25-2	PS Bromoform	50.0	0.00 U	41.6	83	64-138
98-82-8	PS Isopropylbenzene	50.0	0.00 U	42.4	85	55-133
79-34-5	PS 1,1,2,2-Tetrachloroethane	50.0	0.00 U	37.1	74	62-129
96-18-4	PS 1,2,3-Trichloropropane	50.0	0.00 U	36.7	73	70-124
108-86-1	PS Bromobenzene	50.0	0.00 U	40.9	82	62-124
103-65-1	PS n-Propylbenzene	50.0	0.00 U	42.2	84	50-133
108-67-8	PS 1,3,5-Trimethylbenzene	50.0	0.00 U	44.2	88	53-135
95-49-8	PS 2-Chlorotoluene	50.0	0.00 U	42.3	85	56-128
106-43-4	PS 4-Chlorotoluene	50.0	0.00 U	41.4	83	53-130
98-06-6	PS tert-Butylbenzene	50.0	0.00 U	43.8	88	55-135
95-63-6	PS 1,2,4-Trimethylbenzene	50.0	0.00 U	43.3	87	53-132
135-98-8	PS sec-Butylbenzene	50.0	0.00 U	44.1	88	50-138
99-87-6	PS 4-Isopropyltoluene	50.0	0.00 U	44.6	89	49-138
541-73-1	PS 1,3-Dichlorobenzene	50.0	0.00 U	40.8	82	56-126
106-46-7	PS 1,4-Dichlorobenzene	50.0	0.00 U	40.2	80	55-125
104-51-8	PS n-Butylbenzene	50.0	0.00 U	43.0	86	43-142
96-12-8	PS 1,2-Dibromo-3-chloropropane	50.0	0.00 U	31.0	62	62-141
87-68-3	PS Hexachlorobutadiene	50.0	0.00 U	39.3	79	40-147
91-20-3	PS Naphthalene	50.0	0.00 U	38.0	76	62-134
87-61-6	PS 1,2,3-Trichlorobenzene	50.0	0.00 U	38.8	78	52-135

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-1648

Sample Type: Post Spike

Client ID: CAWA-17-134191PS

Matrix: W

Lab Sample ID 1203804346

Instrument: VOA4.I

Analysis Date: 06/08/2017 17:35

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
120-82-1	PS 1,2,4-Trichlorobenzene	50.0	0.00 U	37.3	75	50-133
630-20-6	PS 1,1,1,2-Tetrachloroethane	50.0	0.00 U	43.9	88	71-133
95-50-1	PS 1,2-Dichlorobenzene	50.0	0.00 U	40.4	81	60-125
71-36-3	PS n-Butyl alcohol	5000	0.00 U	3980	80	60-140

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 5 of 8

SDG Number: 2017-1648

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-134191PSD

Matrix: W

Lab Sample ID 1203804348

Instrument: VOA4.I

Analysis Date: 06/08/2017 18:04

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
179601-23-1	PSD m,p-Xylenes	100	0.00 U	84.4	84	59-132	3	0-20
75-05-8	PSD Acetonitrile	1250	0.00 U	975	78	56-131	16	0-20
67-64-1	PSD Acetone	250	0.00 U	112	45	25-155	15	0-20
74-88-4	PSD Iodomethane	250	0.00 U	198	79	66-133	1	0-20
75-15-0	PSD Carbon disulfide	250	0.00 U	198	79	61-141	1	0-20
108-05-4	PSD Vinyl acetate	250	0.00 U	239	95	48-133	8	0-20
78-93-3	PSD 2-Butanone	250	0.00 U	148	59	25-143	15	0-20
108-10-1	PSD 4-Methyl-2-pentanone	250	0.00 U	201	81	61-127	14	0-20
591-78-6	PSD 2-Hexanone	250	0.00 U	178	71	33-138	12	0-20
75-09-2	PSD Methylene chloride	50.0	1.24 J	38.8	75	62-123	2	0-20
75-71-8	PSD Dichlorodifluoromethane	50.0	0.00 U	40.6	81	33-164	5	0-20
74-87-3	PSD Chloromethane	50.0	0.00 U	44.1	88	53-139	1	0-20
75-01-4	PSD Vinyl chloride	50.0	0.00 U	48.6	97	58-140	1	0-20
74-83-9	PSD Bromomethane	50.0	0.00 U	44.3	89	59-146	3	0-20
75-00-3	PSD Chloroethane	50.0	0.00 U	46.4	93	65-129	1	0-20
75-69-4	PSD Trichlorofluoromethane	50.0	0.00 U	45.2	90	65-141	2	0-20
60-29-7	PSD Ethyl ether	50.0	0.00 U	51.0	102	69-127	7	0-20
75-35-4	PSD 1,1-Dichloroethylene	50.0	0.00 U	38.8	78	59-130	0	0-20
1634-04-4	PSD tert-Butyl methyl ether	50.0	0.00 U	40.6	81	69-132	8	0-20
156-60-5	PSD trans-1,2-Dichloroethylene	50.0	0.00 U	41.6	83	65-127	0	0-20
75-34-3	PSD 1,1-Dichloroethane	50.0	0.00 U	41.9	84	67-127	0	0-20
156-59-2	PSD cis-1,2-Dichloroethylene	50.0	0.00 U	41.1	82	69-127	1	0-20



Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-1648

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-134191PSD

Matrix: W

Lab Sample ID 1203804348

Instrument: VOA4.I

Analysis Date: 06/08/2017 18:04

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
594-20-7	PSD 2,2-Dichloropropane	50.0	0.00 U	39.2	78	66-137	2	0-20
74-97-5	PSD Bromochloromethane	50.0	0.00 U	40.9	82	71-130	1	0-20
67-66-3	PSD Chloroform	50.0	0.00 U	39.9	80	71-129	2	0-20
71-55-6	PSD 1,1,1-Trichloroethane	50.0	0.00 U	39.7	79	69-139	0	0-20
563-58-6	PSD 1,1-Dichloropropene	50.0	0.00 U	38.6	77	67-130	3	0-20
56-23-5	PSD Carbon tetrachloride	50.0	0.00 U	40.8	82	66-143	2	0-20
107-06-2	PSD 1,2-Dichloroethane	50.0	0.00 U	41.8	84	69-130	4	0-20
71-43-2	PSD Benzene	50.0	0.00 U	39.2	78	66-125	2	0-20
79-01-6	PSD Trichloroethylene	50.0	0.00 U	41.1	82	65-131	0	0-20
78-87-5	PSD 1,2-Dichloropropane	50.0	0.00 U	41.3	83	67-127	1	0-20
74-95-3	PSD Dibromomethane	50.0	0.00 U	42.2	84	72-129	6	0-20
75-27-4	PSD Bromodichloromethane	50.0	0.00 U	42.8	86	70-138	2	0-20
10061-01-5	PSD cis-1,3-Dichloropropylene	50.0	0.00 U	41.7	83	70-134	3	0-20
108-88-3	PSD Toluene	50.0	0.00 U	40.2	80	60-126	2	0-20
10061-02-6	PSD trans-1,3-Dichloropropylene	50.0	0.00 U	43.4	87	69-135	2	0-20
79-00-5	PSD 1,1,2-Trichloroethane	50.0	0.00 U	41.7	83	66-125	6	0-20
142-28-9	PSD 1,3-Dichloropropane	50.0	0.00 U	41.3	83	67-124	5	0-20
127-18-4	PSD Tetrachloroethylene	50.0	0.00 U	40.1	80	60-130	2	0-20
124-48-1	PSD Dibromochloromethane	50.0	0.00 U	38.7	77	68-143	3	0-20
106-93-4	PSD 1,2-Dibromoethane	50.0	0.00 U	42.1	84	71-127	5	0-20
108-90-7	PSD Chlorobenzene	50.0	0.00 U	40.5	81	64-124	1	0-20
100-41-4	PSD Ethylbenzene	50.0	0.00 U	41.5	83	61-130	3	0-20

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 7 of 8

SDG Number: 2017-1648

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-134191PSD

Matrix: W

Lab Sample ID 1203804348

Instrument: VOA4.I

Analysis Date: 06/08/2017 18:04

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
95-47-6	PSD o-Xylene	50.0	0.00 U	43.4	87	62-131	2	0-20
100-42-5	PSD Styrene	50.0	0.00 U	45.7	91	59-135	1	0-20
75-25-2	PSD Bromoform	50.0	0.00 U	43.8	88	64-138	5	0-20
98-82-8	PSD Isopropylbenzene	50.0	0.00 U	40.0	80	55-133	6	0-20
79-34-5	PSD 1,1,2,2-Tetrachloroethane	50.0	0.00 U	39.2	78	62-129	6	0-20
96-18-4	PSD 1,2,3-Trichloropropane	50.0	0.00 U	38.1	76	70-124	4	0-20
108-86-1	PSD Bromobenzene	50.0	0.00 U	40.3	81	62-124	1	0-20
103-65-1	PSD n-Propylbenzene	50.0	0.00 U	40.3	81	50-133	5	0-20
108-67-8	PSD 1,3,5-Trimethylbenzene	50.0	0.00 U	42.4	85	53-135	4	0-20
95-49-8	PSD 2-Chlorotoluene	50.0	0.00 U	40.8	82	56-128	4	0-20
106-43-4	PSD 4-Chlorotoluene	50.0	0.00 U	39.7	79	53-130	4	0-20
98-06-6	PSD tert-Butylbenzene	50.0	0.00 U	42.4	85	55-135	3	0-20
95-63-6	PSD 1,2,4-Trimethylbenzene	50.0	0.00 U	41.7	83	53-132	4	0-20
135-98-8	PSD sec-Butylbenzene	50.0	0.00 U	42.1	84	50-138	4	0-20
99-87-6	PSD 4-Isopropyltoluene	50.0	0.00 U	43.0	86	49-138	4	0-20
541-73-1	PSD 1,3-Dichlorobenzene	50.0	0.00 U	39.6	79	56-126	3	0-20
106-46-7	PSD 1,4-Dichlorobenzene	50.0	0.00 U	39.4	79	55-125	2	0-20
104-51-8	PSD n-Butylbenzene	50.0	0.00 U	41.3	83	43-142	4	0-20
96-12-8	PSD 1,2-Dibromo-3-chloropropane	50.0	0.00 U	36.4	73	62-141	16	0-20
87-68-3	PSD Hexachlorobutadiene	50.0	0.00 U	38.9	78	40-147	1	0-20
91-20-3	PSD Naphthalene	50.0	0.00 U	43.2	86	62-134	13	0-20
87-61-6	PSD 1,2,3-Trichlorobenzene	50.0	0.00 U	41.0	82	52-135	6	0-20

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-1648

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-134191PSD

Matrix: W

Lab Sample ID 1203804348

Instrument: VOA4.I

Analysis Date: 06/08/2017 18:04

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
120-82-1	PSD 1,2,4-Trichlorobenzene	50.0	0.00 U	39.1	78	50-133	5	0-20
630-20-6	PSD 1,1,1,2-Tetrachloroethane	50.0	0.00 U	44.2	88	71-133	1	0-20
95-50-1	PSD 1,2-Dichlorobenzene	50.0	0.00 U	40.0	80	60-125	1	0-20
71-36-3	PSD n-Butyl alcohol	5000	0.00 U	4640	93	60-140	15	0-20

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 2

SDG Number: 2017-1648

Sample Type: Post Spike

Client ID: CAWA-17-134191PS

Matrix: W

Lab Sample ID 1203804347

Instrument: VOA4.I

Analysis Date: 06/09/2017 22:30

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
107-02-8	PS Acrolein	250	0.00 U	240	96	49-141
76-13-1	PS Trichlorotrifluoroethane	250	0.00 U	206	82	57-149
107-05-1	PS Allyl chloride	250	0.00 U	230	92	54-128
107-13-1	PS Acrylonitrile	250	0.00 U	242	97	59-129
107-12-0	PS Propionitrile	250	0.00 U	240	96	58-131
126-98-7	PS Methacrylonitrile	250	0.00 U	247	99	59-134
80-62-6	PS Methyl methacrylate	250	0.00 U	249	99	62-135
97-63-2	PS Ethyl methacrylate	250	0.00 U	244	98	60-136
78-83-1	PS Isobutyl alcohol	2500	0.00 U	2450	98	60-143
126-99-8	PS 2-Chloro-1,3-butadiene	50.0	0.00 U	35.4	71	63-146

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 2 of 2

SDG Number: 2017-1648

Sample Type: Post Spike Duplicate

Client ID: CAWA-17-134191PSD

Matrix: W

Lab Sample ID 1203804349

Instrument: VOA4.I

Analysis Date: 06/09/2017 22:59

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	U	Spike Conc. ug/L	Recovery %	Acceptance Limits	RPD %	Acceptance Limits
107-02-8	PSD Acrolein	250	0.00	U	240	96	49-141	0	0-20
76-13-1	PSD Trichlorotrifluoroethane	250	0.00	U	210	84	57-149	2	0-20
107-05-1	PSD Allyl chloride	250	0.00	U	235	94	54-128	2	0-20
107-13-1	PSD Acrylonitrile	250	0.00	U	242	97	59-129	0	0-20
107-12-0	PSD Propionitrile	250	0.00	U	234	94	58-131	3	0-20
126-98-7	PSD Methacrylonitrile	250	0.00	U	251	100	59-134	1	0-20
80-62-6	PSD Methyl methacrylate	250	0.00	U	252	101	62-135	1	0-20
97-63-2	PSD Ethyl methacrylate	250	0.00	U	251	100	60-136	3	0-20
78-83-1	PSD Isobutyl alcohol	2500	0.00	U	2450	98	60-143	0	0-20
126-99-8	PSD 2-Chloro-1,3-butadiene	50.0	0.00	U	37.2	74	63-146	5	0-20

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 4

SDG Number: 2017-1648

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1671196

Matrix: WATER

Lab Sample ID 1203806750

Instrument: VOA4.I

Analysis Date: 06/08/2017 09:24

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
179601-23-1	LCS m,p-Xylenes	100	0.0	88.8	89	71-127
75-05-8	LCS Acetonitrile	1250	0.0	948	76	61-125
67-64-1	LCS Acetone	250	0.0	263	105	48-157
74-88-4	LCS Iodomethane	250	0.0	210	84	72-128
75-15-0	LCS Carbon disulfide	250	0.0	213	85	69-138
108-05-4	LCS Vinyl acetate	250	0.0	245	98	67-125
78-93-3	LCS 2-Butanone	250	0.0	226	90	55-138
108-10-1	LCS 4-Methyl-2-pentanone	250	0.0	208	83	66-124
591-78-6	LCS 2-Hexanone	250	0.0	246	98	56-140
75-71-8	LCS Dichlorodifluoromethane	50.0	0.0	45.6	91	40-160
74-87-3	LCS Chloromethane	50.0	0.0	39.4	79	58-135
75-01-4	LCS Vinyl chloride	50.0	0.0	44.0	88	65-137
74-83-9	LCS Bromomethane	50.0	0.0	46.6	93	63-137
75-00-3	LCS Chloroethane	50.0	0.0	50.4	101	69-129
75-69-4	LCS Trichlorofluoromethane	50.0	0.0	53.8	108	69-138
60-29-7	LCS Ethyl ether	50.0	0.0	51.4	103	72-125
75-35-4	LCS 1,1-Dichloroethylene	50.0	0.0	43.8	88	66-126
75-09-2	LCS Methylene chloride	50.0	0.0	38.9	78	68-119
1634-04-4	LCS tert-Butyl methyl ether	50.0	0.0	43.0	86	76-128
156-60-5	LCS trans-1,2-Dichloroethylene	50.0	0.0	45.0	90	71-124
75-34-3	LCS 1,1-Dichloroethane	50.0	0.0	44.3	89	73-123
156-59-2	LCS cis-1,2-Dichloroethylene	50.0	0.0	44.0	88	75-123

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 2 of 4

SDG Number: 2017-1648

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1671196

Matrix: WATER

Lab Sample ID 1203806750

Instrument: VOA4.I

Analysis Date: 06/08/2017 09:24

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
594-20-7	LCS 2,2-Dichloropropane	50.0	0.0	47.8	96	72-138
74-97-5	LCS Bromochloromethane	50.0	0.0	42.2	84	76-125
67-66-3	LCS Chloroform	50.0	0.0	43.9	88	76-123
71-55-6	LCS 1,1,1-Trichloroethane	50.0	0.0	46.1	92	74-136
563-58-6	LCS 1,1-Dichloropropene	50.0	0.0	44.0	88	72-129
56-23-5	LCS Carbon tetrachloride	50.0	0.0	47.3	95	72-140
107-06-2	LCS 1,2-Dichloroethane	50.0	0.0	44.4	89	74-122
71-43-2	LCS Benzene	50.0	0.0	42.7	85	72-121
79-01-6	LCS Trichloroethylene	50.0	0.0	45.9	92	74-125
78-87-5	LCS 1,2-Dichloropropane	50.0	0.0	42.6	85	73-121
74-95-3	LCS Dibromomethane	50.0	0.0	42.8	86	78-123
75-27-4	LCS Bromodichloromethane	50.0	0.0	46.0	92	77-131
10061-01-5	LCS cis-1,3-Dichloropropylene	50.0	0.0	45.2	90	78-131
108-88-3	LCS Toluene	50.0	0.0	43.1	86	71-121
10061-02-6	LCS trans-1,3-Dichloropropylene	50.0	0.0	47.1	94	78-131
79-00-5	LCS 1,1,2-Trichloroethane	50.0	0.0	42.9	86	74-118
142-28-9	LCS 1,3-Dichloropropane	50.0	0.0	42.0	84	74-118
127-18-4	LCS Tetrachloroethylene	50.0	0.0	42.5	85	69-129
124-48-1	LCS Dibromochloromethane	50.0	0.0	41.6	83	76-137
106-93-4	LCS 1,2-Dibromoethane	50.0	0.0	44.0	88	78-122
108-90-7	LCS Chlorobenzene	50.0	0.0	42.3	85	74-120
100-41-4	LCS Ethylbenzene	50.0	0.0	44.5	89	73-125

Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-1648

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1671196

Matrix: WATER

Lab Sample ID 1203806750

Instrument: VOA4.I

Analysis Date: 06/08/2017 09:24

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
95-47-6	LCS o-Xylene	50.0	0.0	44.3	89	74-126
100-42-5	LCS Styrene	50.0	0.0	46.2	92	72-130
75-25-2	LCS Bromoform	50.0	0.0	49.2	98	72-136
98-82-8	LCS Isopropylbenzene	50.0	0.0	46.3	93	70-130
79-34-5	LCS 1,1,2,2-Tetrachloroethane	50.0	0.0	41.7	83	70-126
96-18-4	LCS 1,2,3-Trichloropropane	50.0	0.0	41.5	83	74-122
108-86-1	LCS Bromobenzene	50.0	0.0	43.2	86	74-120
103-65-1	LCS n-Propylbenzene	50.0	0.0	44.9	90	67-128
108-67-8	LCS 1,3,5-Trimethylbenzene	50.0	0.0	46.5	93	70-129
95-49-8	LCS 2-Chlorotoluene	50.0	0.0	43.7	87	71-124
106-43-4	LCS 4-Chlorotoluene	50.0	0.0	44.5	89	69-125
98-06-6	LCS tert-Butylbenzene	50.0	0.0	46.5	93	72-130
95-63-6	LCS 1,2,4-Trimethylbenzene	50.0	0.0	46.2	92	70-126
135-98-8	LCS sec-Butylbenzene	50.0	0.0	46.0	92	70-131
99-87-6	LCS 4-Isopropyltoluene	50.0	0.0	47.2	94	71-131
541-73-1	LCS 1,3-Dichlorobenzene	50.0	0.0	42.4	85	72-121
106-46-7	LCS 1,4-Dichlorobenzene	50.0	0.0	42.3	85	71-120
104-51-8	LCS n-Butylbenzene	50.0	0.0	45.5	91	68-134
96-12-8	LCS 1,2-Dibromo-3-chloropropane	50.0	0.0	39.5	79	68-141
87-68-3	LCS Hexachlorobutadiene	50.0	0.0	43.5	87	72-136
91-20-3	LCS Naphthalene	50.0	0.0	45.7	91	72-132
87-61-6	LCS 1,2,3-Trichlorobenzene	50.0	0.0	43.7	87	70-130



Volatile  
Quality Control Summary  
Spike Recovery Report

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SDG Number: 2017-1648

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1671196

Matrix: WATER

Lab Sample ID 1203806750

Instrument: VOA4.I

Analysis Date: 06/08/2017 09:24

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
120-82-1	LCS 1,2,4-Trichlorobenzene	50.0	0.0	42.5	85	71-129
630-20-6	LCS 1,1,1,2-Tetrachloroethane	50.0	0.0	46.3	93	79-127
95-50-1	LCS 1,2-Dichlorobenzene	50.0	0.0	42.7	85	74-120
71-36-3	LCS n-Butyl alcohol	5000	0.0	4640	93	63-138

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 1

SDG Number: 2017-1648

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1671196

Matrix: WATER

Lab Sample ID 1203806751

Instrument: VOA4.I

Analysis Date: 06/08/2017 10:50

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
107-02-8	LCS Acrolein	250	0.0	291	116	60-140
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	248	99	61-148
107-05-1	LCS Allyl chloride	250	0.0	246	98	59-125
107-13-1	LCS Acrylonitrile	250	0.0	256	102	65-122
107-12-0	LCS Propionitrile	250	0.0	257	103	64-124
126-98-7	LCS Methacrylonitrile	250	0.0	259	104	64-126
80-62-6	LCS Methyl methacrylate	250	0.0	264	106	69-127
97-63-2	LCS Ethyl methacrylate	250	0.0	257	103	66-130
78-83-1	LCS Isobutyl alcohol	2500	0.0	2650	106	65-135
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	41.9	84	66-147

Volatile  
Quality Control Summary  
Spike Recovery Report

Page 1 of 1

SDG Number: 2017-1648

Sample Type: Laboratory Control Sample

Client ID: LCS for batch 1671196

Matrix: WATER

Lab Sample ID 1203807986

Instrument: VOA4.I

Analysis Date: 06/09/2017 14:13

Dilution: 1

Analyst: VXY1

Purge Vol: 5 mL

Batch ID: 1671196

CAS No	Parmname	Amount Added ug/L	Sample Conc. ug/L	Spike Conc. ug/L	Recovery %	Acceptance Limits
107-02-8	LCS Acrolein	250	0.0	279	112	60-140
76-13-1	LCS Trichlorotrifluoroethane	250	0.0	238	95	61-148
107-05-1	LCS Allyl chloride	250	0.0	251	100	59-125
107-13-1	LCS Acrylonitrile	250	0.0	262	105	65-122
107-12-0	LCS Propionitrile	250	0.0	264	106	64-124
126-98-7	LCS Methacrylonitrile	250	0.0	266	106	64-126
80-62-6	LCS Methyl methacrylate	250	0.0	269	108	69-127
97-63-2	LCS Ethyl methacrylate	250	0.0	261	104	66-130
78-83-1	LCS Isobutyl alcohol	2500	0.0	2710	108	65-135
126-99-8	LCS 2-Chloro-1,3-butadiene	50.0	0.0	42.3	85	66-147

## Method Blank Summary

Page 1 of 1

SDG Number:	2017-1648	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1671196	Instrument ID:	VOA4.I	Data File:	060817V4\4L407.D
Lab Sample ID:	1203806749	Prep Date:	06/08/2017 11:19	Analyzed:	06/08/17 11:19
Column:	DB-624				

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
01 LCS for batch 1671196	1203806750	060817V4\4L403A.D	06/08/17	0924
02 LCS for batch 1671196	1203806751	060817V4\4L406A.D	06/08/17	1050
03 CAWA-17-134190	424732001	060817V4\4L413.D	06/08/17	1413
04 CAWA-17-134191PS	1203804346	060817V4\4L420.D	06/08/17	1735
05 CAWA-17-134191PSD	1203804348	060817V4\4L421.D	06/08/17	1804

## Method Blank Summary

Page 1 of 1

SDG Number:	2017-1648	Client:	ARSL004	Matrix:	WATER
Client ID:	MB for batch 1671196	Instrument ID:	VOA4.I	Data File:	060917V4\4L508.D
Lab Sample ID:	1203807982	Prep Date:	06/09/2017 14:42	Analyzed:	06/09/17 14:42
Column:	DB-624				

This method blank applies to the following samples and quality control samples:

Client Sample ID	Lab Sample ID	File ID	Date Analyzed	Time Analyzed
07 LCS for batch 1671196	1203807986	060917V4\4L507A.D	06/09/17	1413
08 CAWA-17-134191PS	1203804347	060917V4\4L524.D	06/09/17	2230
09 CAWA-17-134191PSD	1203804349	060917V4\4L525.D	06/09/17	2259

# Quality Control Data

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b>	<b>2017-1648</b>	<b>Date Collected:</b>	<b>05/31/2017 08:54</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203804346</b>	<b>Date Received:</b>	<b>06/02/2017 09:00</b>		
<b>Client Sample:</b>	<b>QC for batch 1671196</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAWA-17-134191PS</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1671196</b>	<b>Inst:</b>	<b>VOA4.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>06/08/2017 17:35</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>06/08/2017 17:35</b>				
<b>Data File:</b>	<b>060817V4\4L420.D</b>	<b>Column:</b>	<b>DB-624</b>		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		43.9	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		39.8	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		37.1	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		39.3	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		41.9	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		38.9	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		39.6	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		38.8	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		36.7	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		37.3	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		43.3	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		31.0	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		40.1	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		40.4	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		40.3	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		41.5	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		44.2	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		40.8	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		39.4	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		40.2	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		39.9	ug/L	0.300	1.00
78-93-3	2-Butanone		127	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		42.3	ug/L	0.300	1.00
591-78-6	2-Hexanone		158	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		41.4	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		44.6	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		175	ug/L	1.50	5.00
67-64-1	Acetone		96.3	ug/L	1.50	10.0
75-05-8	Acetonitrile		832	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		40.0	ug/L	0.300	1.00
108-86-1	Bromobenzene		40.9	ug/L	0.300	1.00
74-97-5	Bromochloromethane		40.5	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		42.2	ug/L	0.300	1.00
75-25-2	Bromoform		41.6	ug/L	0.300	1.00

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

<b>SDG Number:</b> 2017-1648	<b>Date Collected:</b> 05/31/2017 08:54	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203804346	<b>Date Received:</b> 06/02/2017 09:00	
<b>Client Sample:</b> QC for batch 1671196	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAWA-17-134191PS	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1671196	<b>Inst:</b> VOA4.I	<b>Dilution:</b> 1
<b>Run Date:</b> 06/08/2017 17:35	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 06/08/2017 17:35		
<b>Data File:</b> 060817V4\4L420.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		43.2	ug/L	0.300	1.00
75-15-0	Carbon disulfide		201	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		41.8	ug/L	0.300	1.00
108-90-7	Chlorobenzene		41.0	ug/L	0.300	1.00
75-00-3	Chloroethane		46.1	ug/L	0.300	1.00
67-66-3	Chloroform		40.5	ug/L	0.300	1.00
74-87-3	Chloromethane		44.4	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		37.6	ug/L	0.300	1.00
74-95-3	Dibromomethane		39.8	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		38.6	ug/L	0.300	1.00
60-29-7	Ethyl ether		47.5	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		42.8	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		39.3	ug/L	0.300	1.00
74-88-4	Iodomethane		196	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		42.4	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		38.0	ug/L	1.00	10.0
91-20-3	Naphthalene		38.0	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		46.1	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		40.8	ug/L	0.300	1.00
108-88-3	Toluene		41.0	ug/L	0.300	1.00
79-01-6	Trichloroethylene		41.0	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		46.0	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		220	ug/L	1.50	5.00
75-01-4	Vinyl chloride		48.2	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		41.6	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		40.3	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		87.0	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		3980	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		43.0	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		42.2	ug/L	0.300	1.00
95-47-6	o-Xylene		44.4	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		44.1	ug/L	0.300	1.00



**Volatile  
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Sample Summary**

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<b>SDG Number:</b> 2017-1648	<b>Date Collected:</b> 05/31/2017 08:54	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203804346	<b>Date Received:</b> 06/02/2017 09:00	
<b>Client Sample:</b> QC for batch 1671196	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAWA-17-134191PS	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1671196	<b>Inst:</b> VOA4.I	<b>Dilution:</b> 1
<b>Run Date:</b> 06/08/2017 17:35	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 06/08/2017 17:35		
<b>Data File:</b> 060817V4\4L420.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		37.6	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		43.8	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		41.5	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		42.5	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	44.9	50.0	90	(71%-134%)
Bromofluorobenzene	49.6	50.0	99	(70%-131%)
Toluene-d8	48.9	50.0	98	(74%-124%)

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b>	<b>2017-1648</b>	<b>Date Collected:</b>	<b>05/31/2017 08:54</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203804347</b>	<b>Date Received:</b>	<b>06/02/2017 09:00</b>		
<b>Client Sample:</b>	<b>QC for batch 1671196</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAWA-17-134191PS</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1671196</b>	<b>Inst:</b>	<b>VOA4.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>06/09/2017 22:30</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>06/09/2017 22:30</b>				
<b>Data File:</b>	<b>060917V4\4L524.D</b>	<b>Column:</b>	<b>DB-624</b>		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		35.4	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		240	ug/L	1.50	5.00
107-13-1	Acrylonitrile		242	ug/L	1.50	5.00
107-05-1	Allyl chloride		230	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

**Volatile**  
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**Sample Summary**

<b>SDG Number:</b> 2017-1648	<b>Date Collected:</b> 05/31/2017 08:54	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203804347	<b>Date Received:</b> 06/02/2017 09:00	
<b>Client Sample:</b> QC for batch 1671196	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAWA-17-134191PS	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1671196	<b>Inst:</b> VOA4.I	<b>Dilution:</b> 1
<b>Run Date:</b> 06/09/2017 22:30	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 06/09/2017 22:30		
<b>Data File:</b> 060917V4\4L524.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		244	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2450	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		247	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		249	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		240	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		206	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile  
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Sample Summary**

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<b>SDG Number:</b>	<b>2017-1648</b>	<b>Date Collected:</b>	<b>05/31/2017 08:54</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203804347</b>	<b>Date Received:</b>	<b>06/02/2017 09:00</b>		
<b>Client Sample:</b>	<b>QC for batch 1671196</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAWA-17-134191PS</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1671196</b>	<b>Inst:</b>	<b>VOA4.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>06/09/2017 22:30</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>06/09/2017 22:30</b>				
<b>Data File:</b>	<b>060917V4\4L524.D</b>	<b>Column:</b>	<b>DB-624</b>		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	48.5	50.0	97	(71%-134%)
Bromofluorobenzene	52.5	50.0	105	(70%-131%)
Toluene-d8	46.8	50.0	94	(74%-124%)

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

<b>SDG Number:</b> 2017-1648	<b>Date Collected:</b> 05/31/2017 08:54	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203804348	<b>Date Received:</b> 06/02/2017 09:00	
<b>Client Sample:</b> QC for batch 1671196	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAWA-17-134191PSD	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1671196	<b>Inst:</b> VOA4.I	<b>Dilution:</b> 1
<b>Run Date:</b> 06/08/2017 18:04	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 06/08/2017 18:04		
<b>Data File:</b> 060817V4\4L421.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		44.2	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		39.7	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		39.2	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		41.7	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		41.9	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		38.8	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		38.6	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		41.0	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		38.1	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		39.1	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		41.7	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		36.4	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		42.1	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		40.0	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		41.8	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		41.3	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		42.4	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		39.6	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		41.3	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		39.4	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		39.2	ug/L	0.300	1.00
78-93-3	2-Butanone		148	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		40.8	ug/L	0.300	1.00
591-78-6	2-Hexanone		178	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		39.7	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		43.0	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		201	ug/L	1.50	5.00
67-64-1	Acetone		112	ug/L	1.50	10.0
75-05-8	Acetonitrile		975	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		39.2	ug/L	0.300	1.00
108-86-1	Bromobenzene		40.3	ug/L	0.300	1.00
74-97-5	Bromochloromethane		40.9	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		42.8	ug/L	0.300	1.00
75-25-2	Bromoform		43.8	ug/L	0.300	1.00

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

<b>SDG Number:</b> 2017-1648	<b>Date Collected:</b> 05/31/2017 08:54	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203804348	<b>Date Received:</b> 06/02/2017 09:00	
<b>Client Sample:</b> QC for batch 1671196	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAWA-17-134191PSD	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1671196	<b>Inst:</b> VOA4.I	<b>Dilution:</b> 1
<b>Run Date:</b> 06/08/2017 18:04	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 06/08/2017 18:04		
<b>Data File:</b> 060817V4\4L421.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		44.3	ug/L	0.300	1.00
75-15-0	Carbon disulfide		198	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		40.8	ug/L	0.300	1.00
108-90-7	Chlorobenzene		40.5	ug/L	0.300	1.00
75-00-3	Chloroethane		46.4	ug/L	0.300	1.00
67-66-3	Chloroform		39.9	ug/L	0.300	1.00
74-87-3	Chloromethane		44.1	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		38.7	ug/L	0.300	1.00
74-95-3	Dibromomethane		42.2	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		40.6	ug/L	0.300	1.00
60-29-7	Ethyl ether		51.0	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		41.5	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		38.9	ug/L	0.300	1.00
74-88-4	Iodomethane		198	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		40.0	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		38.8	ug/L	1.00	10.0
91-20-3	Naphthalene		43.2	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		45.7	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		40.1	ug/L	0.300	1.00
108-88-3	Toluene		40.2	ug/L	0.300	1.00
79-01-6	Trichloroethylene		41.1	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		45.2	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		239	ug/L	1.50	5.00
75-01-4	Vinyl chloride		48.6	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		41.1	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		41.7	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		84.4	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4640	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		41.3	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		40.3	ug/L	0.300	1.00
95-47-6	o-Xylene		43.4	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		42.1	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b>	<b>2017-1648</b>	<b>Date Collected:</b>	<b>05/31/2017 08:54</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203804348</b>	<b>Date Received:</b>	<b>06/02/2017 09:00</b>		
<b>Client Sample:</b>	<b>QC for batch 1671196</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAWA-17-134191PSD</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1671196</b>	<b>Inst:</b>	<b>VOA4.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>06/08/2017 18:04</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>06/08/2017 18:04</b>				
<b>Data File:</b>	<b>060817V4\4L421.D</b>	<b>Column:</b>	<b>DB-624</b>		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		40.6	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		42.4	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		41.6	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		43.4	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	48.9	50.0	98	(71%-134%)
Bromofluorobenzene	49.9	50.0	100	(70%-131%)
Toluene-d8	49.8	50.0	100	(74%-124%)

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

<b>SDG Number:</b> 2017-1648	<b>Date Collected:</b> 05/31/2017 08:54	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203804349	<b>Date Received:</b> 06/02/2017 09:00	
<b>Client Sample:</b> QC for batch 1671196	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAWA-17-134191PSD	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1671196	<b>Inst:</b> VOA4.I	<b>Dilution:</b> 1
<b>Run Date:</b> 06/09/2017 22:59	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 06/09/2017 22:59		
<b>Data File:</b> 060917V4\4L525.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		37.2	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		240	ug/L	1.50	5.00
107-13-1	Acrylonitrile		242	ug/L	1.50	5.00
107-05-1	Allyl chloride		235	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00



**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b>	<b>2017-1648</b>	<b>Date Collected:</b>	<b>05/31/2017 08:54</b>	<b>Matrix:</b>	<b>W</b>
<b>Lab Sample ID:</b>	<b>1203804349</b>	<b>Date Received:</b>	<b>06/02/2017 09:00</b>		
<b>Client Sample:</b>	<b>QC for batch 1671196</b>	<b>Client:</b>	<b>ARSL004</b>	<b>Project:</b>	<b>QC</b>
<b>Client ID:</b>	<b>CAWA-17-134191PSD</b>	<b>Method:</b>	<b>SW-846:8260B</b>	<b>SOP Ref:</b>	<b>GL-OA-E-038</b>
<b>Batch ID:</b>	<b>1671196</b>	<b>Inst:</b>	<b>VOA4.I</b>	<b>Dilution:</b>	<b>1</b>
<b>Run Date:</b>	<b>06/09/2017 22:59</b>	<b>Analyst:</b>	<b>VXY1</b>	<b>Purge Vol:</b>	<b>5 mL</b>
<b>Prep Date:</b>	<b>06/09/2017 22:59</b>				
<b>Data File:</b>	<b>060917V4\4L525.D</b>	<b>Column:</b>	<b>DB-624</b>		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		251	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2450	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		251	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		252	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		234	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		210	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

<b>SDG Number:</b> 2017-1648	<b>Date Collected:</b> 05/31/2017 08:54	<b>Matrix:</b> W
<b>Lab Sample ID:</b> 1203804349	<b>Date Received:</b> 06/02/2017 09:00	
<b>Client Sample:</b> QC for batch 1671196	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> CAWA-17-134191PSD	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1671196	<b>Inst:</b> VOA4.I	<b>Dilution:</b> 1
<b>Run Date:</b> 06/09/2017 22:59	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 06/09/2017 22:59		
<b>Data File:</b> 060917V4\4L525.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	47.9	50.0	96	(71%-134%)
Bromofluorobenzene	53.0	50.0	106	(70%-131%)
Toluene-d8	47.1	50.0	94	(74%-124%)

**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-1648

Lab Sample ID: 1203806749

Client Sample: QC for batch 1671196

Client ID: MB for batch 1671196

Batch ID: 1671196

Run Date: 06/08/2017 11:19

Prep Date: 06/08/2017 11:19

Data File: 060817V4\4L407.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

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

SDG Number: 2017-1648

Lab Sample ID: 1203806749

Client Sample: QC for batch 1671196

Client ID: MB for batch 1671196

Batch ID: 1671196

Run Date: 06/08/2017 11:19

Prep Date: 06/08/2017 11:19

Data File: 060817V4\4L407.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

Volatile  
Certificate of Analysis  
Sample Summary

Page 3 of 3

SDG Number:	2017-1648	Matrix:	WATER
Lab Sample ID:	1203806749		
Client Sample:	QC for batch 1671196	Client:	ARSL004
Client ID:	MB for batch 1671196	Method:	SW-846:8260B
Batch ID:	1671196	Inst:	VOA4.I
Run Date:	06/08/2017 11:19	Analyst:	VXY1
Prep Date:	06/08/2017 11:19		
Data File:	060817V4\4L407.D	Column:	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	53.1	50.0	ug/L 106	(71%-134%)
Bromofluorobenzene	55.5	50.0	ug/L 111	(70%-131%)
Toluene-d8	50.7	50.0	ug/L 101	(74%-124%)

## Tentatively Identified Compound Summary

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
No Tentatively Identified Compounds Found				ug/L		

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

Page 1 of 3

SDG Number: 2017-1648

Lab Sample ID: 1203806750

Client Sample: QC for batch 1671196

Client ID: LCS for batch 1671196

Batch ID: 1671196

Run Date: 06/08/2017 09:24

Prep Date: 06/08/2017 09:24

Data File: 060817V4\4L403A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane		46.3	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane		46.1	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane		41.7	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane		42.9	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane		44.3	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene		43.8	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene		44.0	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene		43.7	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane		41.5	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene		42.5	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene		46.2	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane		39.5	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane		44.0	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene		42.7	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane		44.4	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane		42.6	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene		46.5	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene		42.4	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane		42.0	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene		42.3	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane		47.8	ug/L	0.300	1.00
78-93-3	2-Butanone		226	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene		43.7	ug/L	0.300	1.00
591-78-6	2-Hexanone		246	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene		44.5	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene		47.2	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone		208	ug/L	1.50	5.00
67-64-1	Acetone		263	ug/L	1.50	10.0
75-05-8	Acetonitrile		948	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene		42.7	ug/L	0.300	1.00
108-86-1	Bromobenzene		43.2	ug/L	0.300	1.00
74-97-5	Bromochloromethane		42.2	ug/L	0.300	1.00
75-27-4	Bromodichloromethane		46.0	ug/L	0.300	1.00
75-25-2	Bromoform		49.2	ug/L	0.300	1.00

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

SDG Number: 2017-1648

Lab Sample ID: 1203806750

Client Sample: QC for batch 1671196

Client ID: LCS for batch 1671196

Batch ID: 1671196

Run Date: 06/08/2017 09:24

Prep Date: 06/08/2017 09:24

Data File: 060817V4\4L403A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane		46.6	ug/L	0.300	1.00
75-15-0	Carbon disulfide		213	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride		47.3	ug/L	0.300	1.00
108-90-7	Chlorobenzene		42.3	ug/L	0.300	1.00
75-00-3	Chloroethane		50.4	ug/L	0.300	1.00
67-66-3	Chloroform		43.9	ug/L	0.300	1.00
74-87-3	Chloromethane		39.4	ug/L	0.300	1.00
124-48-1	Dibromochloromethane		41.6	ug/L	0.300	1.00
74-95-3	Dibromomethane		42.8	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane		45.6	ug/L	0.300	1.00
60-29-7	Ethyl ether		51.4	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene		44.5	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene		43.5	ug/L	0.300	1.00
74-88-4	Iodomethane		210	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene		46.3	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride		38.9	ug/L	1.00	10.0
91-20-3	Naphthalene		45.7	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene		46.2	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene		42.5	ug/L	0.300	1.00
108-88-3	Toluene		43.1	ug/L	0.300	1.00
79-01-6	Trichloroethylene		45.9	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane		53.8	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate		245	ug/L	1.50	5.00
75-01-4	Vinyl chloride		44.0	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene		44.0	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene		45.2	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes		88.8	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol		4640	ug/L	15.0	50.0
104-51-8	n-Butylbenzene		45.5	ug/L	0.300	1.00
103-65-1	n-Propylbenzene		44.9	ug/L	0.300	1.00
95-47-6	o-Xylene		44.3	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene		46.0	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

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<b>SDG Number:</b>	2017-1648	<b>Matrix:</b>	WATER
<b>Lab Sample ID:</b>	1203806750		
<b>Client Sample:</b>	QC for batch 1671196	<b>Client:</b>	ARSL004
<b>Client ID:</b>	LCS for batch 1671196	<b>Method:</b>	SW-846:8260B
<b>Batch ID:</b>	1671196	<b>Inst:</b>	VOA4.I
<b>Run Date:</b>	06/08/2017 09:24	<b>Analyst:</b>	VXY1
<b>Prep Date:</b>	06/08/2017 09:24		
<b>Data File:</b>	060817V4\4L403A.D	<b>Column:</b>	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether		43.0	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene		46.5	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene		45.0	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene		47.1	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	50.5	50.0	101	(71%-134%)
Bromofluorobenzene	54.1	50.0	108	(70%-131%)
Toluene-d8	50.5	50.0	101	(74%-124%)



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

SDG Number: 2017-1648

Lab Sample ID: 1203806751

Client Sample: QC for batch 1671196

Client ID: LCS for batch 1671196

Batch ID: 1671196

Run Date: 06/08/2017 10:50

Prep Date: 06/08/2017 10:50

Data File: 060817V4\4L406A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		41.9	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		291	ug/L	1.50	5.00
107-13-1	Acrylonitrile		256	ug/L	1.50	5.00
107-05-1	Allyl chloride		246	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

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

SDG Number: 2017-1648

Lab Sample ID: 1203806751

Client Sample: QC for batch 1671196

Client ID: LCS for batch 1671196

Batch ID: 1671196

Run Date: 06/08/2017 10:50

Prep Date: 06/08/2017 10:50

Data File: 060817V4\4L406A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		257	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2650	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		259	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		264	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		257	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		248	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

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<b>SDG Number:</b>	<b>2017-1648</b>	<b>Matrix:</b>	<b>WATER</b>
<b>Lab Sample ID:</b>	<b>1203806751</b>		
<b>Client Sample:</b>	<b>QC for batch 1671196</b>	<b>Client:</b>	<b>ARSL004</b>
<b>Client ID:</b>	<b>LCS for batch 1671196</b>	<b>Method:</b>	<b>SW-846:8260B</b>
<b>Batch ID:</b>	<b>1671196</b>	<b>Inst:</b>	<b>VOA4.I</b>
<b>Run Date:</b>	<b>06/08/2017 10:50</b>	<b>Analyst:</b>	<b>VXY1</b>
<b>Prep Date:</b>	<b>06/08/2017 10:50</b>		
<b>Data File:</b>	<b>060817V4\4L406A.D</b>	<b>Column:</b>	<b>DB-624</b>

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	54.4	50.0	ug/L 109	(71%-134%)
Bromofluorobenzene	56.6	50.0	ug/L 113	(70%-131%)
Toluene-d8	51.0	50.0	ug/L 102	(74%-124%)

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

SDG Number: 2017-1648

Lab Sample ID: 1203807982

Client Sample: QC for batch 1671196

Client ID: MB for batch 1671196

Batch ID: 1671196

Run Date: 06/09/2017 14:42

Prep Date: 06/09/2017 14:42

Data File: 060917V4\4L508.D

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene	U	1.00	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein	U	5.00	ug/L	1.50	5.00
107-13-1	Acrylonitrile	U	5.00	ug/L	1.50	5.00
107-05-1	Allyl chloride	U	5.00	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-1648

Lab Sample ID: 1203807982

Client Sample: QC for batch 1671196

Client ID: MB for batch 1671196

Batch ID: 1671196

Run Date: 06/09/2017 14:42

Prep Date: 06/09/2017 14:42

Data File: 060917V4\4L508.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate	U	5.00	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol	U	50.0	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile	U	5.00	ug/L	1.50	5.00
80-62-6	Methyl methacrylate	U	5.00	ug/L	1.50	5.00
75-09-2	Methylene chloride	J	1.21	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile	U	5.00	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane	U	5.00	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

Page 3 of 3

<b>SDG Number:</b> 2017-1648	<b>Matrix:</b> WATER	
<b>Lab Sample ID:</b> 1203807982		
<b>Client Sample:</b> QC for batch 1671196	<b>Client:</b> ARSL004	<b>Project:</b> QC
<b>Client ID:</b> MB for batch 1671196	<b>Method:</b> SW-846:8260B	<b>SOP Ref:</b> GL-OA-E-038
<b>Batch ID:</b> 1671196	<b>Inst:</b> VOA4.I	<b>Dilution:</b> 1
<b>Run Date:</b> 06/09/2017 14:42	<b>Analyst:</b> VXY1	<b>Purge Vol:</b> 5 mL
<b>Prep Date:</b> 06/09/2017 14:42		
<b>Data File:</b> 060917V4\4L508.D	<b>Column:</b> DB-624	

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	48.4	50.0	97	(71%-134%)
Bromofluorobenzene	54.3	50.0	109	(70%-131%)
Toluene-d8	49.2	50.0	98	(74%-124%)

**Tentatively Identified Compound Summary**

CAS No.	Tentatively Identified Compound (TIC)	RT	Estimated	Units	Fit	Qual
No Tentatively Identified Compounds Found				ug/L		

**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-1648

Lab Sample ID: 1203807986

Client Sample: QC for batch 1671196

Client ID: LCS for batch 1671196

Batch ID: 1671196

Run Date: 06/09/2017 14:13

Prep Date: 06/09/2017 14:13

Data File: 060917V4\4L507A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
630-20-6	1,1,1,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
71-55-6	1,1,1-Trichloroethane	U	1.00	ug/L	0.300	1.00
79-34-5	1,1,2,2-Tetrachloroethane	U	1.00	ug/L	0.300	1.00
79-00-5	1,1,2-Trichloroethane	U	1.00	ug/L	0.300	1.00
75-34-3	1,1-Dichloroethane	U	1.00	ug/L	0.300	1.00
75-35-4	1,1-Dichloroethylene	U	1.00	ug/L	0.300	1.00
563-58-6	1,1-Dichloropropene	U	1.00	ug/L	0.300	1.00
87-61-6	1,2,3-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
96-18-4	1,2,3-Trichloropropane	U	1.00	ug/L	0.300	1.00
120-82-1	1,2,4-Trichlorobenzene	U	1.00	ug/L	0.300	1.00
95-63-6	1,2,4-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
96-12-8	1,2-Dibromo-3-chloropropane	U	1.00	ug/L	0.500	1.00
106-93-4	1,2-Dibromoethane	U	1.00	ug/L	0.300	1.00
95-50-1	1,2-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
107-06-2	1,2-Dichloroethane	U	1.00	ug/L	0.300	1.00
78-87-5	1,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
108-67-8	1,3,5-Trimethylbenzene	U	1.00	ug/L	0.300	1.00
541-73-1	1,3-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
142-28-9	1,3-Dichloropropane	U	1.00	ug/L	0.300	1.00
106-46-7	1,4-Dichlorobenzene	U	1.00	ug/L	0.300	1.00
594-20-7	2,2-Dichloropropane	U	1.00	ug/L	0.300	1.00
78-93-3	2-Butanone	U	5.00	ug/L	1.50	5.00
126-99-8	2-Chloro-1,3-butadiene		42.3	ug/L	0.300	1.00
95-49-8	2-Chlorotoluene	U	1.00	ug/L	0.300	1.00
591-78-6	2-Hexanone	U	5.00	ug/L	1.50	5.00
106-43-4	4-Chlorotoluene	U	1.00	ug/L	0.300	1.00
99-87-6	4-Isopropyltoluene	U	1.00	ug/L	0.300	1.00
108-10-1	4-Methyl-2-pentanone	U	5.00	ug/L	1.50	5.00
67-64-1	Acetone	U	10.0	ug/L	1.50	10.0
75-05-8	Acetonitrile	U	25.0	ug/L	8.00	25.0
107-02-8	Acrolein		279	ug/L	1.50	5.00
107-13-1	Acrylonitrile		262	ug/L	1.50	5.00
107-05-1	Allyl chloride		251	ug/L	1.50	5.00
71-43-2	Benzene	U	1.00	ug/L	0.300	1.00
108-86-1	Bromobenzene	U	1.00	ug/L	0.300	1.00
74-97-5	Bromochloromethane	U	1.00	ug/L	0.300	1.00
75-27-4	Bromodichloromethane	U	1.00	ug/L	0.300	1.00
75-25-2	Bromoform	U	1.00	ug/L	0.300	1.00

**Volatile  
Certificate of Analysis  
Sample Summary**

SDG Number: 2017-1648

Lab Sample ID: 1203807986

Client Sample: QC for batch 1671196

Client ID: LCS for batch 1671196

Batch ID: 1671196

Run Date: 06/09/2017 14:13

Prep Date: 06/09/2017 14:13

Data File: 060917V4\4L507A.D

Client: ARSL004

Method: SW-846:8260B

Inst: VOA4.I

Analyst: VXY1

Column: DB-624

Matrix: WATER

Project: QC

SOP Ref: GL-OA-E-038

Dilution: 1

Purge Vol: 5 mL

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
74-83-9	Bromomethane	U	1.00	ug/L	0.300	1.00
75-15-0	Carbon disulfide	U	5.00	ug/L	1.50	5.00
56-23-5	Carbon tetrachloride	U	1.00	ug/L	0.300	1.00
108-90-7	Chlorobenzene	U	1.00	ug/L	0.300	1.00
75-00-3	Chloroethane	U	1.00	ug/L	0.300	1.00
67-66-3	Chloroform	U	1.00	ug/L	0.300	1.00
74-87-3	Chloromethane	U	1.00	ug/L	0.300	1.00
124-48-1	Dibromochloromethane	U	1.00	ug/L	0.300	1.00
74-95-3	Dibromomethane	U	1.00	ug/L	0.300	1.00
75-71-8	Dichlorodifluoromethane	U	1.00	ug/L	0.300	1.00
60-29-7	Ethyl ether	U	1.00	ug/L	0.300	1.00
97-63-2	Ethyl methacrylate		261	ug/L	1.50	5.00
100-41-4	Ethylbenzene	U	1.00	ug/L	0.300	1.00
87-68-3	Hexachlorobutadiene	U	1.00	ug/L	0.300	1.00
74-88-4	Iodomethane	U	5.00	ug/L	1.50	5.00
78-83-1	Isobutyl alcohol		2710	ug/L	15.0	50.0
98-82-8	Isopropylbenzene	U	1.00	ug/L	0.300	1.00
126-98-7	Methacrylonitrile		266	ug/L	1.50	5.00
80-62-6	Methyl methacrylate		269	ug/L	1.50	5.00
75-09-2	Methylene chloride	U	10.0	ug/L	1.00	10.0
91-20-3	Naphthalene	U	1.00	ug/L	0.300	1.00
107-12-0	Propionitrile		264	ug/L	1.50	5.00
100-42-5	Styrene	U	1.00	ug/L	0.300	1.00
127-18-4	Tetrachloroethylene	U	1.00	ug/L	0.300	1.00
108-88-3	Toluene	U	1.00	ug/L	0.300	1.00
79-01-6	Trichloroethylene	U	1.00	ug/L	0.300	1.00
75-69-4	Trichlorofluoromethane	U	1.00	ug/L	0.300	1.00
76-13-1	Trichlorotrifluoroethane		238	ug/L	2.00	5.00
108-05-4	Vinyl acetate	U	5.00	ug/L	1.50	5.00
75-01-4	Vinyl chloride	U	1.00	ug/L	0.300	1.00
156-59-2	cis-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-01-5	cis-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00
179601-23-1	m,p-Xylenes	U	2.00	ug/L	0.300	2.00
71-36-3	n-Butyl alcohol	U	50.0	ug/L	15.0	50.0
104-51-8	n-Butylbenzene	U	1.00	ug/L	0.300	1.00
103-65-1	n-Propylbenzene	U	1.00	ug/L	0.300	1.00
95-47-6	o-Xylene	U	1.00	ug/L	0.300	1.00
135-98-8	sec-Butylbenzene	U	1.00	ug/L	0.300	1.00



**Volatile  
Certificate of Analysis  
Sample Summary**

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<b>SDG Number:</b>	2017-1648	<b>Matrix:</b>	WATER
<b>Lab Sample ID:</b>	1203807986		
<b>Client Sample:</b>	QC for batch 1671196	<b>Client:</b>	ARSL004
<b>Client ID:</b>	LCS for batch 1671196	<b>Method:</b>	SW-846:8260B
<b>Batch ID:</b>	1671196	<b>Inst:</b>	VOA4.I
<b>Run Date:</b>	06/09/2017 14:13	<b>Analyst:</b>	VXY1
<b>Prep Date:</b>	06/09/2017 14:13		
<b>Data File:</b>	060917V4\4L507A.D	<b>Column:</b>	DB-624

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ
1634-04-4	tert-Butyl methyl ether	U	1.00	ug/L	0.300	1.00
98-06-6	tert-Butylbenzene	U	1.00	ug/L	0.300	1.00
156-60-5	trans-1,2-Dichloroethylene	U	1.00	ug/L	0.300	1.00
10061-02-6	trans-1,3-Dichloropropylene	U	1.00	ug/L	0.300	1.00

Surrogate/Tracer recovery	Result	Nominal	Recovery%	Acceptable Limits
1,2-Dichloroethane-d4	51.1	50.0	ug/L	102 (71%-134%)
Bromofluorobenzene	54.3	50.0	ug/L	109 (70%-131%)
Toluene-d8	48.9	50.0	ug/L	98 (74%-124%)

# **Explosives by LCMSMS Analysis**

# Case Narrative

**Explosives by LCMSMS  
Technical Case Narrative  
ARS International, LLC (ARSL)  
SDG #: 2017-1648  
Work Order #: 424732**

**Method/Analysis Information**

**Procedure:** The Processing, Extraction, and Analysis of Nitroaromatics, Nitroamines, and Nitrate Esters by SW-846 8330B

Analytical Method: SW846 3535A/8330B

Prep Method: SW846 3535A

Analytical Batch Number: 1671746

Prep Batch Number: 1671745

**Sample Analysis**

The following samples were analyzed using the analytical protocol as established in SW846 3535A/8330B:

<b>Sample ID</b>	<b>Client ID</b>
424732001	CAWA-17-134190
1203805555	Method Blank (MB)
1203805556	Laboratory Control Sample (LCS)
1203805559	424596009(CAWA-17-133288) Matrix Spike (MS)
1203805560	424596009(CAWA-17-133288) Matrix Spike Duplicate (MSD)

**Preparation/Analytical Method Verification**

**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-068 REV# 7.

**Calibration Information**

**Initial Calibration**

All initial calibration requirements for this analysis have been met for this SDG.

**Calibration Verification Standard Requirements**

All calibration verification standards (ICV or CCV) have not met requirements of 80-120% for 1203805555 (MB) in this SDG. Please refer to Form 7 of the data package for a list of recoveries. Since the recoveries are biased high and target analytes were not detected in the associated samples, the data are considered unaffected. The data are Q qualified and reported.

**Calibration Blank Requirements**

All initial and continuing calibration blanks (ICB and CCB) bracketing the analyses associated with this batch

for this analysis were within acceptance criteria. Due to software limitations, the CCBs and/or the ICBs may have a concentration for target analytes in the Found column. These values should be zero.

#### **CRI Requirements**

All low level calibration verification (CRI) requirements for this analysis were met by all bracketing CRI standards.

#### **Quality Control (QC) Information**

##### **Method Blank (MB) Statement**

The MB analyzed with this SDG for this analysis met the acceptance criteria.

##### **Surrogate Recoveries**

All the surrogate recoveries were within the established acceptance criteria in this SDG in this analytical batch for this analysis.

##### **Laboratory Control Sample (LCS) Recovery**

One or more of the required spiking analytes were not within the acceptance limits in the laboratory control sample (See Below). While the LCS exhibited a high bias, the analyte was/were not detected in the associated samples, the data are reported.

Sample	Analyte	Value
1203805556 (LCS)	2,6-Dinitrotoluene	106* (72%-105%)
	TATB	150* (47%-135%)

##### **QC Sample Designation**

Client sample 424596009 (CAWA-17-133288) was chosen for matrix spike and matrix spike duplicate analysis.

##### **Matrix Spike (MS) Recovery Statement**

The MS or MSD (See Below) recovered spiked analytes outside of the established acceptance limits. Because the recoveries were biased high and target analytes were not detected in the associated samples above the reporting limit, the data were reported.

Sample	Analyte	Value
1203805560 (CAWA-17-133288MSD)	TATB	152* (38%-149%)

##### **MS/MSD Relative Percent Difference (RPD) Statement**

The RPDs between the MS and MSD met the acceptance limits for this analysis.

##### **Internal Standard (ISTD) Acceptance**

The internal standard responses were within the required acceptance criteria for all samples and QC in this SDG.

#### **Technical Information**

##### **Holding Time Specifications**

All samples in this SDG in this analytical batch met the specified holding time. GEL assigns holding times based on the associated methodology, which assigns the date and time from sample collection of 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.

**Preparation/Analytical Method Verification**

All procedures were performed as stated in the SOP.

**Sample Dilutions**

In accordance with GEL SOP GL-OA-056, all sample and QC extracts are diluted 1:1 v/v with LC reagent grade Water. The samples in this SDG in this analytical batch for this analysis did not require any additional dilutions.

**Sample Re-extraction/Re-analysis**

1203805556 (LCS), 1203805559 (CAWA-17-133288MS) and 1203805560 (CAWA-17-133288MSD) were re-analyzed due to the bracketing CCV failing to meet the required acceptance criteria. The second analysis was bracketed by passing acceptance criteria. Sample 424732001 (CAWA-17-134190) was re-analyzed to confirm potential carryover from the previous sample analysis. The re-analysis data are reported.

**Miscellaneous Information****Data Exception (DER) Documentation**

Data exception report (DER) 1641799 was generated for samples 1203805556 (LCS) and 1203805560 (CAWA-17-133288MSD) in this SDG/batch.

**Manual Integrations**

Manual integrations were not required for any data file associated with this SDG.

**Additional Comments**

Due to software limitations, all initial calibration blanks must be designated as XIB001 in order for the forms to be correct. Due to software limitations, file extensions such as DL, RE, etc. may not appear on the generated forms and/or raw data. Relative Retention Time (RRT) is used by the laboratory to establish peak identity. The RRT of each target analyte is calculated using the retention time of the corresponding internal standard. The RRT of each analyte in a sample must be within 0.1 of the analyte's calculated RRT in the ICV.

**System Configuration**

The laboratory utilizes an Agilent 1100 liquid chromatography instrument for either Primary or Secondary analyte analysis. It is coupled with an Applied Biosystems 4000 Mass Spectrometer/ Mass Spectrometer, designated as either LC/MS/MS #3 or LC/MS/MS #4. The laboratory also utilizes a Shimadzu Nexera XC liquid chromatography instrument for Primary and/or Secondary analyte analysis. It is coupled with an Applied Biosystems 5500 Mass Spectrometer/ Mass Spectrometer, designated as LC/MS/MS #5. All are fitted with an APCI (Atmospheric Pressure Chemical Ionization) probe that is operated in the negative ionization mode for both the Primary and Secondary analyte analysis.

**Electronic Packaging Comment**

This data package was generated using an electronic data processing program referred to as virtual packaging. In an effort to increase quality and efficiency, the laboratory has developed systems to generate all data packages electronically. The following change from traditional packages should be noted:

Analyst/peer reviewer initials and dates are not present on the electronic data files. Presently, all initials and dates are present on the original raw data. These hard copies are temporarily stored in the laboratory. An electronic signature page inserted after the case narrative will include the data validator's signature and title. The signature page also includes the data qualifiers used in the fractional package. Data that are not generated electronically, such as hand written pages, will be scanned and inserted into the electronic package.

**Chromatographic Columns**

The LC-MS/MS Explosives analysis was performed on a ABSciex 5500 Qtrap LC/MS/MS.

The detection of the Primary and Secondary Nitroaromatic and Nitramine analytes is accomplished through analysis on the following reversed phase column:

Phenomenex: Ultracarb 5u ODS (20), 250 x 4.60 mm ID.

**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

ARSL004 ARS International, LLC (ARS-LANS-MTOA6-25093-GEL)

Client SDG: 2017-1648 GEL Work Order: 424732

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

- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a surrogate compound
- Q One or more quality control criteria have not been met. Refer to the applicable narrative or DER.
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.
- 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: Michael Penny

Date: 14 JUN 2017

Title: Group Leader



# **Sample Data Summary**

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-134190

Lab Code: GEL

GEL Job No (SDG) 2017-1648

Matrix: WATER

GEL Sample ID: 424732001

Sample Amount 940 mL

Date Received: 06-JUN-17

Moisture: .

Extraction Batch ID: 1671745

Extraction Type Sol Exchange

Date Extracted: 07-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0608061.wiff

Date Analyzed: 10-JUN-17 04:18

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	.266	U	0.0851	0.266
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	.266	U	0.0851	0.266
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
13980-04-6	TNX	.266	U	0.0851	0.266
<i>13980-04-6</i>	<i>TNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	.266	U	0.0851	0.266
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	.266	U	0.0851	0.266
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	.266	U	0.0851	0.266
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
5755-27-1	MNX	.266	U	0.0851	0.266
<i>5755-27-1</i>	<i>MNX</i>				
606-20-2	2,6-Dinitrotoluene	.266	U	0.0851	0.266
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
80251-29-2	DNX	.266	U	0.0851	0.266
<i>80251-29-2</i>	<i>DNX</i>				
88-72-2	o-Nitrotoluene	.266	U	0.0872	0.266
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
98-95-3	Nitrobenzene	.266	U	0.0851	0.266
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	.266	U	0.0851	0.266
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	.266	U	0.0851	0.266
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-134190

Lab Code: GEL

GEL Job No (SDG) 2017-1648

Matrix: WATER

GEL Sample ID: 424732001

Sample Amount 940 mL

Date Received: 06-JUN-17

Moisture: .

Extraction Batch ID: 1671745

Extraction Type Sol Exchange

Date Extracted: 07-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-65-0	m-Dinitrobenzene	.266	U	0.0851	0.266
99-65-0	<i>m-Dinitrobenzene</i>				
479-45-8	Tetryl	.532	U	0.0851	0.532
479-45-8	<i>Tetryl</i>				
78-11-5	PETN	.532	U	0.106	0.532
78-11-5	<i>PETN</i>				
99-99-0	p-Nitrotoluene	.532	U	0.160	0.532
99-99-0	<i>p-Nitrotoluene</i>				
3058-38-6	TATB	1.06	U	0.319	1.06
3058-38-6	<i>TATB</i>				
618-87-1	3,5-Dinitroaniline	1.06	U	0.319	1.06
618-87-1	<i>3,5-Dinitroaniline</i>				
78-30-8	tris(o-cresyl) phosphate	1.06	U	0.319	1.06
78-30-8	<i>tris(o-cresyl) phosphate</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	2.66	U	0.532	2.66
59229-75-3	<i>2,6-Diamino-4-nitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	2.66	U	0.532	2.66
6629-29-4	<i>2,4-Diamino-6-nitrotoluene</i>				
121-82-4	RDX	8.08		0.0851	0.266
121-82-4	<i>RDX</i>				

# **Quality Control Summary**

**High Explosives Surrogate Recovery Summary****Lab Name:** GEL Laboratories LLC**GEL Job No (SDG):** 2017-1648**Lab Code:** GEL**HPLC Column:** Ultracarb Phenomenex 5u ODS (20)

Lab Sample ID	Client Sample ID	DNT	QC Limits	Flg
424732001	CAWA-17-134190	100	55 - 115	
1203805555	MB for batch 1671745	102	55 - 115	
1203805556	LCS for batch 1671745	105	55 - 115	
1203805559	CAWA-17-133288MS	81	55 - 115	
1203805560	CAWA-17-133288MSD	93	55 - 115	

DNT = 3,4-Dinitrotoluene

**3B**  
**High Explosives LCS/LCS Duplicate Summary**

**Lab Name:** GEL Laboratories LLC

**Client ID:** LCS

**Lab Code:** GEL

**GEL Job No (SDG)** 2017-1648

**Extract Batch Code:** 1671745

**Date Extracted:** 07-JUN-17

**GEL LCS ID:** 1203805556

**GEL LCSDUP ID:** .

**Analysis Date/Time:** 09-JUN-17 23:37

**DUP Analysis Date/Time:**

**Reporting Units:** ug/L

**QC Type:** LCS/LCSD

Compound	Spike Added	LCS Conc	LCS Rec #	LCSD Conc	LCSD Rec #	RPD #	RPD	Recovery Limits
1,3,5-Trinitrobenzene	5	4.19	84					70 - 110
2,4,6-Trinitrotoluene	5	4.89	98					69 - 113
2,4-Diamino-6-nitrotoluene	5	3.93	79					50 - 121
2,4-Dinitrotoluene	5	4.41	88					71 - 110
2,6-Diamino-4-nitrotoluene	5	4.21	84					53 - 127
2,6-Dinitrotoluene	5	5.31	106 *					72 - 105
2-Amino-4,6-dinitrotoluene	5	4.52	90					70 - 112
3,5-Dinitroaniline	5	6.02	120					70 - 121
4-Amino-2,6-dinitrotoluene	5	4.76	95					74 - 116
HMX	5	3.92	78					58 - 113
Nitrobenzene	5	4.52	90					64 - 115
PETN	5	4.8	96					57 - 126
RDX	5	4	80					64 - 117
TATB	2.5	3.76	150 *					47 - 135
Tetryl	5	4.01	80					55 - 122
m-Dinitrobenzene	5	4.66	93					74 - 117
m-Nitrotoluene	5	4.63	93					66 - 114
o-Nitrotoluene	5	4.49	90					64 - 115
p-Nitrotoluene	5	4.84	97					66 - 127
tris(o-cresyl) phosphate	5	3.64	73					43 - 104

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

**3**  
**High Explosives MS/MSD Summary**

**Lab Name:** GEL Laboratories LLC

**Client ID:** CAWA-17-133288

**Lab Code:** GEL

**GEL Job No (SDG)** 2017-1648

**Extract Batch Code:** 1671745

**Date Extracted:** 07-JUN-17

**GEL Spike ID:** 1203805559

**GEL SpikeDup ID:** 1203805560

**Analysis Date/Time:** 10-JUN-17 02:32

**MSD Analysis Date/Time:** 10-JUN-17 03:07

**Reporting Units:** ug/L

**QC Type:** MS/MSD

Compound	Spike Added	Sample Conc	MS Conc	MS Rec #	MSD Conc	MSD Rec #	RPD #	RPD Limit	Rec Limits
2,4,6-Trinitrotoluene	5.20833	.0975	4.56	86	4.59	86	0	30	66 - 112
2,4-Diamino-6-nitrotoluene	5.20833	0	5.74	110	6.16	118	7	30	50 - 121
2,4-Dinitrotoluene	5.20833	.0404	4.61	88	5.19	99	12	30	69 - 113
2,6-Diamino-4-nitrotoluene	5.20833	0	5.42	104	5.58	107	3	30	53 - 127
2,6-Dinitrotoluene	5.20833	0	4.49	86	4.26	82	5	30	70 - 106
2-Amino-4,6-dinitrotoluene	5.20833	.342	4.46	79	4.7	84	5	30	67 - 115
3,5-Dinitroaniline	5.20833	.103	5.81	110	5.72	108	2	30	70 - 121
4-Amino-2,6-dinitrotoluene	5.20833	.446	4.76	83	5.32	94	11	30	65 - 120
HMX	5.20833	1.69	6.44	91	6.47	92	1	30	44 - 128
Nitrobenzene	5.20833	0	4.27	82	4	77	6	30	62 - 116
PETN	5.20833	0	4.52	87	4.21	81	7	30	51 - 131
RDX	5.20833	21.2	26.4	100	22.2	20 *	17	30	57 - 125
TATB	2.60417	0	3.88	149	3.97	152 *	2	30	38 - 149
Tetryl	5.20833	0	3.82	73	3.79	73	1	30	50 - 126
m-Dinitrobenzene	5.20833	0	4.93	95	4.53	87	8	30	74 - 117
m-Nitrotoluene	5.20833	0	4.09	78	3.95	76	3	30	59 - 120
o-Nitrotoluene	5.20833	0	4.64	89	4.01	77	15	30	56 - 119
p-Nitrotoluene	5.20833	0	4.8	92	4.24	81	12	30	61 - 129
tris(o-cresyl) phosphate	5.20833	0	3.68	71	3.71	71	1	30	38 - 105
1,3,5-Trinitrobenzene	5.20833	0	4.34	83	4.11	79	5	30	67 - 111

#Column to be used to flag recovery and RPD values with an asterisk

# Quality Control Data



1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1671745

Lab Code: GEL

GEL Job No (SDG) 2017-1648

Matrix: WATER

GEL Sample ID: 1203805555

Sample Amount 1000 mL

Date Received: 06-JUN-17

Moisture: .

Extraction Batch ID: 1671745

Extraction Type Sol Exchange

Date Extracted: 07-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0608029.wiff

Date Analyzed: 09-JUN-17 09:35

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
118-96-7	2,4,6-Trinitrotoluene	.25	U	0.080	0.250
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	.25	U	0.080	0.250
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
121-82-4	RDX	.25	U	0.080	0.250
<i>121-82-4</i>	<i>RDX</i>				
13980-04-6	TNX	.25	U	0.080	0.250
<i>13980-04-6</i>	<i>TNX</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	.25	U	0.080	0.250
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
2691-41-0	HMX	.25	U	0.080	0.250
<i>2691-41-0</i>	<i>HMX</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	.25	U	0.080	0.250
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
5755-27-1	MNX	.25	U	0.080	0.250
<i>5755-27-1</i>	<i>MNX</i>				
606-20-2	2,6-Dinitrotoluene	.25	U	0.080	0.250
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
80251-29-2	DNX	.25	U	0.080	0.250
<i>80251-29-2</i>	<i>DNX</i>				
88-72-2	o-Nitrotoluene	.25	U	0.082	0.250
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
98-95-3	Nitrobenzene	.25	U	0.080	0.250
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-08-1	m-Nitrotoluene	.25	U	0.080	0.250
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: MB for batch 1671745

Lab Code: GEL

GEL Job No (SDG) 2017-1648

Matrix: WATER

GEL Sample ID: 1203805555

Sample Amount 1000 mL

Date Received: 06-JUN-17

Moisture: .

Extraction Batch ID: 1671745

Extraction Type Sol Exchange

Date Extracted: 07-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-35-4	1,3,5-Trinitrobenzene	.25	U	0.080	0.250
99-35-4	1,3,5-Trinitrobenzene				
99-65-0	m-Dinitrobenzene	.25	U	0.080	0.250
99-65-0	m-Dinitrobenzene				
479-45-8	Tetryl	.5	U	0.080	0.500
479-45-8	Tetryl				
78-11-5	PETN	.5	U	0.100	0.500
78-11-5	PETN				
99-99-0	p-Nitrotoluene	.5	U	0.150	0.500
99-99-0	p-Nitrotoluene				
3058-38-6	TATB	1	U	0.300	1.00
3058-38-6	TATB				
618-87-1	3,5-Dinitroaniline	1	QU	0.300	1.00
618-87-1	3,5-Dinitroaniline				
78-30-8	tris(o-cresyl) phosphate	1	U	0.300	1.00
78-30-8	tris(o-cresyl) phosphate				
59229-75-3	2,6-Diamino-4-nitrotoluene	2.5	U	0.500	2.50
59229-75-3	2,6-Diamino-4-nitrotoluene				
6629-29-4	2,4-Diamino-6-nitrotoluene	2.5	U	0.500	2.50
6629-29-4	2,4-Diamino-6-nitrotoluene				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1671745

Lab Code: GEL

GEL Job No (SDG) 2017-1648

Matrix: WATER

GEL Sample ID: 1203805556

Sample Amount 1000 mL

Date Received: 06-JUN-17

Moisture: .

Extraction Batch ID: 1671745

Extraction Type Sol Exchange

Date Extracted: 07-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0608053.wiff

Date Analyzed: 09-JUN-17 23:37

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
13980-04-6 <i>13980-04-6</i>	TNX <i>TNX</i>	.25	U	0.080	0.250
5755-27-1 <i>5755-27-1</i>	MNX <i>MNX</i>	.25	U	0.080	0.250
80251-29-2 <i>80251-29-2</i>	DNX <i>DNX</i>	.25	U	0.080	0.250
78-30-8 <i>78-30-8</i>	tris(o-cresyl) phosphate <i>tris(o-cresyl) phosphate</i>	3.64		0.300	1.00
3058-38-6 <i>3058-38-6</i>	TATB <i>TATB</i>	3.76		0.300	1.00
2691-41-0 <i>2691-41-0</i>	HMX <i>HMX</i>	3.92		0.080	0.250
6629-29-4 <i>6629-29-4</i>	2,4-Diamino-6-nitrotoluene <i>2,4-Diamino-6-nitrotoluene</i>	3.93		0.500	2.50
121-82-4 <i>121-82-4</i>	RDX <i>RDX</i>	4		0.080	0.250
479-45-8 <i>479-45-8</i>	Tetryl <i>Tetryl</i>	4.01		0.080	0.500
99-35-4 <i>99-35-4</i>	1,3,5-Trinitrobenzene <i>1,3,5-Trinitrobenzene</i>	4.19		0.080	0.250
59229-75-3 <i>59229-75-3</i>	2,6-Diamino-4-nitrotoluene <i>2,6-Diamino-4-nitrotoluene</i>	4.21		0.500	2.50
121-14-2 <i>121-14-2</i>	2,4-Dinitrotoluene <i>2,4-Dinitrotoluene</i>	4.41		0.080	0.250
88-72-2 <i>88-72-2</i>	o-Nitrotoluene <i>o-Nitrotoluene</i>	4.49		0.082	0.250

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: LCS for batch 1671745

Lab Code: GEL

GEL Job No (SDG) 2017-1648

Matrix: WATER

GEL Sample ID: 1203805556

Sample Amount 1000 mL

Date Received: 06-JUN-17

Moisture: .

Extraction Batch ID: 1671745

Extraction Type Sol Exchange

Date Extracted: 07-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
35572-78-2	2-Amino-4,6-dinitrotoluene	4.52		0.080	0.250
35572-78-2	2-Amino-4,6-dinitrotoluene				
98-95-3	Nitrobenzene	4.52		0.080	0.250
98-95-3	Nitrobenzene				
99-08-1	m-Nitrotoluene	4.63		0.080	0.250
99-08-1	m-Nitrotoluene				
99-65-0	m-Dinitrobenzene	4.66		0.080	0.250
99-65-0	m-Dinitrobenzene				
19406-51-0	4-Amino-2,6-dinitrotoluene	4.76		0.080	0.250
19406-51-0	4-Amino-2,6-dinitrotoluene				
78-11-5	PETN	4.8		0.100	0.500
78-11-5	PETN				
99-99-0	p-Nitrotoluene	4.84		0.150	0.500
99-99-0	p-Nitrotoluene				
118-96-7	2,4,6-Trinitrotoluene	4.89		0.080	0.250
118-96-7	2,4,6-Trinitrotoluene				
606-20-2	2,6-Dinitrotoluene	5.31		0.080	0.250
606-20-2	2,6-Dinitrotoluene				
618-87-1	3,5-Dinitroaniline	6.02		0.300	1.00
618-87-1	3,5-Dinitroaniline				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133288(424596009MS)MS

Lab Code: GEL

GEL Job No (SDG) 2017-1648

Matrix: WATER

GEL Sample ID: 1203805559

Sample Amount 960 mL

Date Received: 06-JUN-17

Moisture: .

Extraction Batch ID: 1671745

Extraction Type Sol Exchange

Date Extracted: 07-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0608058.wiff

Date Analyzed: 10-JUN-17 02:32

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
13980-04-6	TNX	.0885	J	0.0833	0.260
<i>13980-04-6</i>	<i>TNX</i>				
5755-27-1	MNX	.175	J	0.0833	0.260
<i>5755-27-1</i>	<i>MNX</i>				
80251-29-2	DNX	.26	U	0.0833	0.260
<i>80251-29-2</i>	<i>DNX</i>				
78-30-8	tris(o-cresyl) phosphate	3.68		0.313	1.04
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
479-45-8	Tetryl	3.82		0.0833	0.521
<i>479-45-8</i>	<i>Tetryl</i>				
3058-38-6	TATB	3.88		0.313	1.04
<i>3058-38-6</i>	<i>TATB</i>				
99-08-1	m-Nitrotoluene	4.09		0.0833	0.260
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
98-95-3	Nitrobenzene	4.27		0.0833	0.260
<i>98-95-3</i>	<i>Nitrobenzene</i>				
99-35-4	1,3,5-Trinitrobenzene	4.34		0.0833	0.260
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	4.46		0.0833	0.260
<i>35572-78-2</i>	<i>2-Amino-4,6-dinitrotoluene</i>				
606-20-2	2,6-Dinitrotoluene	4.49		0.0833	0.260
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				
78-11-5	PETN	4.52		0.104	0.521
<i>78-11-5</i>	<i>PETN</i>				
118-96-7	2,4,6-Trinitrotoluene	4.56		0.0833	0.260
<i>118-96-7</i>	<i>2,4,6-Trinitrotoluene</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133288(424596009MS)MS

Lab Code: GEL

GEL Job No (SDG) 2017-1648

Matrix: WATER

GEL Sample ID: 1203805559

Sample Amount 960 mL

Date Received: 06-JUN-17

Moisture: .

Extraction Batch ID: 1671745

Extraction Type Sol Exchange

Date Extracted: 07-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
121-14-2	2,4-Dinitrotoluene	4.61		0.0833	0.260
<i>121-14-2</i>	<i>2,4-Dinitrotoluene</i>				
88-72-2	o-Nitrotoluene	4.64		0.0854	0.260
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	4.76		0.0833	0.260
<i>19406-51-0</i>	<i>4-Amino-2,6-dinitrotoluene</i>				
99-99-0	p-Nitrotoluene	4.8		0.156	0.521
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				
99-65-0	m-Dinitrobenzene	4.93		0.0833	0.260
<i>99-65-0</i>	<i>m-Dinitrobenzene</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	5.42		0.521	2.60
<i>59229-75-3</i>	<i>2,6-Diamino-4-nitrotoluene</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	5.74		0.521	2.60
<i>6629-29-4</i>	<i>2,4-Diamino-6-nitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	5.81		0.313	1.04
<i>618-87-1</i>	<i>3,5-Dinitroaniline</i>				
2691-41-0	HMX	6.44		0.0833	0.260
<i>2691-41-0</i>	<i>HMX</i>				
121-82-4	RDX	26.4		0.0833	0.260
<i>121-82-4</i>	<i>RDX</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133288(424596009MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2017-1648

Matrix: WATER

GEL Sample ID: 1203805560

Sample Amount 960 mL

Date Received: 06-JUN-17

Moisture: .

Extraction Batch ID: 1671745

Extraction Type Sol Exchange

Date Extracted: 07-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

GEL data file: EXP0608059.wiff

Date Analyzed: 10-JUN-17 03:07

Dilution Factor: 2

Concentration Units: ug/L

Cas No.	Compound	Concentration*	Q	MDL	PQL
5755-27-1	MNX	.164	J	0.0833	0.260
<i>5755-27-1</i>	<i>MNX</i>				
13980-04-6	TNX	.26	U	0.0833	0.260
<i>13980-04-6</i>	<i>TNX</i>				
80251-29-2	DNX	.26	U	0.0833	0.260
<i>80251-29-2</i>	<i>DNX</i>				
78-30-8	tris(o-cresyl) phosphate	3.71		0.313	1.04
<i>78-30-8</i>	<i>tris(o-cresyl) phosphate</i>				
479-45-8	Tetryl	3.79		0.0833	0.521
<i>479-45-8</i>	<i>Tetryl</i>				
99-08-1	m-Nitrotoluene	3.95		0.0833	0.260
<i>99-08-1</i>	<i>m-Nitrotoluene</i>				
3058-38-6	TATB	3.97		0.313	1.04
<i>3058-38-6</i>	<i>TATB</i>				
98-95-3	Nitrobenzene	4		0.0833	0.260
<i>98-95-3</i>	<i>Nitrobenzene</i>				
88-72-2	o-Nitrotoluene	4.01		0.0854	0.260
<i>88-72-2</i>	<i>o-Nitrotoluene</i>				
99-35-4	1,3,5-Trinitrobenzene	4.11		0.0833	0.260
<i>99-35-4</i>	<i>1,3,5-Trinitrobenzene</i>				
78-11-5	PETN	4.21		0.104	0.521
<i>78-11-5</i>	<i>PETN</i>				
99-99-0	p-Nitrotoluene	4.24		0.156	0.521
<i>99-99-0</i>	<i>p-Nitrotoluene</i>				
606-20-2	2,6-Dinitrotoluene	4.26		0.0833	0.260
<i>606-20-2</i>	<i>2,6-Dinitrotoluene</i>				

1  
High Explosives Analysis Data Sheet

Lab Name: GEL Laboratories LLC

Client Sample ID: CAWA-17-133288(424596009MSD)MSD

Lab Code: GEL

GEL Job No (SDG) 2017-1648

Matrix: WATER

GEL Sample ID: 1203805560

Sample Amount 960 mL

Date Received: 06-JUN-17

Moisture: .

Extraction Batch ID: 1671745

Extraction Type Sol Exchange

Date Extracted: 07-JUN-17

Concentrated Extract Volume (mL) 5

Injection Volume (uL):50

Cas No.	Compound	Concentration*	Q	MDL	PQL
99-65-0	m-Dinitrobenzene	4.53		0.0833	0.260
99-65-0	<i>m-Dinitrobenzene</i>				
118-96-7	2,4,6-Trinitrotoluene	4.59		0.0833	0.260
118-96-7	<i>2,4,6-Trinitrotoluene</i>				
35572-78-2	2-Amino-4,6-dinitrotoluene	4.7		0.0833	0.260
35572-78-2	<i>2-Amino-4,6-dinitrotoluene</i>				
121-14-2	2,4-Dinitrotoluene	5.19		0.0833	0.260
121-14-2	<i>2,4-Dinitrotoluene</i>				
19406-51-0	4-Amino-2,6-dinitrotoluene	5.32		0.0833	0.260
19406-51-0	<i>4-Amino-2,6-dinitrotoluene</i>				
59229-75-3	2,6-Diamino-4-nitrotoluene	5.58		0.521	2.60
59229-75-3	<i>2,6-Diamino-4-nitrotoluene</i>				
618-87-1	3,5-Dinitroaniline	5.72		0.313	1.04
618-87-1	<i>3,5-Dinitroaniline</i>				
6629-29-4	2,4-Diamino-6-nitrotoluene	6.16		0.521	2.60
6629-29-4	<i>2,4-Diamino-6-nitrotoluene</i>				
2691-41-0	HMX	6.47		0.0833	0.260
2691-41-0	<i>HMX</i>				
121-82-4	RDX	22.2		0.0833	0.260
121-82-4	<i>RDX</i>				



## Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-1648Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 08-JUN-17 17:13GEL Data File: EXP0608001.wiffInstrument ID: LCMSMS5Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0

## Explosives Initial Calibration Blank

Lab Name: GEL Laboratories LLCGEL Job No(SDG): 2017-1648Lab Code: GELLab Sample ID: XIBLK01Analysis Date: 08-JUN-17 17:48GEL Data File: EXP0608002.wiffInstrument ID: LCMSMS5Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1648

Lab Code: GEL

Lab Sample ID: XIBLK02

Analysis Date: 08-JUN-17 22:28

GEL Data File: EXP0608010.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
TATB	0	0
3,5-Dinitroaniline	0	3.86
2,4-Diamino-6-nitrotoluene	0	4.19
2,6-Diamino-4-nitrotoluene	0	4.27
DNX	0	0
MNX	0	0
TNX	0	3.53
1,3,5-Trinitrobenzene	0	3.75
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	4
2-Amino-4,6-dinitrotoluene	0	3.41
4-Amino-2,6-dinitrotoluene	0	3.74
HMX	0	0
Nitrobenzene	0	1.42
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	7.06
3,4-Dinitrotoluene	0	3.64
tris(o-cresyl) phosphate	0	4.72

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1648

Lab Code: GEL

Lab Sample ID: XIBLK03

Analysis Date: 09-JUN-17 00:49

GEL Data File: EXP0608014.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	3.17
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1648

Lab Code: GEL

Lab Sample ID: XIBLK04

Analysis Date: 09-JUN-17 04:54

GEL Data File: EXP0608021.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1648

Lab Code: GEL

Lab Sample ID: XIBLK05

Analysis Date: 09-JUN-17 07:15

GEL Data File: EXP0608025.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1648

Lab Code: GEL

Lab Sample ID: XIBLK06

Analysis Date: 09-JUN-17 08:25

GEL Data File: EXP0608027.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

**4A**  
**Explosives Continuing Calibration Blank**

**Lab Name:** GEL Laboratories LLC

**GEL Job No(SDG):** 2017-1648

**Lab Code:** GEL

**Lab Sample ID:** XIBLK07

**Analysis Date:** 09-JUN-17 14:51

**GEL Data File:** EXP0608038.wiff

**Instrument ID:** LCMSMS5

**Column:** Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	2.44
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0



4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1648

Lab Code: GEL

Lab Sample ID: XIBLK08

Analysis Date: 09-JUN-17 16:01

GEL Data File: EXP0608040.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1648

Lab Code: GEL

Lab Sample ID: XIBLK09

Analysis Date: 09-JUN-17 21:16

GEL Data File: EXP0608049.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0

4A  
Explosives Continuing Calibration Blank

Lab Name: GEL Laboratories LLC

GEL Job No(SDG): 2017-1648

Lab Code: GEL

Lab Sample ID: XIBLK10

Analysis Date: 09-JUN-17 22:27

GEL Data File: EXP0608051.wiff

Instrument ID: LCMSMS5

Column: Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0

4A  
Explosives Continuing Calibration Blank

**Lab Name:** GEL Laboratories LLC

**GEL Job No(SDG):** 2017-1648

**Lab Code:** GEL

**Lab Sample ID:** XIBLK11

**Analysis Date:** 10-JUN-17 03:42

**GEL Data File:** EXP0608060.wiff

**Instrument ID:** LCMSMS5

**Column:** Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MXN	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	2.54
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0

4A  
Explosives Continuing Calibration Blank

**Lab Name:** GEL Laboratories LLC

**GEL Job No(SDG):** 2017-1648

**Lab Code:** GEL

**Lab Sample ID:** XIBLK12

**Analysis Date:** 10-JUN-17 05:28

**GEL Data File:** EXP0608063.wiff

**Instrument ID:** LCMSMS5

**Column:** Ultracarb Phenomenex 5u ODS (20)

Compound	True	Found (ug/L)
o-Nitrotoluene	0	0
p-Nitrotoluene	0	0
3,4-Dinitrotoluene	0	0
tris(o-cresyl) phosphate	0	0
TATB	0	0
3,5-Dinitroaniline	0	0
2,4-Diamino-6-nitrotoluene	0	0
2,6-Diamino-4-nitrotoluene	0	0
DNX	0	0
MNX	0	0
TNX	0	0
1,3,5-Trinitrobenzene	0	0
2,4,6-Trinitrotoluene	0	0
2,4-Dinitrotoluene	0	0
2,6-Dinitrotoluene	0	0
2-Amino-4,6-dinitrotoluene	0	0
4-Amino-2,6-dinitrotoluene	0	0
HMX	0	0
Nitrobenzene	0	0
Nitroglycerin	0	0
PETN	0	0
RDX	0	0
Tetryl	0	0
m-Dinitrobenzene	0	0
m-Nitrotoluene	0	0

# Miscellaneous

### DATA EXCEPTION REPORT

<b>Mo.Day Yr.</b> 14-JUN-17	<b>Division:</b> Industrial	<b>Quality Criteria:</b> Specifications	<b>Type:</b> Process
<b>Instrument Type:</b> LC-MS/MS	<b>Test / Method:</b> SW846 3535A/8330B	<b>Matrix Type:</b> Liquid	<b>Client Code:</b> ESHL
<b>Batch ID:</b> 1671746	<b>Sample Numbers:</b> See Below		
<b>Potentially affected work order(s)(SDG): 424596(2017-1633),424732(2017-1648),424735(2017-1647),424739(2017-1645),424741(2017-1644)</b> <b>Application Issues:</b> Failed Recovery for MS/MSD, or PS/PSD Failed Recovery for LCS/LCSD			
<b>Specification and Requirements Exception Description:</b>		<b>DER Disposition:</b>	
1. Two high recoveries were observed for 1203805556 (LCS). The recovery for 2,6-Dinitrotoluene was 106% (72%-105%) and for TATB, the recovery was 150% (47-135%).  2. A high recovery was observed for 1203805559 (MS). The recovery for TATB was 152% (38%-149%).		1. The high recoveries may be the result of vagaries in the extraction process and would suggest bias high detections. No reportable detections were observed in the associated samples.  2. The high recovery may be the result of vagaries in the extraction process. The high recovery was also observed in the batch LCS. No reportable detections were observed in the associated samples.	

**Originator's Name:**

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**Data Validator/Group Leader:**

Michael Penny 14-JUN-17